

ASBESTOS

-The lurking danger-

12/18/2021

Asbestos-The lurking danger-



Objectives

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- Asbestos Characteristics
- Occupation where asbestos exposure can occur
- Statistics
- Asbestos route of entry into body
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- National and international laws on asbestos
- Legal Compliance
- Kenya asbestos disposal procedure
- Handling of asbestos
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- Challenges
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Introduction

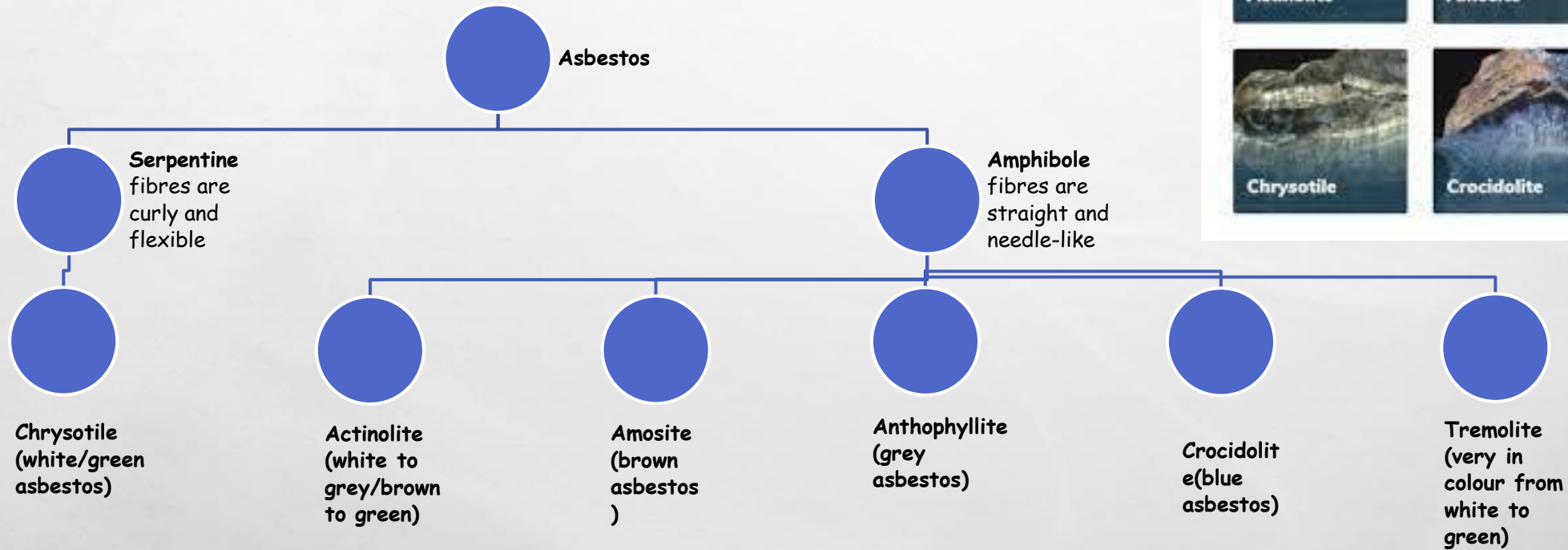
- Asbestos is a Greek word meaning inextinguishable or unquenchable
- Asbestos means the fibrous form of mineral silicates belonging to rock-forming minerals of the serpentine group, i.e., chrysotile (white asbestos), and of the amphibole group, i.e., actinolite, amosite (brown asbestos, cummingtonite-grunerite), anthophyllite, crocidolite (blue asbestos), tremolite, or any mixture containing one or more of these
- The use of asbestos became popular due to its characteristic of heat and chemical resistance, fireproofing and strength
- Asbestos has been used since the late 1800s. Historically it was used in military ships, vehicles and aircraft, asbestos-cement pipe and sheeting, floor and roofing felts, dry wall, floor tiles, spray on ceiling coatings, and packing materials.



Asbestos fire fighting suits, intended for use by the air arm of the Royal Navy, are modeled at the factory where they are made. UK, October 14, 1940. (Photo by © Hulton-Deutsch Collection/CORBIS/Corbis via Getty Images)



Definition and classification



Asbestos Characteristics

several properties that make asbestos so versatile and cost effective are

- high tensile strength
- Chemical stability
- thermal stability
- high flexibility
- low electrical conductivity
- large surface area.

The leading domestic markets are roofing products, gaskets, and friction products (clutch plates, brake pads and linings). nearly all of the asbestos produced worldwide is chrysotile.

