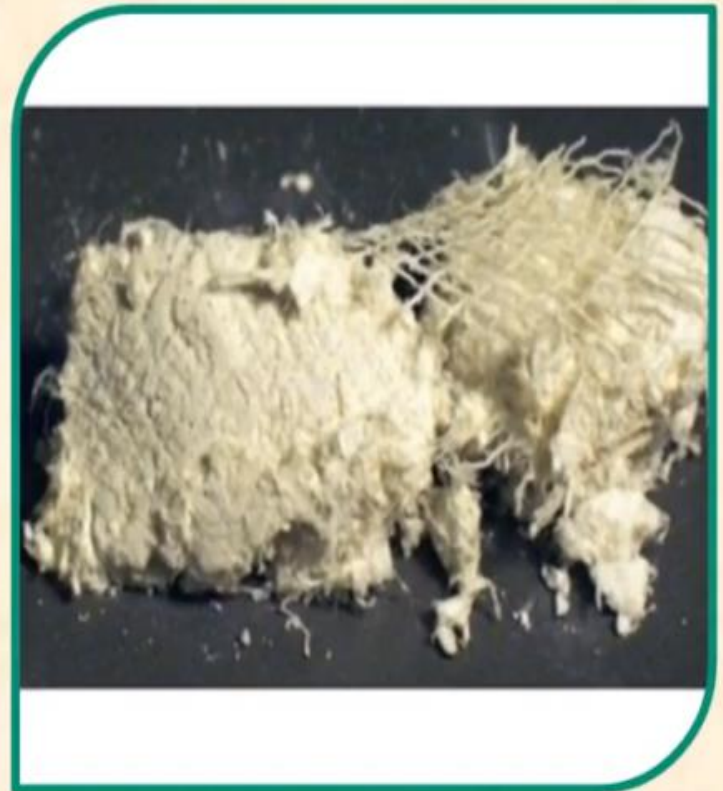


ASBESTOS

Welcome to the two-part course on asbestos.

“My strong advice is that householders should engage experienced and licensed professionals to undertake home renovations where asbestos is likely to be present and/or to undertake asbestos removal.

“There is no safe level of exposure to asbestos fibres.”



Asbestos fibres

ABOUT THE COURSE

In the next two modules this course will cover information on understanding asbestos insulation, the dangers it poses, the health risks, and other key topics.

It is important to keep in mind that in such a short course it is not possible to cover all of these topics in the depth they deserve.

Therefore, a bibliography of resources will appear at the end of each module.



THE FOCUS

In this first module the focus will be on the following topics:

1. What is asbestos?
2. When was asbestos used?
3. Where would it be found?
4. When does asbestos become dangerous and why?
5. Asbestos-related diseases such as mesothelioma
6. Who is at risk, why, and to what degree?
7. Asbestos and building or home renovations – the dangers
8. The risk from fires and hailstorms
9. 6 steps for reducing the risk to your health
10. How to find a licensed asbestos removal specialist
11. Personal Protective Equipment
12. Dos and Don'ts for removal specialists
13. When working outdoors
14. When cleaning up
15. Websites for asbestos information and awareness

