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# Greenwood Environmental Overview



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- About Greenwood
- Why Turkey?
- Control of Asbestos in Turkey
- Greenwood's Aims in Turkey
- Asbestos Project Structure
- Path to Best Practice
- Greenwood and the Ministry of Health



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# What is Asbestos?

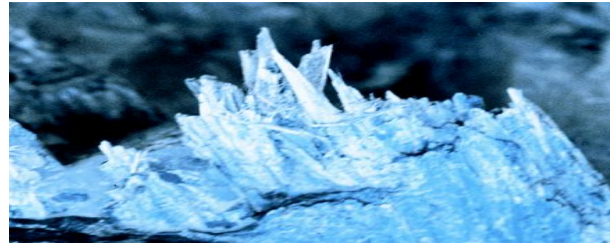
- Naturally occurring mineral (volcanic origins)
- Been used for 5,000 yrs
- Rapid expansion of use since Industrial Revolution:
  - Used in manufacture of 5000 products (3000 for construction industry)
  - Widespread in non-domestic premises
- In UK asbestos estimated to be present in approximately 500,000 premises
- The UK's Health and Safety Executive advises that asbestos containing materials are likely to be present in any building built or renovated before the year 2000

# Types of Asbestos

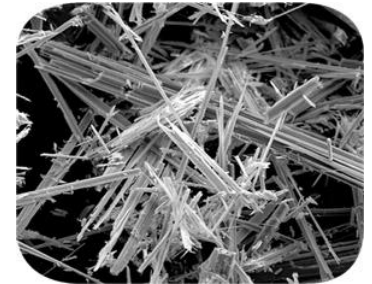
All pictures are significantly magnified for visibility



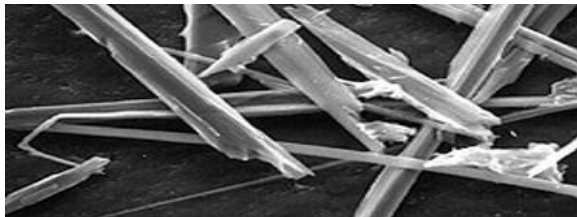
Chrysotile Asbestos  
(White)  
Serpentine Fibre Group



Crocidolite Asbestos  
(Blue)  
Amphibole Fibre Group



Amosite Asbestos  
(Brown)  
Amphibole Fibre Group



Tremolite Asbestos  
(Grey - Green)  
Amphibole Fibre Group



# Unique Properties

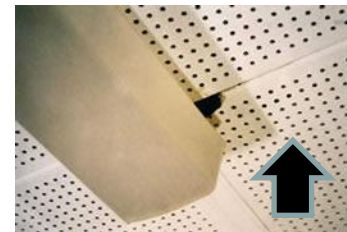


- Asbestos has been described as a ‘miracle mineral’ for its unique properties:
  - Thermal Insulation (resistant to 1000 degrees celsius)
  - Electrical Insulation
  - Chemically inert (resistant to corrosive chemicals)
  - Acoustic Insulation
  - Strengthening Properties (greater tensile strength than steel)
  - Condensation Protection
  - Can be woven into textile products
- Asbestos containing materials are likely to be used where-ever such properties are required
- Based on UK experience asbestos is likely to be encountered by the following sectors and organisations:
  - Construction, renovation and demolition
  - Manufacturing
  - Industrial and Chemical
  - Mining
  - Energy generation
  - Transport
  - Education
  - Military
  - Healthcare
  - Facilities Management and building maintenance
  - Retail
  - Government buildings: Ministries, Municipalities
  - All buildings accessed by the public
  - Building professionals (architects, surveyors, health and safety)
  - Museum sector