Occupations where exposure to asbestos can occur

- mining and milling asbestos
- manufacture of materials or products containing asbestos
- use or application of asbestos-containing products
- stripping, repair or maintenance of products containing asbestos
- demolition of plant or structures containing asbestos materials
- transportation, storage and handling of asbestos or asbestos-containing materials
- other operations involving a risk of exposure to airborne asbestos dust



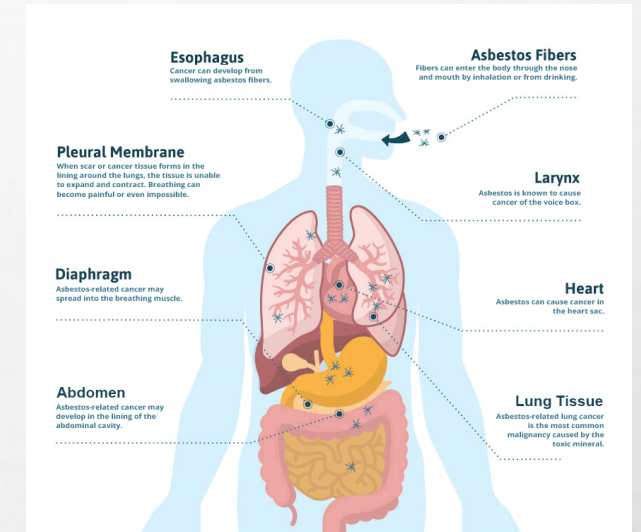
Statistics

- About 125 million people in the world are exposed to asbestos at the workplace(WHO)
- Approximately 90,000 people die from asbestos-related diseases globally each year.(OSHA)
- Exposure to asbestos claims about 88 000 lives in europe annually, accounting for 55-85% of lung cancers developed at work, and mortality rates from this exposure are estimated to continue to increase until the late 2020s and 2030s(european economic and social committee (eesc))
- According to UK Asbestos Training Association (UKATA).There were 2,369 mesothelioma deaths in 2019 and is estimated that there were, in addition, a similar number of deaths due to asbestos-related lung cancer and 490 asbestosis deaths in 2019 due to past exposures to asbestos. Total is above 5,000 deaths



Asbestos route of entry to body

- There is no "safe" level of asbestos exposure
- Due to their long latency period, most problems arise after years of repeated exposure to the carcinogen.
- Once asbestos-containing materials are disturbed, fibers so tiny to be seen by the naked eye are released into the air.
- Asbestos fibres can be inhaled without knowing, which makes asbestos an even more dangerous hazard -**Lurking danger**-
- When microscopic asbestos fibres are inhaled or swallowed, they can become trapped in the body's respiratory or digestive tract.
- The body can get rid of some asbestos fibers, but many fibers become stuck permanently.



Diseases caused by asbestos exposure

Unlike other hazardous material there is no immediate signs of exposure to asbestos

Due to the long latency period it becomes difficult for a person to recall when they were exposed to asbestos and yet still they may not know they were exposed to asbestos

Some of the symptoms related to asbestos diseases include

- Shortness of breath
- Chest pain
- Cough
- Fluid build up
- Difficulty swallowing
- Fatigue

Diseases caused by asbestos exposure

- mesothelioma
- asbestosis
- lung cancer
- ovary cancer
- larynx cancer
- trachea, bronchus cancer

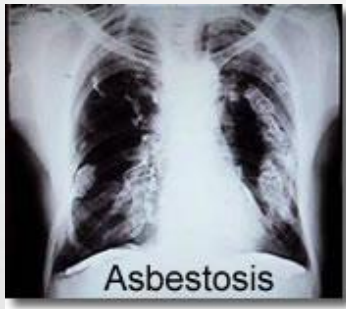


Photo courtesy Minnesota department of health

International laws on asbestos

- **International Labour Organisation**-The asbestos convention, 1986 (no. 162), and recommendation, 1986 (no. 172), adopted by the international labour conference at its 72nd session in 1986- **Kenya yet to ratify**
- **UNEP** Basel convention on the control of Transboundary movement of hazardous waste and their disposal 1992 lists asbestos as category of controlled waste in Annex 1- **Ratified by Kenya in 2000**

- **European Union-**

directive 2009/148/ec of the european parliament and of the council of 30 november 2009 on the protection of workers from the risks related to exposure to asbestos at work as outlined in Article 8 **employers shall ensure that no worker is exposed to an airborne concentration of asbestos in excess of 0,1 fibres per cm³ as an 8-hour time-weighted average (twa).**

Five of the six types of asbestos were banned in 1991

Total ban on asbestos in 2005

International laws on asbestos

- **United kingdom**-control of asbestos regulations 2012
- **Canada**-prohibition of asbestos and products containing asbestos regulations: sor/2018-196
- **South Africa**-Asbestos Abatement Regulations promulgated on 10 November 2020
- **United States**-Toxic and Hazardous Substances 1926:1101 Asbestos
OSHA permissible exposure limit(PEL)for asbestos is 0.1 fibre per cubic centimeter of air as an eight-hour time-weighted average(TWA),with an excursion limit(EL) of 1.0 asbestos fibres per cubic centimeter over a 30-minute period

Legal Compliance

○ Environment Management Coordination Act 1999 Amended 2015

Section 88(1) Any person intending to transport wastes within Kenya, operate a wastes disposal site or plant or to generate hazardous waste, shall prior to transporting the wastes, commencing with the operation of a wastes disposal site or plant or generating hazardous wastes, as the case may be, apply to the Authority in writing for the grant of an appropriate license.