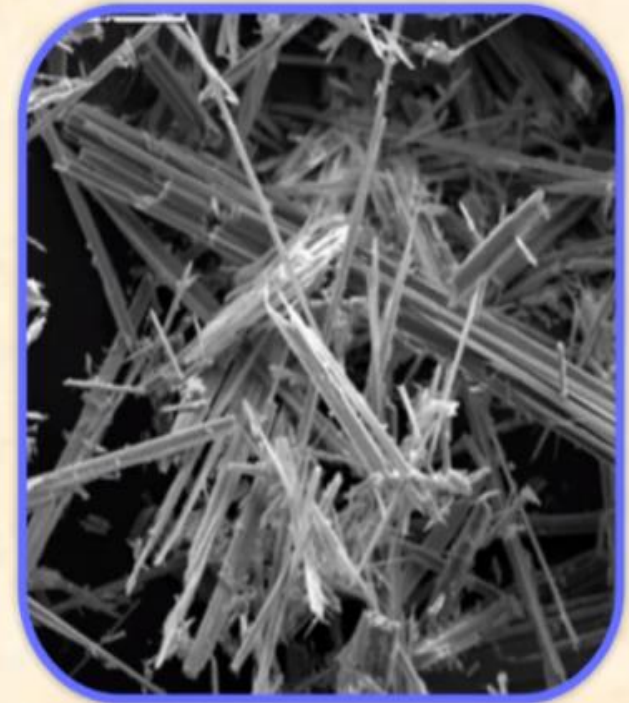
WHAT IS ASBESTOS?

- Asbestos is the name given to a group of naturally occurring minerals found in rock formations.
 - Three types of asbestos were mined in Australia: white, blue and brown asbestos.
 - Large deposits were mined in Western Australia and New South Wales, and there were smaller operations in Tasmania and South Australia.
- Asbestos fibres are strong, heat resistant and have insulating properties.
 - Clumps of mined asbestos can be broken down into loose fibres, or fibre bundles, and can be mixed with other materials, such as cement, to produce a variety of building products.



MORE ON ASBESTOS

- Asbestos fibres are not visible to the naked eye but, they are very light, remain airborne for a long time, and can be carried by wind and air currents over large distances.
- Asbestos fibres can be found in the air from the breakdown of natural asbestos deposits and manufactured asbestos products.
- Once airborne, small fibres may remain suspended in the air for some time and can be carried long distances by wind before settling down.
- Larger fibres and particles tend to settle more quickly. Asbestos fibres do not dissolve in water or move through soil. They are generally not broken down to other compounds and remain virtually unchanged over long periods.



Asbestos fibres
under a microscope

THE TWO TYPES OF ASBESTOS

The two types of asbestos: Friable and Bonded

- Friable asbestos products are generally quite soft and loose and can be crumbled into fine material or dust with very light pressure, such as crushing with your hand.
- Such products usually contain high levels of asbestos (up to 100% in some instances), which is loosely held in the product so that the asbestos fibres are easily released into the air.

- Bonded asbestos products are made from a bonding compound (such as cement) mixed with a small proportion (usually less than 15%) of asbestos. Bonded asbestos products are solid, rigid and non-friable.



**Friable
Asbestos**

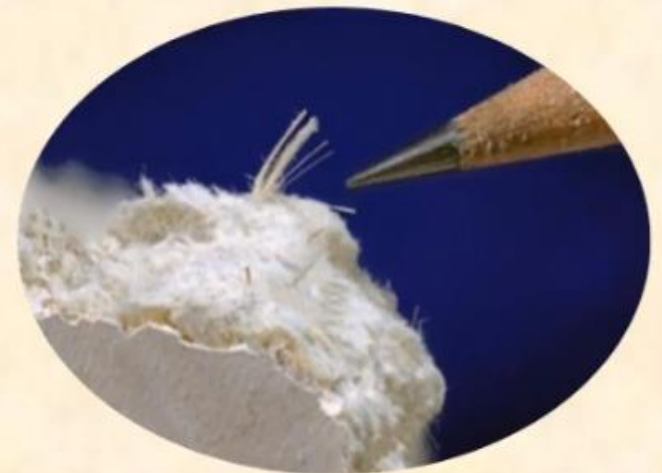
WHEN WAS IT USED?

Asbestos was first used in the 1800s commonly used in commercial and industrial settings for fireproofing, soundproofing and insulation.



In Australia, asbestos cement materials were first manufactured in the 1920s and were commonly used in the manufacture of residential building materials from the mid-1940s until the late 1980s.

During the 1980s asbestos cement materials were phased out in favor of asbestos-free products.