# Asbestos Containing Materials (ACM's)



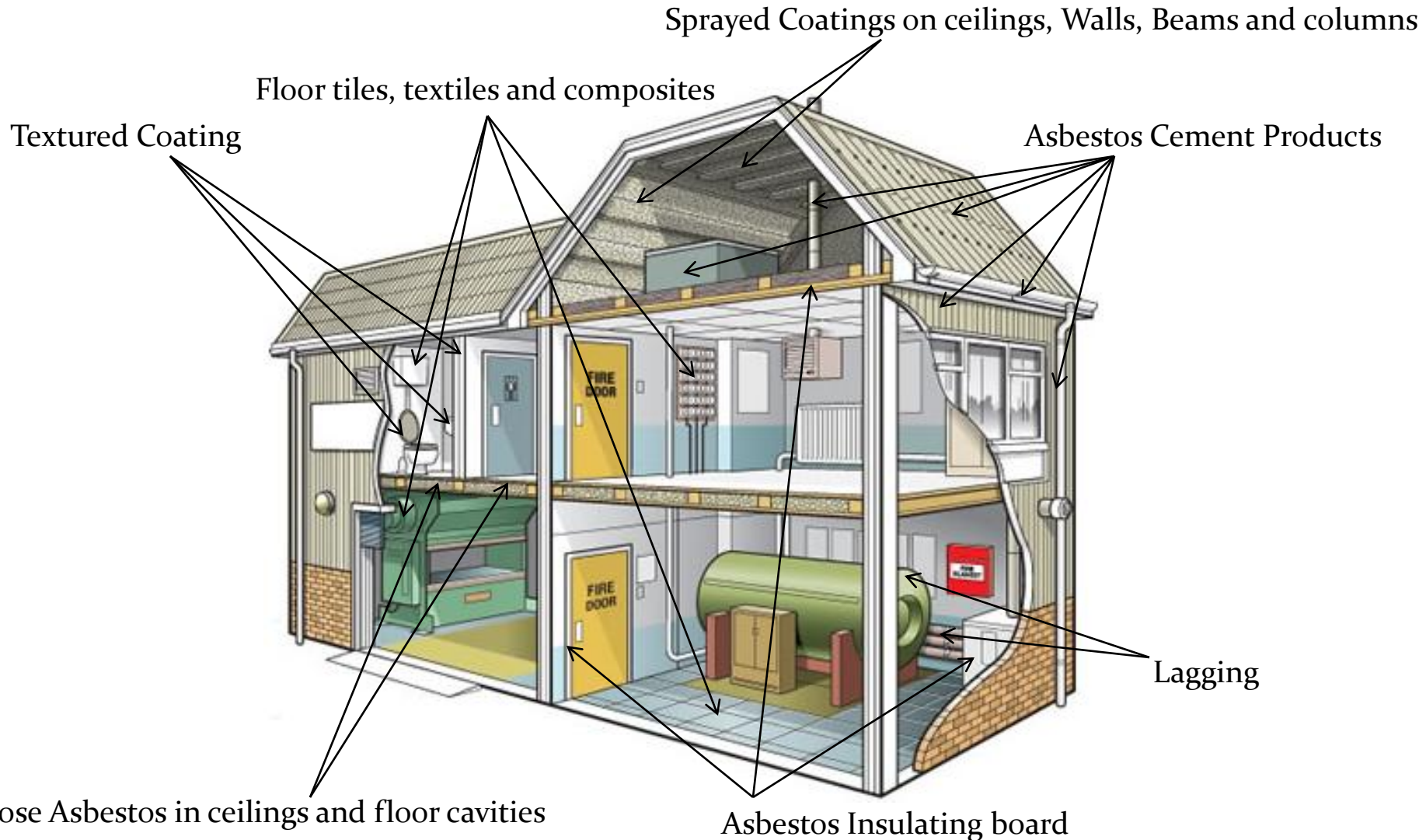
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# Asbestos Containing Materials (ACM's)



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# Risk Rating for Typical Asbestos Products used in Construction



