Asbestos Awareness Training

SHB
Scottish House Builders
Health & Safety Forum

Objectives

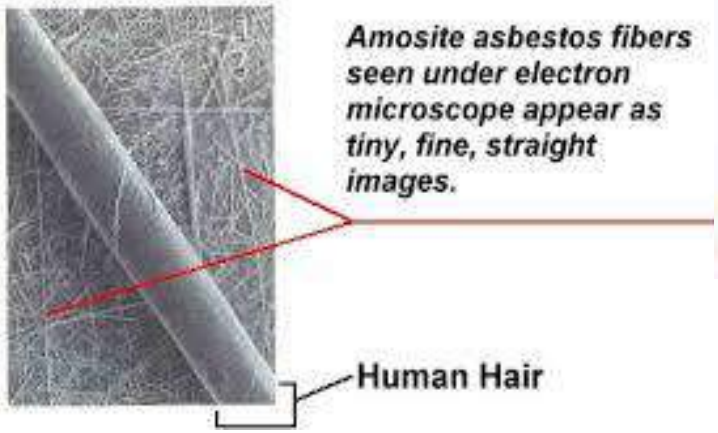
By the end of the course you will be able to:-

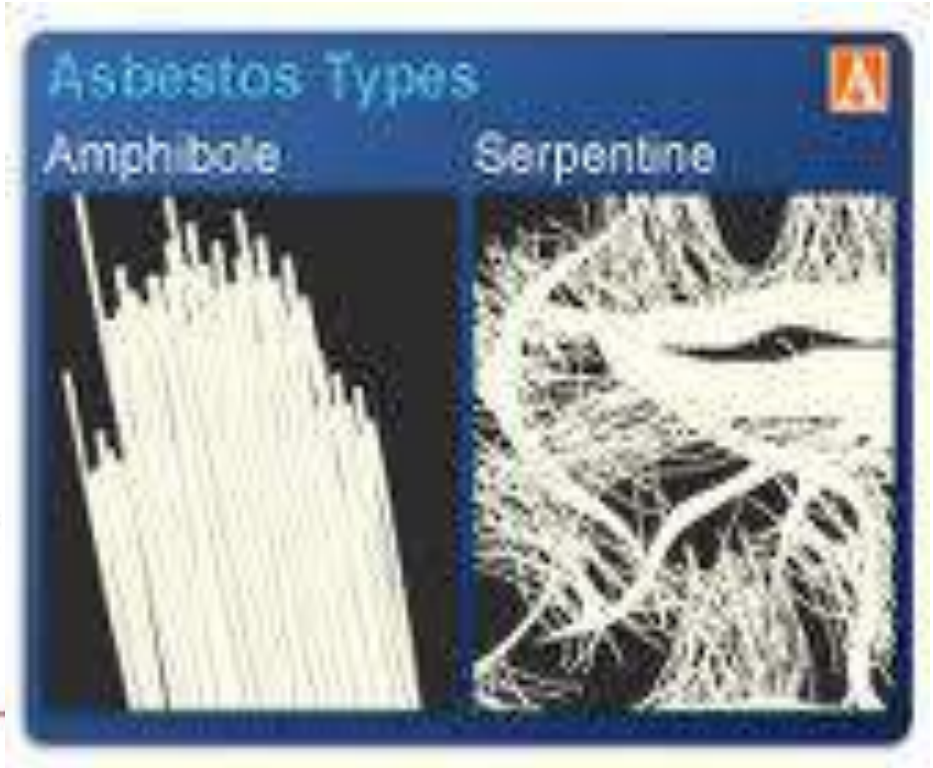
- Name the 3 main types of asbestos
- List the diseases caused by exposure to asbestos and understand the increased risk for smokers
- List some of the likely uses and locations for asbestos products in buildings
- Know how to avoid the risks from asbestos
- Explain the general emergency procedures should asbestos be discovered / disturbed

What is Asbestos?