WHERE DO WE FIND ASBESTOS?

Many houses built before 1990 therefore contain asbestos cement materials, especially in the eaves, internal and external wall cladding, ceilings (particularly in wet areas such as bathrooms and laundries) and fences.

The next 2 slides describe where in your home or office you might find the two types of asbestos.



Asbestos

BONDED ASBESTOS PRODUCTS

The vast majority of asbestos-containing products used in houses were bonded asbestos cement materials, including:

Shingles and siding
(villaboard and similar)

Roofing

Exterior & interior wall
cladding

Eaves

Fencing

Thermal boards
around fireplaces

Water or flue pipes

FRIABLE ASBESTOS PRODUCTS

- Asbestos-rope door gaskets in wood stoves
- Loose fill roofing insulation (not common)
- Spray-on insulation or soundproofing
- Low-density asbestos fibre board
- Insulation on hot-water pipes, domestic heaters and stoves (e.g. Lagging)

- Backing material on floor tiles and vinyl flooring
- Carpet underlay
- Textured paints, decorative ceiling coatings
- Heat-resistant fabrics
- Brick and plaster sealants, fillers and some adhesive products
- Hail or fire damaged, or badly weathered asbestos cement materials

ASBESTOS IN THE HOME

Here is where asbestos can be found:

- Some roofing and siding shingles are made of asbestos cement.
- Houses built between 1930 and 1950 may have asbestos as insulation.
- Asbestos may be present in textured paint and in patching compounds used on wall and ceiling joints. Their use was banned in 1977.
- Artificial ashes and embers sold for use in gas-fired fireplaces.
- Older products such as stove-top pads.
- Walls and floors around wood-burning stoves may be protected with asbestos. Asbestos is found in some vinyl floor tiles and the backing on vinyl sheet flooring and adhesives.
- Hot water and steam pipes in older houses.
- Oil and coal furnaces and door gaskets may have asbestos insulation.

WHEN IS ASBESTOS DANGEROUS?

Asbestos only poses a risk to health when asbestos fibres are breathed in.



With cement

Undisturbed asbestos cement materials in good condition do not pose a health risk because the asbestos fibres are bound together in solid cement.

Damaged materials

However, if the material is damaged or crumbling (that is, has become friable), or is disturbed by breaking, cutting, drilling or sanding, fibres are released into the air.

THE HEALTH HAZARDS OF ASBESTOS

- There is such an abundance of information, scientific and medical research on the topic, this course can only provide a brief and introductory review.

- When asbestos fibres are breathed in, they may remain deep within the lungs.

- They can lodge in lung tissue and cause inflammation, scarring and some more serious asbestos-related diseases, which usually take many years, if not decades, to develop.

THE FOUR MAJOR DISEASES – PART 1

PLEURAL PLAQUES

Areas of white, smooth, raised scar tissue on the outer lining of the lung, internal chest wall and diaphragm IS often the earliest sign of exposure to asbestos.

Not everyone who has been exposed to asbestos develops plaques, possibly because of differences in their immune response to asbestos fibres.

People with pleural plaques as their only asbestos-related symptom usually have very little impairment of lung function.