PRODUCT TYPE	RISK RATE	COMMON % OF ASBESTOS	PRODUCT TYPE	RISK RATE	COMMON % OF ASBESTOS
Resins; Mastics & Adhesives	LOW	5%	Low density Insulation boards	HIGH	16-40%
Toilet cisterns & seats; window seals etc	LOW	1-10%	Sprayed Asbestos	HIGH	55-85%
Reinforced PVC, Plastics & composites	LOW	1-10%	Gaskets; brake & clutch plates	HIGH	70 -90%
Roofing Felts; damp proof course etc	LOW	8%	Mill Boards	HIGH	37-97%
Decorative Finishes & Artex	LOW	3-5%	Loose filled or packed Asbestos	HIGH	100%
Corrugated Asbestos Cement	LOW	5-10%	Woven Textiles; Ropes & Blankets	HIGH	100%
Vinyl & Thermoplastic Floor Tiles	MEDIUM	2-25%	Paper; Felt and Cardboard	HIGH	100%
Asbestos Cement sheets	MEDIUM	10-25%	Pipe & Boiler Lagging	HIGH	6-100%
Asbestos Insulating Board	HIGH	15-40%	Asbestos Mattresses and Packing	HIGH	100%



# Health Risk



- Key problem is the strength, shape and size of asbestos fibres
- Materials containing asbestos deteriorate over time which can result in release of billions of fibres into the air
- Fibres do not evaporate, dissolve, breakdown, no odour
- Aerodynamic – float in air until settle / inhaled
  - Trapped in lungs and cannot be broken down
  - Leads to various terminal conditions (5 x higher risk for smokers)
- Currently highest occupational death rate in UK – 4,500 pa (more than deaths on road). Rate still increasing yr on yr despite 24 yrs of management of asbestos
- The effect of inhaling asbestos fibres is irreversible and there are no cures. Exposure is for life.

# Health Risk (cont.)

There are 5 main diseases directly related to asbestos exposure. These are :-

Asbestosis

Mesothelioma

Lung Cancer

Pleural Plaques

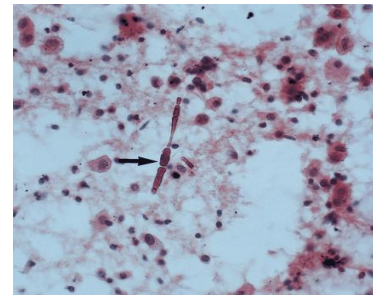
Pleural Thickening

## Physical Effects of Asbestos in the Lungs

- Mesothelioma tumours of entire lung



- Asbestos fibre in the lung



# Greenwood



- New company comprising highly experienced personnel set up to develop asbestos control sector in Turkey
- Services offered:
  - Consultancy
  - Project Management
  - Survey
  - Training
  - Removal contracting
- How:
  - Directly where have necessary experience
  - Indirectly
    - personnel well connected within asbestos community and can put together expert teams to handle any asbestos related requirement
    - subcontracting to UK national and international experts

# Greenwood (cont.)



- Experience of Greenwood personnel
  - 30 yrs asbestos experience comprising:
    - Contracting: personnel involved in some of largest UK asbestos removal projects: power stations, government premises (BBC)
    - Consultancy: leading expert advising UK government's museum sector
    - Survey: one of UK's most experienced asbestos surveyors
    - Labour supply: experts in training asbestos workers
- Emphasis on best practice:
  - Regular guest speaker at industry forum
  - Work with government regulatory body to help set best practice
- Commitment to Turkey:
  - Main business focus
  - Key staff relocation
  - JV with Turkish partner

# Why Turkey?



- Exploring market and developing relationships since mid 2009.  
Impressed by:
  - Professionalism and receptiveness of business community
  - Young and hard working workforce
  - Pro-active and forward thinking government tackling asbestos problem with speed and seriousness
  - Turkey's well deserved position as regional leader who sets best practice

# Control of Asbestos in Turkey



- 2003: Legal framework -Turkey adopted EU legislation on asbestos control (Directive 87/217/EC) which became law in 2006
- March 2009: Regulatory framework - Government commitment to complete harmonisation process
- Creates legal obligations for companies with regard asbestos in their premises
- Service provision to sector in embryonic state (outside shipping industry)

# Legal Obligations



- Turkish Organisations currently have following legal obligations:

- Employers:

- Duty to protect health of employees by preventing risk of exposure to asbestos

- Building owner or facilities manager:

- duty to be able to define the location and condition of all Asbestos Containing Materials in their premises. (If there is any doubt about whether or not asbestos is present, it should be presumed to be present)
    - Before any demolition, maintenance or repair work the employer carrying out the works must be provided an asbestos survey by the building owner or facilities manager

- Contractors:

- To produce Plan of Works for the removal of any asbestos through controlled procedures and conditions
    - to notify Ministry of Labour and Social Security before any work commences
    - Regulations stipulate the control methods for removing asbestos, monitoring and record keeping requirements
    - Detail measures taken to ensure any work carried out doesn't exceed the maximum permitted limit (delete)
    - Removal of asbestos shall only be conducted by skilled personnel have required experience

# Greenwood's aims in Turkey



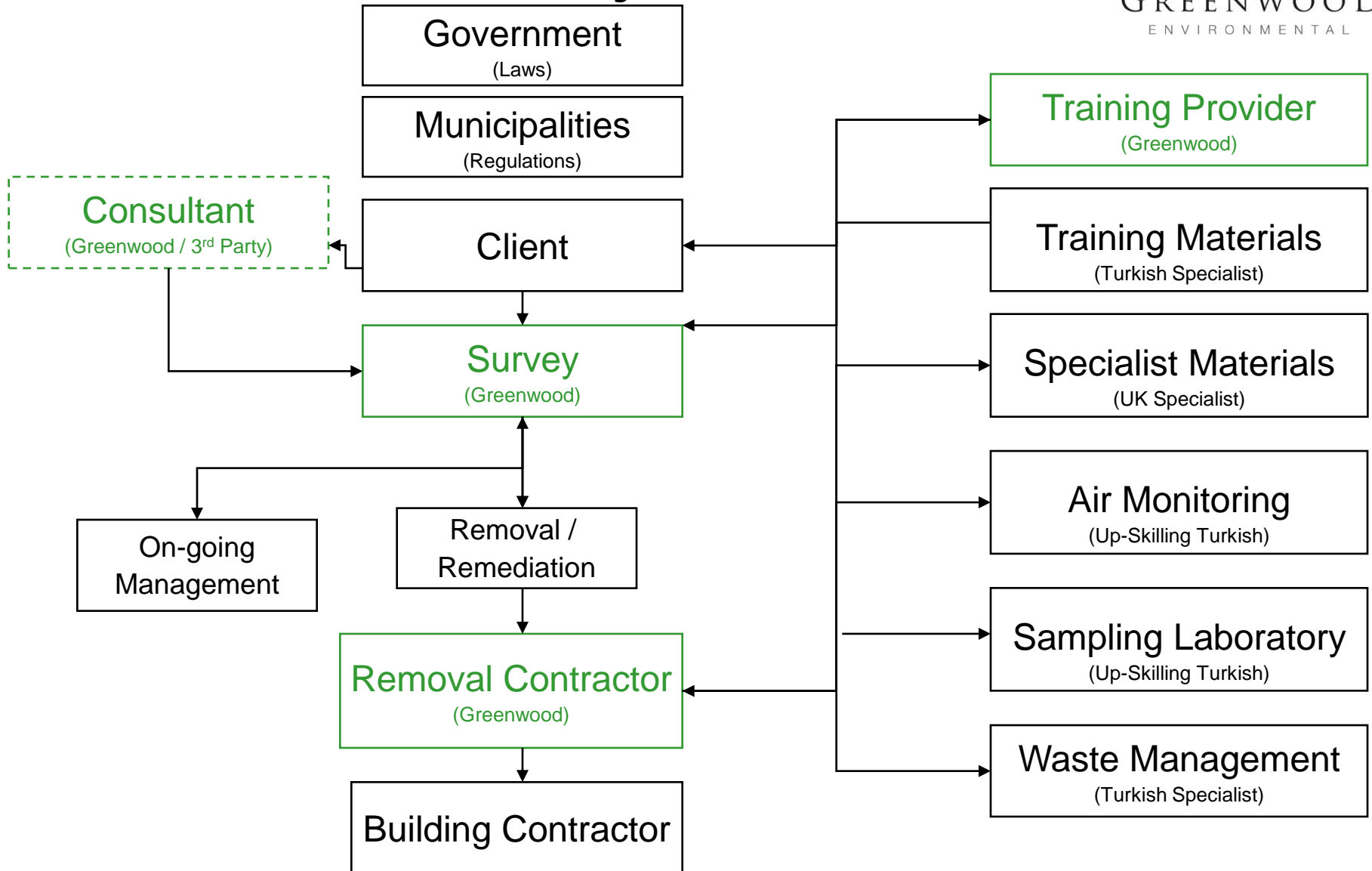
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- Control of asbestos sector at very early stages of development
- Work with government to help develop sector:
  - Raise awareness (drawing on UK government experience)
    - public health issue for individuals
    - Organisations responsibility to fulfill their legal obligations
  - Set up structures to ensure best practice for asbestos sector service providers
  - Create a new sector of skilled employment for Turkish workers
  - Help Turkey develop best practice and to become regional leader in the control of asbestos