- Naturally occurring material
- 3 main types
  - Chrysotile – white
  - Amosite – Brown
  - Crocidolite – Blue
  - BUT can't identify the different types just from colour
- 2 types of structure
  - Serpentine (Chrysotile) – divide into coarse curly cotton wool, fluffy fibreglass and wavy fibres that show little resistance to being bent or spiraled
  - Amphiboles (Amosite/ Crocidolite) – long thin fibres, needlelike shards

What is Asbestos?





What is Asbestos?

- Properties
  - Versatile
  - Hardwearing
  - High tensile strength
  - Good chemical, electrical and heat resistance
  - Mostly resistant to acids
- The general use of asbestos is now banned in UK.
  - Blue and Brown asbestos banned in 1985, white in 1999

History of Asbestos

- The Ancient Greeks used asbestos for wicks in lamps (they never burnt away) – the name means *inextinguishable*
- The Greeks did note a 'sickness in the lungs' of slaves who wove asbestos into cloth. However because of the seemingly magical properties they ignored the symptoms
- The Romans used asbestos cloth napkins, which were cleaned by throwing them into the fire.
- Deposits of asbestos are found throughout the world
  - Russia (largest producer), Canada, South Africa, Australia

History of Asbestos

- Asbestos is extracted by open cast mining. It is crushed, processed and refined into a wool like fibrous mass
- At the turn of 20th century it was noticed that there was a large number of deaths and lung problems in asbestos mining towns
- The first diagnosis of asbestosis was made in 1924 on a woman who died aged 33 years
- In the 1930`s medical journals started to link asbestos to cancer

History of Asbestos

- In 1931 laws were passed to increase ventilation requirements (United States took another 10 years to make these steps)
- Asbestos companies continued to ignore the danger for the sake of profits
- During the 1950s – 1980s, hundreds of building products contained asbestos
- Asbestos cement products were still in use until 1999
- Use of asbestos products peaked in the Sixties and early Seventies

Effects of Asbestos on Health

- Asbestos is the common name for a variety of silicate materials that are fibrous and are more resistant to acid and fire.
- All types of asbestos are classed as carcinogens.
- Inhalation of fibres causes the most problems
  - As the material breaks down the fibres split lengthways, creating thinner fibrils of the same length
  - The sharp fibres become lodged in lung tissue and can never be removed
- Asbestos fibres cannot be absorbed through the skin
- If swallowed asbestos can cause cancer in bowels
- The risk of adverse effects is much higher for smokers
- Asbestos related diseases can take 15 – 60 years to develop following exposure to fibres

Asbestos Related Diseases

- Main diseases are asbestosis, lung cancer, mesothelioma, pleural plaques.
- Over 2000 asbestos related deaths per year!

- Asbestosis
  - Scarring of lung tissues, caused by fibres reaching the alveoli (small air sacks in lungs)
  - Scarring results in reduced lung capacity and increased risk of lung cancer
  - Symptoms include extreme shortness of breath
  - Not always fatal but extremely debilitating

Asbestos Related Diseases

- Lung Cancer
  - Cancerous tumours in lung tissue
  - Symptoms include shortness of breath, coughing (up blood)
  - Nearly always fatal

- Mesothelioma
  - Cancerous cells form on the membrane covering the internal organs. Most commonly on the pleura covering lungs
  - Cancerous growth inhibits normal lung tissue function
  - Symptoms: shortness of breath, cough, pain in chest
  - Always fatal – life expectancy 6 – 24 months from diagnosis

Asbestos Related Diseases

- Pleural Plaques
  - Fibres lodged in the lung tissue push through and scratch the inside of the pleural membrane (liquid covering the inside of the lungs).
  - This causes inflammation and areas of scarring

- Other less common disease linked with asbestos exposure include:
  - Cancer of larynx
  - Asbestos warts
  - Pleural thickening

Remember:

- Asbestos is a naturally occurring substance and everyone is exposed to very small numbers of fibres all the time.
  - Background levels are 0.000001 – 0.0001 fibres/ml. That means 1 fibre or less in 10 litres of air
- People can only be exposed to fibres if:
  - The material is disturbed / damaged
  - Quantities of fibres are made airborne
  - They breathe the fibres in
- The risk of ill health / death is determined by:
  - Concentration of respirable fibres in the air
  - Duration of exposure to the fibres
  - Level of respiratory protection
  - Number of exposure events, over how long a period of time
  - Type of fibres exposed to