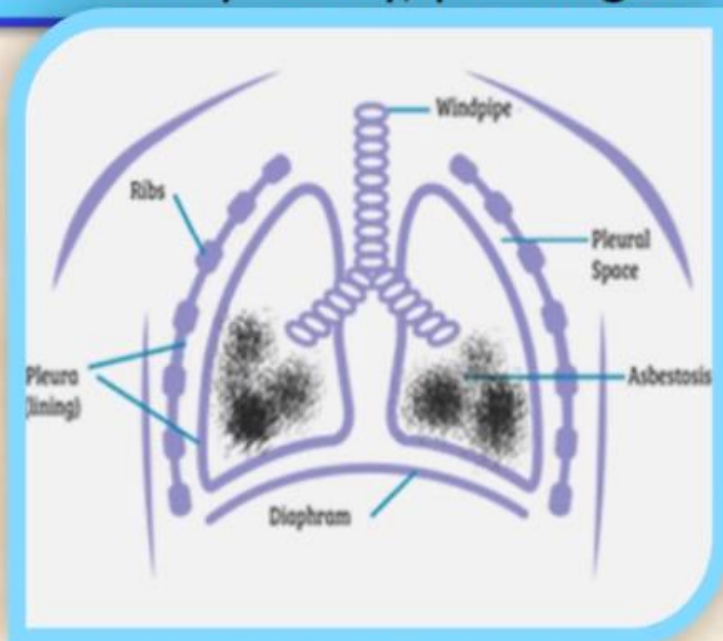


This x-ray shows pleural plaques on the person's lungs.

THE MAJOR DISEASES – PART 2

ASBESTOSIS

- A chronic condition caused by inflammation or scarring in the lungs
- Causes shortness of breath, coughing and permanent lung damage
- Caused by heavy, prolonged exposure to asbestos

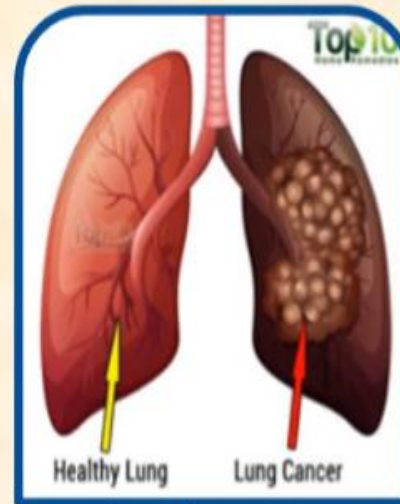
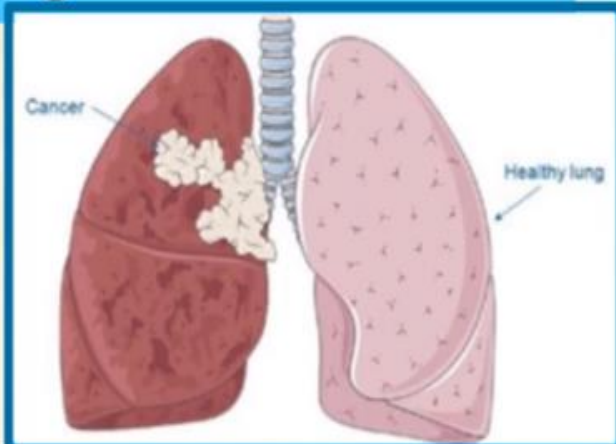


The diagram on the left shows two lungs both of which have black, round scarring due to asbestosis. These scars are typical of the disease.

THE MAJOR DISEASES – PART 3

Tumors

Cancerous tumors that mainly occur in the lining of the tubes leading into the lungs, the smaller airways or the middle of the lungs.



