

*

Asbestos Awareness Training

Course Delivered By:



CCP(Asbestos)



×

What is Asbestos and Why did we use it..?

Mozambique Shelter Cluster ShelterCluster.org Coordinating Humanitarian Shelter

Asbestos is a naturally occurring, fibrous, mineral rock, created millions of years ago as the Earth was forming.









It is mined by open cast quarrying or tunnelling techniques.









The rock is then processed in large factories...





Mozambique Shelter Cluster ShelterCluster.org Coordinating Humanitarian Shelter



... and the fibres separated out and cleaned.





Mozambique Shelter Cluster ShelterCluster.org Coordinating Humanitarian Shelter



The raw asbestos is then bagged and exported for use in various products around the world.





Mozambique Shelter Cluster ShelterCluster.org Coordinating Humanitarian Shelter



Most modern processes involve automated systems with fewer workers and dust extraction.

Others are less fortunate...





Asbestos Mines



*

U N D P



Asbest, Russia – Home to the World's largest asbestos mine.

Chrysotile - White Asbestos













Crocidolite - Blue Asbestos







Why Was Asbestos Used?

Resistant to Heat & Fire Good Heat & Cold Insulation **High Tensile Strength Chemically Inert Poor Conductor of Electricity Good Sound Insulation Condensation Protection Does Not Rot or Degrade Very Versatile Relatively Inexpensive**



lozambique Shelter Cluster

elterCluster.org ardinating Humanitarian Shelter





*

Health Effects

Asbestos Related Diseases



Asbestos, like other substances, can get into the body by:

Inhalation

Inhalation of asbestos fibres is the most common and dangerous route and is associated with three main types of fatal disease:

Asbestosis

Lung Cancer

Mesothelioma



Asbestos Related Diseases







Asbestosis

- Fibrosis or scarring of lung tissue.
- First documented case in 1924.
- Dose related disease.
- Can develop 10-20 years after first exposure.

Not always fatal but leads to other life threatening conditions.



terCluster.org





Lung Cancer

There are over 35,000 deaths due to lung cancer in the UK each year, mainly due to tobacco smoking.

An estimated 2,000 or more deaths are due to asbestos exposure.

Link first shown in 1934.

Latency period of 10-35 years.

Smokers exposed to asbestos are over 50 x more likely to contract lung cancer than non-smokers.







Mesothelioma

- Aggressive, malignant cancer of the lining of the lung (pleura) or abdomen (peritoneum).
- Asbestos fibres penetrate the lung tissue and lodge in the pleura.
- The tumour compresses the lungs and other body organs.
- Survival is usually less than 18 months following diagnosis.



alterCluster.org



Mesothelioma

- First reported in UK in 1942 & linked to asbestos in 1960.
- Almost always due to asbestos exposure and is not related to dose.
- Can develop between 15-60 years after first exposure, ave. 35-45 years.
- 2595 deaths in 2016 in the UK, Over 80% of them were men.



In the UK, deaths may increase and peak to possibly over 3,000 per year by around 2020.





Applications & Uses in Buildings

Sprayed Asbestos Coating



*



Sprayed asbestos to the underside of a corrugated cement sheet roof.



In poor condition to steel joists.

Asbestos Thermal Insulation

Mozambique Shelter Cluster ShelterCluster.org Xordinating Humanitarian Shelter

Used to keep plant, equipment or areas hot or cold.

- Various content from 6 85% of all asbestos types.
- Crocidolite used until ~1970.
- **Different forms include:**

Loose fill & packing Blocks, quilts, blankets & bags Hard set, hand applied & sectional lagging Paper & card insulation & linings Textiles, cloth, tape & rope Millboards

Unlikely to find after early 1980's.

Asbestos Thermal Insulation



ShelterCluster.org

Mozambique Shelter Cluster

Coordinating Humanitarian Shelter

*



Hard set insulation to school boilers, pipework & tanks,



...and to calorifier water tanks in an apartment block.

Asbestos Thermal Insulation







Sectional insulation to pipework.



Crocidolite insulation wrapped in Chrysotile cloth.

Asbestos Paper, Felt & Cardboard

UN DP

Used for heat & electrical insulation.