Penalty of indiscriminate disposal in accordance to section 141 can be 1 million shillings, two years imprisonment or both

○ Legal Notice 101 The Environment Impact Assessment Audit Regulations 2003, established under EMCA 1999



Legal Compliance

- Legal Notice no 31 Environmental (impact assessment and audit) No 8 Of 1999, Amendment of Second Schedule

Asbestos removal and disposal is listed as projects that have to be subjected to EIA process and are classified as medium risk projects as outlined in section (10) waste disposal, including—(c) removal and onsite disposal of asbestos and 12 (k) commercial asbestos disposal sites.

- Environmental (impact assessment and audit) (amendment) regulations, 2019.

7. (1) every proponent undertaking a project specified in the second schedule of the act as being a low risk project or a medium risk project, shall submit to the authority a summary project report of the likely environmental effect of the project.



Legal Compliance

○ Waste Management Regulations 2006

Section 91(1) The standards and Enforcement Review Committee shall, in consultation with the relevant lead agencies, recommend to the Authority standards criteria for the classification of hazardous wastes with regard to determining-Hazardous waste, corrosive waste, carcinogenic waste, flammable waste, persistent waste, toxic waste, explosive waste, radioactive waste, waste ,reactive otherwise than as described in the forgoing paragraphs of this subsection and any other category of waste the authority may consider necessary

Fourth schedule Y36, wastes containing asbestos in the form of dust or fibers



Legal Compliance

- National Guidelines on Safe management and disposal of asbestos 2013

Section 91 (2) The authority shall on recommendation of the Standards and Enforcement Review Committee issue guidelines and regulations for the management of each category of hazardous waste determined under section (1)



- Occupational Safety and Health Act(OSHA) 2007

Second Schedule outlines in No.37 primary malignant neoplasm of the mesothelium (diffuse mesothelioma) of the plaura or of the peritoneum and No39. pneumoconiosis (including silicosis and asbestosis), byssinosis. as an occupational disease

Legal Compliance



- The Factories and Other Places of Work (Cellulose solutions) rules
fire resisting materials as defined include f) except for cellulose stores,
wood completely and securely covered on both sides with compressed
asbestos of not less than three sixteenths of an inch in thickness
- The Factories and Other Places of Work (Hazardous Substances)
rules, 2007

occupational exposure limit(oel) for asbestos

amosite 0.5 fiber > 5 μm /cc

chrysolite 2 fiber > 5 μm /cc

crocidolite 0.2 fiber > 55 μm /cc

other forms 2 fiber > 5 μm /c

Legal Compliance

○ **The Factories and Other Places of Work (Medical Examination Rules) 2005**

mandates the occupier to ensure that medical examination is conducted to workers where asbestos is handled including clinical examination, lung function tests, full size chest x-ray, sputum cytology. pre examination and annual for all. It is also required to report to the director symptomatic worker, progressive deterioration in chest x-ray findings and suspected or diagnosed cases of asbestosis and/or mesothelioma and bronchogenic carcinoma

KEBS Standards

Some of the active KEBS standards on asbestos products

KS 450:1985 specification for asbestos-cement building and sanitary pipes.

KS 100:1982 specification for asbestos-cement corrugated sheets for roofing and cladding.

KS 243:1980 specification for pvc (vinyl) asbestos floor tiles.

KS ISO 10397:1993 stationary source emissions - determination of asbestos plant emissions - method by fibre count measurement.



Challenges

- The cost implication and paper work involved discourages owners who may opt to leave it as it is
- Unscrupulous disposal in open dumpsites
- Disposed asbestos on open fields finding their ways back to the community
- Lack of public awareness on asbestos as a health hazard



Challenges

- Inadequate EIA process -public participation, establishment of dumpsite in water catchment areas Litigations that has resulted to asbestos designated dumpsite to be closed off and asbestos initially dumped relocated further causing disturbance **ELC. PETITION NO. 2 OF 2018**
- failure by licenced transporters and disposal sites to adhere to the EIA licence requirements



*Kitui County Maluma Location,
Nzambani Ward in Kiongwe area.*

Recommendations for improvement

- Review legislation to reduce the OEL to 0.1 fibres per cc as in OSHA ,UK and Europe to protect workers undertaking abatement works
- Total ban on asbestos containing products including brake pads and crutches
- Commitment by stakeholders to adhere to the legal requirements
- Commit to doing the right thing from a moral and ethical point of view



Recommendations for improvement

- Public awareness
- Enforcement of the law for the violators by the concerned authorities
- Prompt follow up by NEMA of complains from members of the public



Thank you
Gladys Nyaga, IDipNEBOSH
NEMA EIA/EA Lead Expert
Environment, Health, Safety and Social Safeguards Consultant
gladfrancis@gmail.com
+254 713 234 256