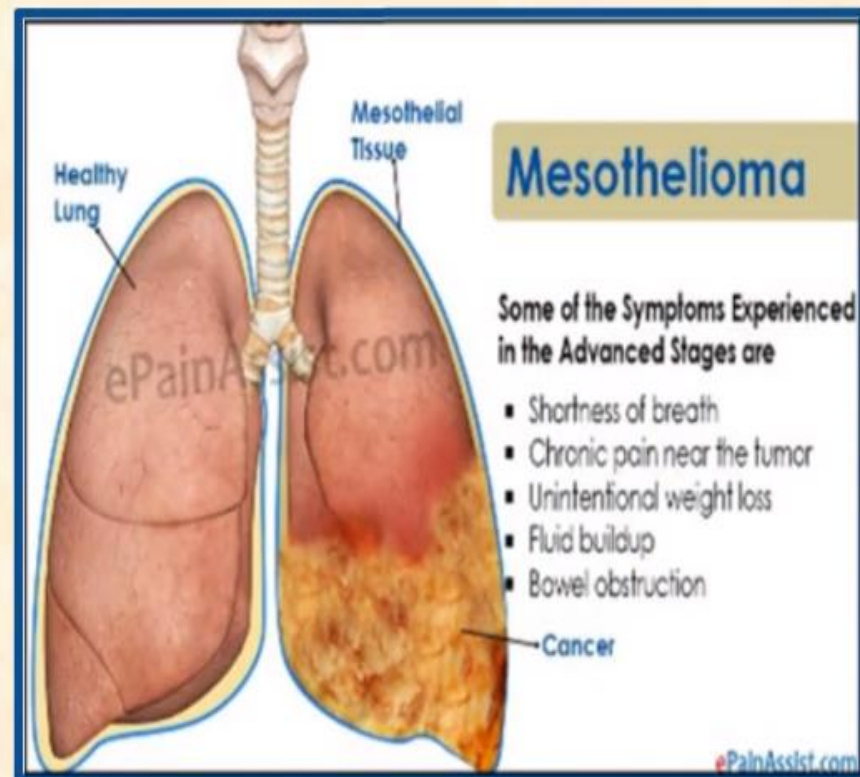
Lung Cancer

Risk of developing lung cancer is increased in people who also smoke or have a pre-existing lung disease.

THE MAJOR DISEASES – PART 4

MESOTHELIOMA

A rare form of cancer of the tissue that lines the body cavities, particularly the chest and abdominal cavities.



On the left is a healthy lung and on the right is a lung diseased with Mesothelioma.

RISK AND EXPOSURE

01

The risk of developing an asbestos-related disease increases in proportion to the number of asbestos fibres a person breathes in during their life. This, in turn, depends on how many fibres are breathed in and how often.

02

Very occasional exposure to a larger number of asbestos fibres (e.g. unsafe home renovation or demolition next door) poses a risk to your health.

03

But frequent exposure to a larger number of asbestos fibres (e.g. builder or tradesperson using unsafe techniques) is much more likely to pose a risk to your health.

WHO IS AT RISK?

Most people who develop asbestos-related diseases have worked on jobs where they frequently breathed in large amounts of asbestos fibres.

In the past, construction workers using unsafe practices may have frequently encountered asbestos fibre levels well above background levels.

The current regulated workplace limit (over an eight-hour period) is 100 fibres per litre of air (which is between 500 and 10 000 times background levels).

In the past, workers in asbestos milling or mining often encountered fibre concentrations a million times higher than background levels.

LIVING NEAR AN ASBESTOS MINE



An asbestos mine

1

Family members of exposed workers or those who lived close to active asbestos mines are also at risk.

2

An exposed worker or home renovator can carry asbestos fibres on their clothing, boots, skin, hair and tools.

3

Householders should be alert to ensure family members are not exposed to these fibres.

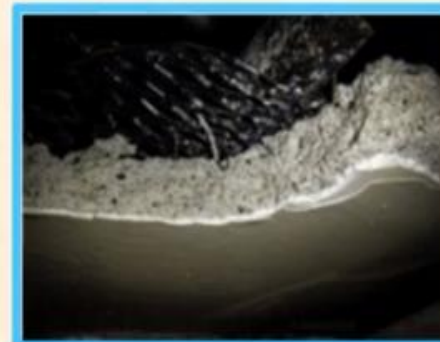
POSSIBLE HOUSEHOLD EXPOSURE

When are householders likely to be exposed to asbestos?



During normal wear and tear

During minor household maintenance or accidental disturbance.



NORMAL WEAR AND TEAR

01

In normal circumstances, the risk to householders from asbestos is very low.



02

If the house contains bonded asbestos products in good condition, leave them alone. But, check from time to time for signs of deterioration or damage.