May also form backing to flooring products, duct linings and facing or reinforcement to roof felt & damp proof courses.

Can be up to 100% asbestos fibre, usually Chrysotile.

If not bonded, can be easily damaged & release fibres.

'Novilon' & 'Armstrong' flooring.

'Pax felt' & 'Viceroy' linings.

Unlikely to find after late 1970's.

Asbestos Paper, Felt & Cardboard and Shelter Cluster







Corrugated paper & foil insulation, often found lining boiler casings.

Paper lining to ducting.

Asbestos Paper, Felt & Cardboard





Sectional corrugated card insulation.



Asbestos paper insulation or vapour barriers can be found beneath other non-asbestos type insulation.

Asbestos Paper, Felt & Cardboard





Asbestos paper coated fibreboard lining a cement sheet roof.



Asbestos Millboard



High fibre, low density, insulating board.

General heat insulation and fire & electrical protection.

37 - 97% asbestos fibre, usually Chrysotile.

Crocidolite used in some boards from 1896 until 1965.

Very soft and easily damaged.

Used in ovens, boilers, laboratories, heat & fire shields.

Unlikely to find after late 1970's.

Asbestos Millboard



A damaged millboard heat shield.





Mozambique Shelter Cluster

Coordinating Humanitarian Shelter

ShelterCluster.org

*

Millboard lining an industrial oven.

Millboard is soft and highly fibrous.

Asbestos Insulating Board



16-25% asbestos fibre, but can reach 40%

Usually Amosite, Crocidolite used in some boards until 1965.

Widely used where fire protection was needed but also provides heat & acoustic insulation and moisture resistance.

'Asbestolux', 'Turnasbestos', 'LDR', 'Marinite' & 'Shipboard'.

Common uses:

Structural steelwork cladding Partition walls, ceiling panels & tiles Linings to stairs, doors, hatches, lifts, risers etc. Window & blanking panels Roof, eaves & canopy linings & soffits

Unlikely to find after early 1980's.

Asbestos Insulating Board







Broken asbestos insulating board.



Damaged board lining a door.

Asbestos Insulating Board





Asbestos insulating board ceiling,



... and skylight recess lining.

Woven Asbestos



Textiles, cloth, yarn, rope & string.

Used for heat insulation, fire protection, electrical resistance, packing, caulking & joint sealing.

Up to 100% asbestos fibre, usually Chrysotile since 1970.

Various uses:

Cloth wrap insulation Packing & caulking around flues & pipes Flash pads to fuses Gaskets, washers & duct sealants Window / skylight beading Textile clothing, fire blankets & curtains

Unlikely to find after mid 1980's.

Woven Asbestos

Asbestos cloth flash pads to fuses...

..and wrap to an electric cable.









Mozambique Shelter Cluster ShelterCluster.org Coordinating Humanitarian Shelter



Extensive use as a strong, external building material.

10-15% fibre in Portland Cement or calcium silicate.

Usually Chrysotile but Crocidolite used from 1950-1969 & Amosite from 1945-1980 within some materials.

High density & hard but brittle & easily fragmented.

Moulded into various materials:

Corrugated, profiled & flat sheets Rainwater hoppers, gutters & downpipes Roof, wall & decking tiles Building boards & shuttering Flues, pipes, troughs, sills, tanks & containers

Possibly used until 1999.







Broken asbestos cement sheeting.



Damaged partition wall in a prefabricated office building.









Profiled asbestos cement roof sheets.

Asbestos cement built factory workshop & stores.







'Eternit' cement roof tiles.



Fibrous debris in guttering.



Cement undercloaking to a gable end roof.



Mozambique Shelter Cluster

Coordinating Humanitarian Shelter

ShelterCluster.org

Profiled asbestos cement roof sheets, badly damaged after a fire.









Asbestos cement guttering, hoppers, and downpipes.



Coated Metal Sheeting





Mozambique Shelter Cluster

Coordinating Humanitarian Shelter

ShelterCluster.org

'Galbestos' profiled metal sheeting. Chrysotile and bitumen / resin. Produced 1938 - 1977. Used for industrial buildings, walls, roofs and fencing.

Reinforced Plastics & Composites





Reinforced 'Shires Lynx' toilet cistern. Amosite usually added.