# Asbestos Project Structure



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# Asbestos Service Association

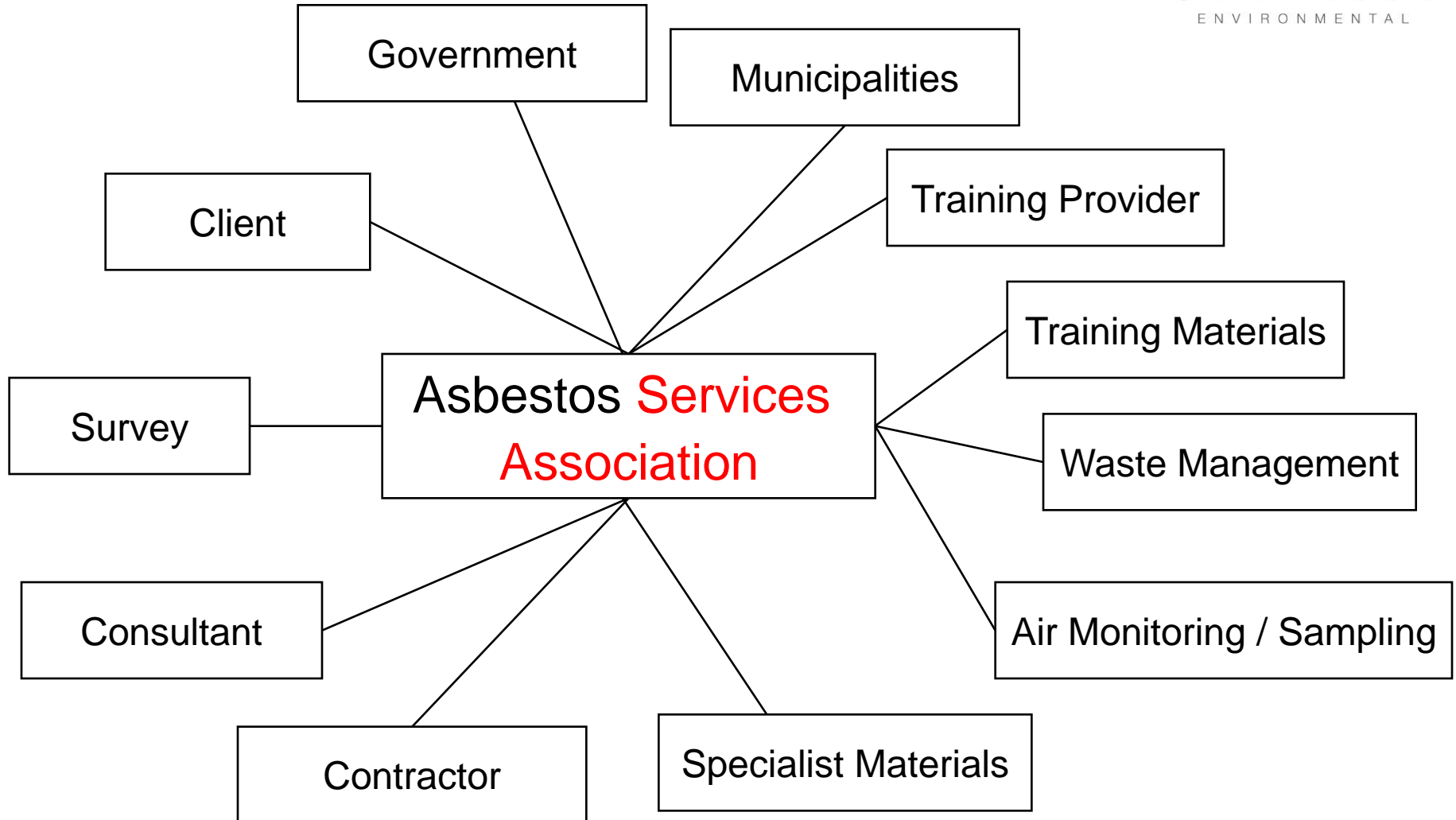


- Key structure to ensure consistent standards of best practice by service providers to asbestos control sector
- Forum for government, clients and asbestos service providers
  - Guidelines: develop guidelines for working practices (drawn from UK)
  - Training: set framework for training standards
  - Quality Assurance: Auditing / licensing of service providers
- Revenue sources from industry to cover cost of establishing best practice:
  - Licensing fees
  - Industry levy to provide training grants

# Path to Best Practice



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# Greenwood and the Ministry of Health



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- Greenwood offers:
  - Consultancy:
    - Specific projects
      - Tremolite contamination in Anatolia
      - Asbestos awareness campaign
        - » Drawing on UK and other countries experience (see copy of current HSE campaign)
        - » Could arrange working party visit to UK government HSE / Asbestos Licensing Unit
    - Scoping study for asbestos survey requirements on Ministry of Health buildings according to asbestos legislation
  - EU Funding Support
    - Manage project funding submission to EU to cover an asbestos control development package which could include:
      - awareness campaign / free asbestos building surveys / subsidised asbestos removal / set up of Asbestos Service Association