03

The natural ageing and weathering of asbestos cement roofs releases asbestos fibres over time. These are unlikely to pose a health risk.

MAINTENANCE OR ACCIDENTAL DISTURBANCE

- Accidental exposure may be a result of someone pushing their foot through a ceiling sheet, putting up a new towel rail, or even cleaning up garden debris.
- **You should never use power tools or high-pressure, water jet cleaning equipment on asbestos products** as they may cause damage that releases asbestos fibres. In some states, these activities are illegal.
- Old vinyl and linoleum floor coverings and tiles might also contain asbestos backing in a form that can easily become airborne when disturbed.



If asbestos needs to be removed, always call a professional!

DANGERS DURING BUILDING OR RENOVATIONS

- During renovations or demolition of affected houses, asbestos fibres may be released into the air.
- While the overall health risk in these circumstances may be very low, extra precautions should be taken to reduce the chance of asbestos fibres becoming airborne.
- The workers' exposure can be reduced by wearing personal protective equipment such as masks and appropriate clothing.
- Other precautions include dampening down surfaces, not using power tools or high-pressure cleaning equipment, and vacating the home during the renovation.
- If you are concerned about demolition work being carried out close to your home, remain indoors and contact your local government environmental health officer and/or your state health and safety authority.

OTHER DISTURBANCES

- Carpet Underlay
- Fire Damage
- Hail and Storm Damage



Hail, storm and fire damage can release asbestos into the atmosphere.

CARPET UNDERLAY

- Some carpet underlay manufactured and installed before the early 1970s used material produced from hessian bags that had previously been used to transport raw asbestos.
- Underlay containing asbestos will not pose a significant risk while it remains underneath the carpet.
- If the carpet is badly worn or damaged, consider replacing both the carpet and the underlay.
- Replacement of the carpet at any time would also provide an ideal opportunity for safe disposal and replacement of the underlay.
- When removing always take standard precautions.

FIRE DAMAGE

During a building fire or bushfire, the amount of asbestos fibres released into the air is relatively low.

Air monitoring during and after fires has confirmed this.

However, pieces of asbestos material and some fibres may remain in the ash and may present a risk if they are disturbed while cleaning up after a fire.

For this reason, when cleaning up after a fire, one should wet down the debris to avoid dust and wear personal protective equipment.



HAIL OR STORM DAMAGE

- Hailstorms pose a risk to roofing, particularly old asbestos roofs.
- If your asbestos roofing is punctured or cracked, it is best to have your house re-roofed.
- Be very careful when checking your roof, particularly if it contains asbestos or other brittle material, because there is a high risk of falling off or through the roof.
- Do not attempt to repair broken asbestos cement roofs. As soon as possible after a storm, or if you suspect damage, have the roof properly assessed by a licensed professional.



SIX STEPS TO REDUCE THE RISK

The first 2 steps:

01

Know where asbestos-containing products could be in your home. If in doubt, get products tested, or for safety's sake, assume it is asbestos.

02

Maintain asbestos-containing products in good condition, such as through use of paint or other surface finishes, enclosures and capping.



REDUCE THE RISK

03

Replace asbestos cement materials if they are damaged or are being temporarily dismantled for any reason. Ensure all friable asbestos is removed only by a licensed asbestos removalist.

04

Plan ahead to prevent disturbing and releasing asbestos fibres, particularly when renovating or demolishing a structure that might contain asbestos (such as a house, garage or shed).

DANGER

ASBESTOS

REDUCE THE RISK

05

Get advice from your local government environmental health officer, or state or territory government, on safe handling and disposal of asbestos-containing products, and on the use of appropriate protective equipment.

06

Engage a licensed asbestos removalist when undertaking major home renovations or demolitions where asbestos may be present. Consider checking their procedures and quality of clean-up. In some states, homeowners also require a license for removal of asbestos-containing materials.