Fibres are well bound but can be released if damaged.

Friction Materials

Mozambique Shelter Cluster ShelterCluster.org Coordinating Humanitarian Shelter 

Many vehicles were fitted with asbestos containing brake pads.



Asbestos Cement Debris

Mozambique Shelter Cluster ShelterCluster.org Coordinating Humanitarian Shelter





... resulting in significant clean up works and costs.

Asbestos cement roof sheets break and fragment in fire...



Asbestos Cement Debris



*



Asbestos is often fly tipped to avoid high disposal costs.

Asbestos Cement Problems







Mozambique Shelter Cluster

rdinating Humanitarian Shelter

ShelterCluster.org



Falls through fragile roofs & roof-lights account for some 22% of falls from height in the construction industry – equivalent to 7 deaths and 300 major injuries a year.

So, What's The Risk..?

Mozambique Shelter Cluster ShelterCluster.org Coordinating Humanitarian Shelter



High Risk Groups

- Construction workers
- Ancillary trades
- Service installers
- Maintenance workers
- Caretakers & cleaners
- Public & family members

High Risk Activities

- Releasing the fibres
- Cutting, drilling & sawing
- Breaking, sanding & abrading
- Cleaning & bagging waste
- Accidental damage
- Thefts & vandalism

Risk will be dependent on:

- The type of asbestos fibre & material,
- The asbestos content & amount released,
- The duration of exposure,
- The work activities carried out.

Asbestos Awareness – Any Questions





Situation in Mozambique

Historically:

- Large producers of asbestos in the region (Zimbabwe, South Africa)
- Asbesto-cement factory operating in Dondo until 2008 ("Lusalite")
- Wide use as roofing material for public and commercial buildings, as well as houses



Situation in Mozambique

Regulation on Asbestos in Mozambique

- Decree n. 55/2010 Ban of importation and commercialization of material with asbestos
- → Since 2010, new fibro-cement product shall use asbestos-free processes
- Decree n. 83/2014 Regulation on Hazardous Waste,
 identifies products with asbestos as hazardous waste

 \rightarrow <u>Rules for safe handling?</u>



Post-Idai Situation

- Suspected asbesto-cement in rubbles (roofing plates, locally called "lusalite"):
 - Considered low risk asbestos containing material
 - Risk when breaking down and handling without protection
- Still many partially damaged roofs to be dismantled during rehabilitation process



Mozambique Shelter Cluster ShelterCluster.org Coordinating Humanitarian Shelter



Post-Idai situation

Practices observed:

- Fly-tipping of rubble together with other waste
- Use as filling material for potholes
- Disposal by commercial sector at the dumpsite





Post-Idai situation





Next step

1. Awareness

2. Training for safe removal

3. Safe removal

4. Final disposal



*

1. Awareness

Target-groups:

- Decision-makers:
 - Government
 - Local Authorities
 - Humanitarian actors
- Construction / Private sector
- Population in general

Objectives:

- Create common understanding on risks and how to manage them
- Avoid creating panic



*

1. Awareness

Key message – what NOT to do:

- Do not break
- Do not reuse
- Do not fly-tip on the road
- Do not use as rubble for roads or construction
- Do not cut
- Don't allow children to play with it

→ Avoid disturbing the material



2. Training for safe removal

Detailed and practical one-day training on safe asbesto-cement removal

- Target-groups:
 - Small groups (max. 10 persons)
 - Waste collection staff from Municipalities / Districts
 - Construction companies / Private waste collection
 - Operators + Supervisors + Auditing



-

3. Safe removal

- Small teams (max. 5 members)
- Staff with proper training
- Supervision
- Plan for safe work, including:
 - Use of Personnel Protection Equipment (PPE)
 - Use of Respiratory Protection Equipment (RPE P3 class)
 - Following of pre-established procedure

- \rightarrow Low risk in relation to asbestos if basic procedure is respected.
- → Other risks shall be considered (work at height, etc.)



A CONTRACTOR







and an

3. Safe removal









4. Final disposal

Final disposal shall be considered:

- Burial and coverage with other material to avoid future contacts between material and people
- Choose a location with low probability of earthwork / excavation in the future