    - Greenwood could work on a consultancy or success fee basis

# Tremolite Contamination



- Extensive naturally occurring tremolite asbestos in South East Anatolia causing severe mortality
  - (one study reported up to 50% non occupational asbestos related mortality amongst over 60 yr old population)
- Problem made worse by widespread practice of adding tremolite to whitewash used on local housing
- Ministry of Health currently undertaking extensive survey

# Tremolite Contamination



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- Pending survey findings, Greenwood's preliminary suggestions:
  - Expert advice: Introduce UK's leading land contamination expert (former director of UK's largest environmental consultancies and currently working on preparing London's Olympic site; a vast contaminated brown-field site)
  - Thoughts for Remediation Plan:
  - Aim: to reduce risk of exposure and prevent spread of asbestos
    - Minimising airborne fibre release by:
      - Stop whitewashing of buildings
      - Remove surface rocks near habitable areas (if feasible) and / or
      - Spray rocks with diluted form of new encapsulation adhesive which seeps into cavities and fissures and sets like an epoxy resin so bonding fibres to rocks
      - Could be sprayed by hand on rocks near habitable areas or from the air in remote areas (pesticide spray process as adhesive is non harmful natural product)
      - Regular monitoring and re-application as necessary
    - Prevent any foodstuffs being grow in contaminated soil
    - Awareness campaign

