Prevention and Control of Asbestos Related Diseases

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Asbestos fibres: (i) Serpentine group: Chrysotile*
(ii) Amphibole group: Crocidolite*, amosite*, anthophylite*, actinolite and tremolite

- Asbestos fibres used in asbestos cements products (roof tiles, ceilings, floor tiles) (85%); insulation materials; asbestos textiles; brake lining, gaskets and clutch plates.
- Exposure - when materials:
  - manufactured (textile, friction products, insulation and building materials),
  - damaged or disturbed in construction (removal during renovation/demolition), and
  - during brake and clutch repair.
Asbestos Related Diseases

• **Pleura Specific** – Asbestosis, Mesothelioma, Pleural plaques

• **Non-specific** – Lung cancer, Diffuse Pleural thickening, Pleural effusion, Rounded atelectasis

Asbestos estimated to cause 100,000 deaths a year.

Asbestos related cancers increasing globally
The Helsinki Criteria – commonly used when attributing lung cancer to asbestos.

The criteria include:
(i) the presence of asbestosis or
(ii) a count of 5,000 to 15,000 asbestos bodies or more per gram dry lung tissue or
(iii) estimated cumulative lung exposure of 25 fiber-years or more or
(iv) an occupational history of one year or more of heavy exposure or 5-10 years of moderate exposure and
(v) a minimum lag-time of 10 years.

There is a multiplicative effect when asbestos exposure and smoking occurs.
Russia consumes 60% of asbestos produced, China produces for domestic use, Canada exports 95%

Decline in consumption in developed countries

ILO Asbestos Convention 1986 ratified by 32/177 member states.

OSHA (USA) Asbestos Standard 1986

Initially governments reluctant to ban or accept international conventions

13th Session ILO/WHO Committee on Occupational Health (2003) strongly recommended a concerted, worldwide effort to eliminate asbestos-caused diseases

WHO Resolution on carcinogens in the workplace - 2005

Global Union Federations/ ICFTU call for ban to ILO - 2006

Japan banned asbestos in 2008

Call for ban by CAP Malaysia, MTUC and supported by MMA.
The WHO’s Resolution 58.22 states that there is no scientific evidence to suggest that there is any safe level of exposure to asbestos.

Evidence of an increased incidence of asbestos-caused cancers in populations that had very low levels of exposure to asbestos.

To limit or eliminate asbestos related diseases the WHO resolution recommends the complete abandonment of all uses of all types of asbestos.

The resolution pays particular attention to the worldwide popularity of asbestos-containing cement used by the construction industry.
Asbestos Use in Malaysia

• Asbestos not mined in Malaysia
• In commercial use since 1950s
• Joint venture companies established with companies from Japan and Australia
• South Pacific Asbestos Association established in 1984 when discussions on Asbestos Regulations 1986 held
• Asbestos used in manufacture of asbestos cement products (roofing, flat sheets, pipes), friction materials and gaskets
<table>
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<tr>
<th>Year</th>
<th>Imports (metric tons) Virta R.L 2006</th>
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<td>1960</td>
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<tr>
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<td>2003</td>
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<td>2007</td>
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Workplaces involved in using asbestos

Non–Factory (2)
Factories currently using asbestos (8)
Factories that had used asbestos (7)

Total number of employees in 8 Factories currently using asbestos (2136)

Types of asbestos employees exposed to

Chrysotile (brake, roof) – 1951
Fibrous anthrophylite (roof) – 185
Legislative Framework to Control Asbestos Related Diseases

Factories and Machinery (Asbestos Process) Regulations 1986

OSH (Classification, Packaging and Labelling (CPL) of Hazardous Chemicals) Regulations 1997 - Asbestos classified as a carcinogen under Schedule II of CPL Regulations

OSH (Use and Standards of Exposure to Chemicals Hazardous to Health Regulations) 2000 – USECHH 2000

OSH (Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease) Regulations 2004
Factories and Machinery (Asbestos Process) Regulations 1986

- Workers in factories where asbestos processing carried out
- Crocidolite prohibited. Other asbestos fibres allowed.
- Asbestos processing – use, application, removing, mixing, handling of asbestos material (construction work, brake repair, removal of lagging excluded)
- Exposure assessment, engineering controls, respirators, laundry facilities, medical surveillance
Health surveillance under Asbestos Regulations 1986

- Permissible Exposure level – 1 fiber/ml

- Medical surveillance every 2 years
  Medical, smoking, occupational history
  Physical examination (Respiratory)
  Chest X’ray (PA view)
  Pulmonary Function Tests (FVC, FEV, FEV/FVC)

- Conducted by General Practitioner
OSH (Use and Standards of Exposure to Chemicals Hazardous to Health Regulations) (USECHH 2000)

- Under OSHA 1994 - all workers (except Armed Forces and Merchant Shipping)

- USECHH 2000 - Regulations for chemicals (including asbestos)

- Chemical Health Risk Assessment

- Permissible Exposure Level 0.1 fiber/ml

- Medical surveillance (Asbestos – Schedule 2)

- Competent persons- Assessor, Industrial Hygiene Technician, Occupational Health Doctor
• Medical surveillance every year
History, Examination, Chest Xray (3 yearly), PFT (FMA)
Suspected asbestosis (1/0) - Repeat Chest Xray 1 year later
Definite asbestosis (1/1 or higher) Chest Xray Annually

• Conducted by Occupational Health Doctor

• Employee medical records to be kept for thirty years and employees have access.