FIND A LICENSED REMOVAL SPECIALIST

The best place to go is the website for the Environmental Protection Agency or the EPA. They provide all the information anyone needs to find a licensed asbestos removal specialist, and links to the education and training one requires to become a licensed specialist.

<https://www.epa.gov/asbestos/protect-your-family-exposures-asbestos#professionals>



Remember: Only a Licensed Asbestos Removal Specialist can do the job properly.

PROTECTIVE EQUIPMENT

1. No one should go into an asbestos removal project without wearing the proper PPE. To do so is to put your health in grave danger.
2. This is why a Licensed Removal Specialist is crucial to such a project. The average homeowner should not attempt asbestos removal themselves.
3. Remember, asbestos is only dangerous when it's disturbed and it gets into the atmosphere.
4. You should wear either a half-face filter respirator fitted with a class P1 or P2 filter cartridge, or a class P1 or P2 disposable respirator appropriate for asbestos.



Half-face filter respirator

ADDITIONAL PPE

- Disposable coveralls should be used to prevent the contamination of clothing and footwear. An attached hood or disposable hat, and suitable disposable gloves should also be worn.
- The coveralls should have no external pockets or velcro fastenings, and the gloves should be sufficiently robust for the work to be done.
- Smooth, non-slip footwear without laces or top fasteners are preferable to plastic overshoes where there is a risk of slipping.



Samples of PPE: coveralls, mask, goggles, rubber gloves, and non-slip footwear.

FOR REMOVAL SPECIALISTS – PART 1

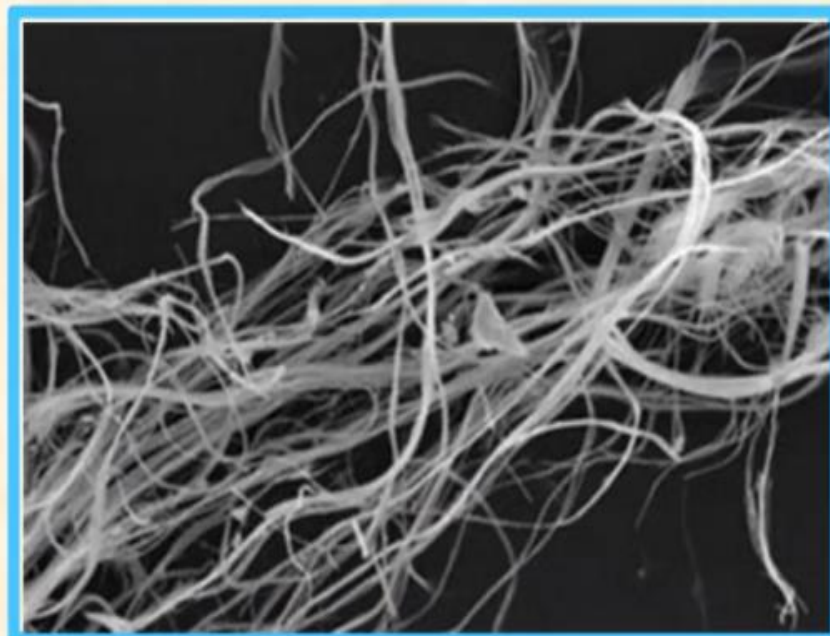
1. Work in a well-ventilated area and, where possible, in the open air (but not on windy days).
2. Thoroughly wet down the material before you start and regularly during the work by lightly spraying surfaces with water or a 1:10 polyvinyl acetate (PVA): water solution, or with low-pressure water from a garden hose (if outdoors); keep it wet until packaged for transport.
3. Use non-powered hand tools (e.g. A guillotine, hand saw or hand-powered drill) as these generate smaller amounts of dust and waste chips that are coarser than those generated when using power tools.