Tremolite





# HSE ASBESTOS AWARENESS HIDDEN KILLER CAMPAIGN

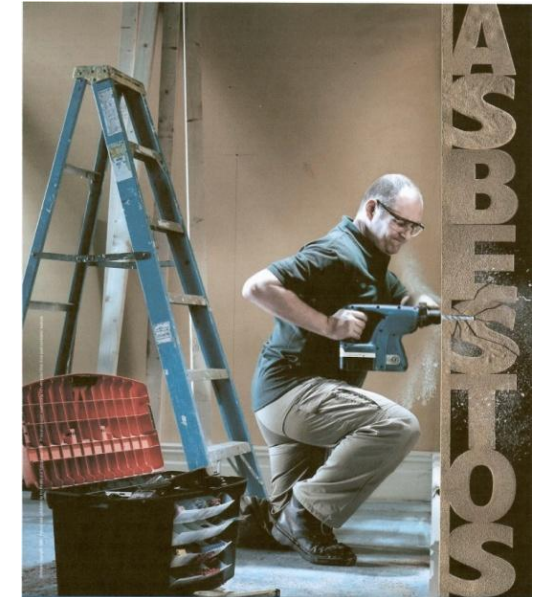


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The HSE launched an Asbestos Awareness Campaign 'Asbestos - The Hidden Killer' on the 13th October 2008 and will operate for 3 months throughout the UK. The campaign was aimed predominantly at tradesmen with-in the construction industry who are liable to be exposed to asbestos

'Every week twenty tradesmen die from asbestos-related disease. If you are an electrician, plumber, heating and ventilation engineer, joiner, plasterer or work in any similar trade, you are likely to come across this hidden killer in your work - asbestos dust could kill you.

A lot of buildings still contain asbestos materials - anywhere built or refurbished before the year 2000 is likely to contain asbestos and it is often in places where you can't see it easily. You could be working where asbestos is present right now.'



Every week 20 tradesmen die from this hidden killer



- Asbestos is responsible for over 4000 deaths every year, and it could still be hiding in anything built or refurbished before the year 2000
- Don't you owe it to your workmates and your family to protect yourself?

Visit [www.hse.gov.uk/hiddenkiller](http://www.hse.gov.uk/hiddenkiller) or call 0845 345 0055 for more information



# ASBESTOS



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# Appendices

# Team



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- David Price (Director)
  - Proven entrepreneurial track record
  - Set up one of sector leading asbestos labour agencies (UK government Home Office approval)
  - Regular contributor to government advisory panel and industry forum
  
- Paul Billinge (Director)
  - 25 yrs industry experience combining asbestos removal and building refurbishment
  - Highly qualified technical project manager
  - Managed some of UK's largest and most prestigious asbestos removal projects
  - Experience in setting up asbestos removal and building services divisions

# Team (cont.)



- Kevin Graham (Head of Consultancy and Training)
  - 15 yrs industry experience
  - One of UK’s leading asbestos consultants and surveyors
  - Asbestos consultant to department of UK government’s public sector
  - Unique and extensive experience (only person to have developed control measures for UK’s museum sector)
- Rustu Kurtulan (Business Development)
  - One of Turkey’s leading Occupational Health & Safety auditors
  - During last 10 years has conducted over 1000 third party audits for most of Turkey’s leading manufacturing and industrial companies focusing on Quality, Environment and Social Responsibility
  - Trained in UK as a qualified asbestos removal manager

# Experience



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•Greenwood personnel have worked on some of the UK's largest and most prestigious asbestos removal projects:

–Government institutions:

- BBC
- Local Authorities (housing associations)
- Military (RAF bases)
- NHS Hospitals
- Universities
- National Museums

–Chemical / Industrial:

- Merck Sharp & Dohme Limited (MSD) (UK subsidiary of Merck & Co)
- Pfizers

–Manufacturing:

- General Motors

–Construction:

- Kone Plc

–Retail:

- Moss Bros Group
- Bookers

–National Monuments

- Westminster Abbey

•Greenwood's associated company, Anglo-Polish, is one of the leading labour suppliers to the UK asbestos sector and has supplied workers to most major projects. Greenwood would have access to the best of these workers.