• Medical removal provisions for those with early asbestos induced disease or symptomatic
Permissible exposure limits 8 hour TLV-TWA

Application of Hierarchy of Control Measures

Control of carcinogens listed in CPL Regulations

Exposure monitoring

Health surveillance program

Information, instruction and training

Labelling and relabelling

Provision of chemical safety data sheets

Warning signs
• OSH (Prohibition of Use of Substance) Order 1999, crocidolite prohibited except for research and analytical purposes.

• OSH (Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease) Regulations 2004 – include Asbestosis, Asbestos Related Lung Cancer and Mesothelioma.
Reporting of Asbestos Related Diseases

- Reporting of occupational diseases including asbestos related diseases required under Section 32 of OSHA 1994

- Reporting by medical practitioners to Department of Occupational Safety and Health

- Under-notification: inability to diagnose, unable to make link between exposure and disease, contractual arrangements with employers
Environmental Quality (Scheduled Waste) Regulations 1989

- Asbestos waste including sludge, loose asbestos and empty bags with loose fibres disposed at prescribed premises.

- Guidance on transport, handling and disposal
PREVENTIVE MEASURES IN THE WORKPLACE

Ban vs Safe use

Ban / Elimination of use in the workplace

Substitution – Use of asbestos free mineral fibers

Engineering controls
- Isolate source
- Improve ventilation systems

Administrative controls
- Limit worker exposure time
- Provide shower and laundry facilities

Personal protective equipment
- Provide and ensure use of protective clothing and respirators
• Naturally occurring and manufactured mineral fibres (glass, rock wool, clay)

• Naturally occurring vegetable/ cellulose fibres (wood pulp, sisal, bamboo, rattan shavings, and other vegetable fibres); rice husk ash; vegetable fibres in asphalt

• Synthetic plastics e.g. fibrous (aramids) and non fibrous (polyvinyl alcohol, polypropylene and PVC)

• Galvanised metal sheets, slate and aluminium roof tiles
Cellulose fibre boards

Cellulose fibre boards – cellulose fibre, Portland cement, refined sand and water

- Roofing
- Siding
- Internal lining and wall partitioning
- Ceiling
- Substrate for flooring
- Fire and insulation application
- Decorative and innovative applications
Increased awareness of need for asbestos abatement

Increased asbestos abatement activities being carried out

Approaches to controlling exposures:
- Removal and disposal of asbestos containing materials
- Encapsulation
- Enclosure

Asbestos abatement activities: no control measures to strict industrial hygiene controls
Replacement of asbestos cement products

Replacement of asbestos cement pipes with ductile iron pipe by Penang Island Water Corporation – since 2006 with completion date of 12 years

Johore Water Company’s Asset Replacement Department – asbestos cement pipes being replaced with mild steel or high density polyethylene pipes – 668 km by 2007

Asia Baru Construction given task to replace asbestos cement pipes in Kuala Lumpur since 2006
Replacement of asbestos cement pipes in Kuala Lumpur

Source:
Replacement of asbestos cement pipes in Johore
Good example of Asbestos Removal
Shell Bagan Luar (BLi)

Removal of corrugated asbestos cement sheets from gantry and replaced by steel cladding
DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
CAUTION

Asbestos Containing Material (ACM)
Cancer and lung disease hazard
Do not disturb without proper training and equipment
Asbestos containing debris at construction site

Construction workers and public exposed
Malaysian Trade Union Congress and Consumer Association of Penang

Malaysian Medical Association supported ban

DOSH hired consultants to study asbestos use and exposures in country

Communication on health risks from asbestos increasingly being conducted by government agencies, NGOs, trade unions, professional bodies
3 companies pressed for total asbestos ban

7 companies requested 1-5 years period for the ban to take effect with reason of needing time to finish off their current asbestos stock.

3 companies requested government to ban asbestos after 10 to 15 years time due to its high demand.

4 companies agreed to abide with government's decision to ban asbestos
National Asbestos Bans (55 countries)

Algeria Czech Republic Iceland Malta Saudi Arabia
Argentina Denmark Ireland Mongolia Seychelles
Australia Egypt Israel Mozambique Slovakia
Austria Estonia Italy Netherlands Slovenia
Bahrain Finland Japan New Caledonia South Africa
Belgium France Jordan Norway Spain
Brunei Gabon Korea (South) Oman Sweden
Bulgaria Germany Kuwait Poland Switzerland
Chile Greece Latvia Portugal Turkey
Croatia Honduras Lithuania Qatar United Kingdom
Cyprus Hungary Luxembourg Romania Uruguay

Time for Malaysia to Ban Asbestos is NOW.