FOR REMOVAL SPECIALISTS – PART 2

1. Pull out any nails first to help remove sheeting with minimal breakage.
2. Carefully lower (not drop) the sheets to the ground and stack on two layers of polythene sheeting at least 0.2 mm thick (e.g. heavy-duty builders' plastic).
3. Minimize cutting or breaking of the asbestos cement products.
4. Remove and dispose of personal protective equipment as described below.
5. Shower and wash your hair immediately afterwards and, regardless of whether gloves were used, thoroughly clean your hands and fingernails to remove any dust and asbestos that may be on your body.

ASBESTOS REMOVAL – WHAT NOT TO DO – PART 1

1. Use high-pressure water jets to wet surfaces as this may increase the spread of loose fibres or dust.
2. Slide one sheet over the surface of another as this may abrade the surface of the materials, and increase the likelihood of the release of fibres and dust.
3. Use power tools, abrasive cutting or sanding discs, or compressed air on asbestos cement, as these will contribute to airborne dust and debris.



A close-up look at asbestos fibres.

ASBESTOS REMOVAL – WHAT NOT TO DO – PART 2

1. Dry sand, wire brush or scrape surfaces to be painted.
2. Walk on corrugated asbestos cement roofs if it can be avoided — many people have been injured by falling through weathered asbestos cement roofs while attempting to treat or repair the roof surface.
3. Leave asbestos cement products around the garden, or where they may be broken or crushed.



INDOORS – WHAT TO DO

1. Isolate the area you are working on from the rest of the building by closing and sealing internal doors.
2. Leave external doors and windows open to maximize ventilation.
3. Cover the floor with heavy-duty plastic sheeting to catch dust, debris and offcuts
4. Keep household members, visitors and pets away from the area until the work is completed.



INDOORS – WHAT NOT TO DO

Spread asbestos dust through areas of the building that are not protected by plastic sheeting (e.g. by walking through unprotected areas without removing shoes).



Workers carefully removing asbestos from inside a home.

CLEANING UP - DO

1. Thoroughly clean the work area, tools and equipment as soon as possible after finishing the job.
2. Clean up any asbestos cement residues in the work area, and on the tools and equipment used by using wet rags and a wet mop, or with a vacuum cleaner fitted with a high-efficiency particulate air (HEPA) filter which conforms to AS4260. Attachments with brushes should be avoided because they are difficult to decontaminate.
3. Double bag, seal and dispose of any materials used during the decontamination, such as rags and mops, along with other asbestos products at a disposal facility licensed to take asbestos.
4. Keep dust, debris and offcuts damp with water.
5. Keep your respirator on.

CLEANING UP – DON'T

Remove any materials from the work area until cleaned up as described above.

Clean the work area by dry sweeping or by using a household vacuum cleaner.



REMOVING & DISPOSING OF PPE

DO

1. Peel off coveralls, hat and gloves
2. Immediately seal all these items in two 0.2 mm thick (heavy-duty) polythene bags (i.e. double bagged) and clearly label to identify the contents as described above in 'Packaging and disposal of asbestos'
3. Dispose of these bags with the other asbestos waste
4. Wash or wipe reusable footwear using wet rags
5. Leave the respirator on until the contaminated clothing is removed, bagged and sealed, then dispose of the respirator by doubling bagging it as described above.

REMOVING & DISPOSING OF PPE

DON'T

1. Keep or recycle disposable protective equipment; for example, don't attempt to shake the dust out of overalls or clean the items with a vacuum cleaner
2. Launder or clean gloves — the asbestos removal and laundering process causes physical damage or deterioration of the gloves.



RESOURCES

1. U.S. Environmental Protection Agency – WWW.EPA.GOV
2. Selected Annotated Bibliography of Asbestos Resources in the United States and Canada - <https://pubs.usgs.gov/bul/1019l/report.pdf>
3. www.asbestos.com – excellent site for information on health resources and support

END OF MODULE 1

Thank-you very much for joining us today.
Please, proceed to the 10-question quiz before
moving on to Module 2 in this series.



More on asbestos in Module 2.