# EU Asbestos Regulations



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- This information is only designed to provide a brief overview on the most significant regulations currently in place in Turkey. Additional regulations are in place relating to asbestos, however more information can be provided on these if required.
- **Regulation 1 – Purpose of these Regulation**
- The purpose of this regulation is to prevent employees being exposed to asbestos, and protect against the health risks associated with exposure. As well as define the measures that will be taken to manage asbestos risks.
- **Regulation 2 – Scope of these Regulations**
- This regulation applies for all works and workplaces in where exposure to asbestos is possible, and for all works with Asbestos Containing Materials (ACMs)
- **Regulation 3 - Grounds of these Regulations**
- These regulations are prepared in accordance with Article 78 of the Labour Law 4857, and is enforced by the Ministry of Labour & Social Security.
- **Regulation 4 – Definitions**
- This regulation states that the regulations apply to all 6 types of asbestos fibre, and provides their classification identifications
- **Regulation 5 – Risk Assessment**
- This regulation states that an employer is obligated to conduct a Risk Assessment (or Survey Inspection) for all works that are liable to expose employees to asbestos fibres. The Risk Assessment (or Survey Inspection) should consider the potential level of exposure to asbestos, which asbestos fibre type the employee may be exposed to, and the official product form the asbestos fibres are contained in.
- **Regulation 6 – Notification**
- This regulation states that the employer is obligated to notify the workplace within this scope to the Ministry of Labour & Social Security before starting work. Certain minimal requirements are necessary for the notification which must be carefully assessed by professional consultants

# EU Asbestos Regulations



## Regulation 7 – Prohibition on Use of asbestos

The 'use' of asbestos in the form of Sprayed; Thermal or Acoustic Insulation is prohibited under these regulations.

In addition the marketing of asbestos, discovering asbestos; producing asbestos and exposing people to asbestos are also prohibited under these regulations

The works for removing Asbestos Containing Materials (ACMs) are excluded from the above prohibitions

## Regulation 8 – Preventing of exceeding the Limit Values

This regulation details the measures that must be taken to ensure that works do not exceed the 'Limit Value' at any stage. This regulation does not apply to the mining industry

## Regulation 9 – Asbestos Measurements

This regulation details the requirements regular measurement of asbestos fibre in the working environment, along with sample taking by qualified personnel, air monitoring, health record surveillance, and air borne fibre counting techniques and methods

## Regulation 10 – Limit Value

The employer shall ensure that the Time Weighted Average (TWA) of asbestos concentrations that employees are exposed to should be less than 0.1 fibre/cm<sup>3</sup> over a 4 hour continuous period

## Regulation 11 – Exceeding the Limit Value

This regulation details the measures that must be taken if the Limit Value is exceeded at any stage, and the controls that must be taken prior to resuming work.

## Regulation 12 – Demolition, Maintenance & Repair Works

This regulation state that before the employer commences any demolition, maintenance or repair works, the employer shall perform the works by getting information from the building owner or facilities manage, in order to define the location and condition of all Asbestos Containing Materials (ACMs) in the premises.

This regulation also states that if there is any doubt as to whether asbestos is present or not, it should be presumed to be present and the regulations applied until analysis confirms otherwise.

# EU Asbestos Regulations



## **Regulation 13 – Demolition & Removal Works**

This regulation states that the demolition, removal, demounting, maintenance and repair works in which the Limit Value may be exceeded despite technical measures; specific measures will apply to the employer before commencing back to work.

## **Regulation 14 – Business Plan**

This regulation states that before the construction or demolition of a building; structure; workshop; plant or other facility as well as ships containing asbestos, a working schedule (method statement) shall be conducted. This regulation also defines some of the minimal requirements necessary for a Business Plan.

## **Regulation 15 – Training**

This regulation states that the employer is obligated to provide suitable, sufficient and proper training to all employees who may be exposed to asbestos. This regulation also details some of the minimal requirements for training provision.

## **Regulation 16 – Conduct of removal work by the experts**

This regulation states that the removal of asbestos shall be conducted by skilled personnel having the required experience in this field

# Contacts



Paul Billinge

Tel.00 44 208 544 8005

Mobile: 00 44 7940730943

[paul@greenwoodenvironmental.co.uk](mailto:paul@greenwoodenvironmental.co.uk)

David Price, Director

Tel. 00 44 208 544 8005

Mobile: 00 44 781 614 6730

[david@greenwoodenvironmental.co.uk](mailto:david@greenwoodenvironmental.co.uk)