Control of Asbestos Regulations

- Brings together three previous sets of legislation
  - Covering prohibition of asbestos, control of asbestos at work and asbestos licensing
- Bans the use of white, brown and blue asbestos and the second hand use of asbestos products (e.g. asbestos cement sheets)
- Aims to increase employer and employee awareness to the presence of asbestos and the risks from work with asbestos
- Requires duty holders to manage asbestos properly in non domestic properties
  - Asbestos management plan
  - Asbestos register for building

Control of Asbestos Regulations

- Requires employers to provide information, instruction and training to all employees likely to be exposed to asbestos – not just asbestos removal workers
  - 3 levels of training:- asbestos awareness, non licensed asbestos removal, licensed asbestos removal
  - The required content of the Asbestos Awareness course is listed in the Approved Code of Practice.
  - Employees likely to be exposed to asbestos include:
    - General maintenance staff
    - Electricians
    - Plumbers
    - Gas Fitters
    - Painters and Decorators
    - Joiners
    - Plasterers
    - Demolition Workers
    - Construction Workers
    - Roofers
    - Heating and Ventilation Engineers
    - Telecommunications Engineers
    - Fire and Burglar Alarm Installers
    - Computer Installers
    - Architects, building surveyors and such
    - Shop fitters

Control of Asbestos Regulations

- Introduces more stringent standards of worker protection
  - Where work is carried out which may disturb asbestos employers are required to prevent exposure and spread of asbestos
  - Worker exposure must not exceed the Control Limit of 0.1 fibres per cm^3 *Note: This is still not a "safe" level and should still be reduced as far below the limit as possible.*
  - RPE must be worn, but the work must still be arranged to prevent the release of fibres.

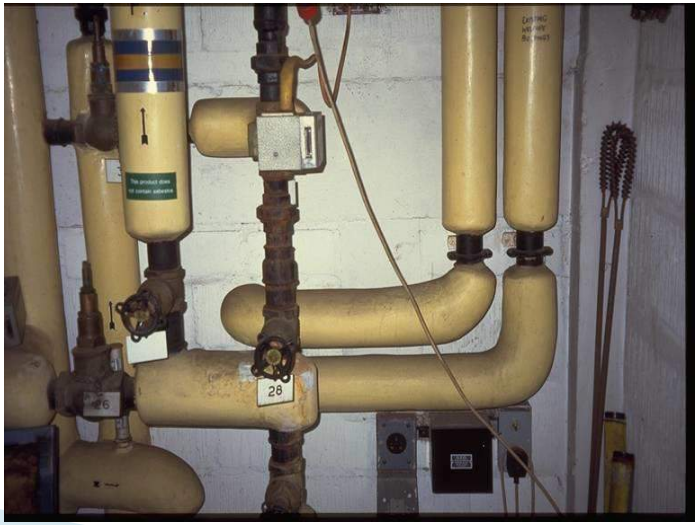
- Approved Codes of Practice and HSE Guidance
  - Tell us how to put the law into practice
  - Management of asbestos in non domestic premises – L127
  - Work with materials containing asbestos – L143
  - Asbestos Essentials – HSG210
  - Asbestos Kills: Protect Yourself – INDG419

Uses of Asbestos

- Insulating Board
  - Structural fire protection – on steel work, behind radiators and boilers, inside doors,
  - Also used for acoustic insulation, lining, ceiling tiles, general building board (resists moisture ingress)
  - Up to 85% asbestos, semi compressed so very likely to give off fibres if broken, drilled or sawn
  - Only to be removed by a licensed contractor

Uses of Asbestos

- Lagging
  - Thermal insulation for pipes/boilers
  - Common lagging up to 15% asbestos
  - Quilts/blankets up to 100% asbestos
  - Often has protective foil, paper or wire covering
  - Only to be removed by a licensed contractor



Uses of Asbestos

- Asbestos Cement Products
  - Roof sheets, flue pipes, guttering, down comers, roof tiles, permanent shuttering
  - Only 10-15% asbestos (usually white asbestos)
  - Fibres are tightly bound with portland cement so unlikely to give off fibres unless badly damaged
  - Sheets should be removed whole and kept wet

Uses of Asbestos

- Asbestos Containing Plastics
  - Floor tiles, stair nosings, sink pads, toilet seats and cisterns
  - Can also find asbestos in the adhesive used with floor tiles
  - Up to 25% asbestos
  - Fibre release unlikely under normal use

Uses of Asbestos

- Asbestos Rope and Cloth
  - Fire blankets, gaskets, cable insulation, flash guards
  - Up to 100% asbestos
  - Release of fibres depends on material
  - All 3 types of asbestos used pre1970, only chrysotile since

Uses of Asbestos

- Sprayed Coatings
  - Used as fire protection and acoustic control for structural steelwork.
  - Up to 85% asbestos
  - Fibre release likely if disturbed. Can also degrade as it ages.

Uses of Asbestos

- Textured Coatings
  - Commonly referred to as ‘artex’.
  - Low percentage of asbestos
  - Fibres may be released if the material is drilled or sanded.

Uses of Asbestos

- Asbestos Paper Products
  - Backing on fibre boards, floor tiles
  - Covering on electrical equipment insulation, pipe insulation
  - Damp proof course

- External Building Panels
  - Asbestos boarding can be used for external cladding

Uses of Asbestos

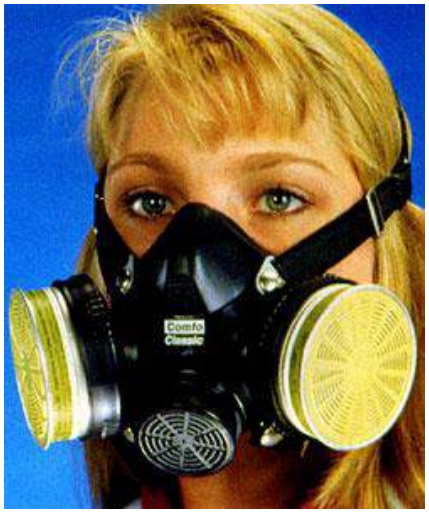
Asbestos in soil?

Potential for asbestos fibre release
and
Can be a very expensive cost to manage/ dispose/ remediate the problem!

PPE and RPE

- Personal Protective Equipment
  - Asbestos removal operatives wear:
    - Disposable overalls (Type 5 – Particle tight)
    - Boots without laces, or boot covers
    - Respiratory Protection
- Respiratory Protective Equipment
  - 3 types
    - Disposable respirators – with FFP3 filter
    - Half Face Masks
    - Full Face Masks

Respiratory Protective Equipment



Avoiding Risk

- Major refurbishment or demolition works must not start without a demolition/ refurbishment type (fully intrusive) survey to ascertain the presence of asbestos
- Any asbestos in the work area should be removed or protected
- Premises should have asbestos registers – look at them or ask the foreman where the asbestos is before starting work
- If you are working somewhere where asbestos may be discovered

  e.g. pulling down ceilings, working in loft spaces, under floors or demolishing walls

  wear disposable overalls and a FFP3 mask as a precaution.

Emergency Procedures

- If you discover or disturb asbestos
  - STOP work immediately
  - Prevent access to the area
  - Report to the person in charge.
  - Minimise spread of contamination to other areas
  - Keep exposures as low as you can
  - Safe system of work to manage the issue

  - HSE Asbestos Essentials Sheet EM1 gives directions

Summary

- What is Asbestos?
- Effects of Asbestos on Health – Main Diseases
- Health and Safety Legislation
- Control of Asbestos Regulations 2012
- Uses of Asbestos
- Where Asbestos can be found in Buildings
- Avoiding Risk
- PPE & RPE
- Emergency Procedures

Why?????

- Only ½ the world has currently banned the use/export of asbestos!

- Some countries who **still** use/ import asbestos:
- – China, Brazil, Mexico, India, Russia, Columbia, United States, Canada