



Training:

Asbestos awareness workplace safety

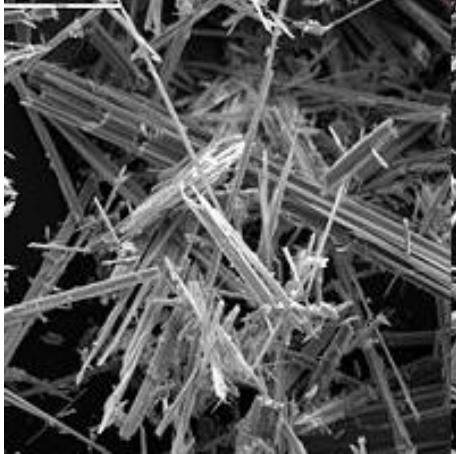
TRAINER:

Denys Pavlovskyi,
Expert of asbestos use in Ukraine

Ukraine, Kyiv
23-25 November 2022

Asbestos: Myths

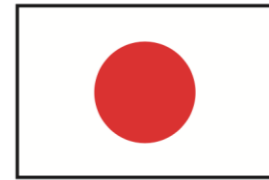
**Amphibole
asbestos**



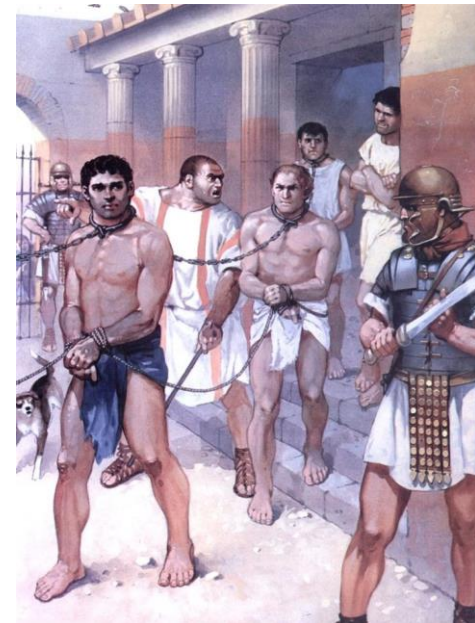
**Chrysotile
asbestos**



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**Slaves from
asbestos mines**



**Clothing from asbestos
protects from magic**



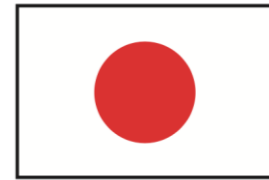
**Asbestos medical
bandage**



Asbestos: reality

The World Health Organization (WHO) states:

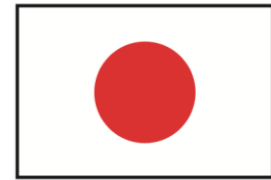
- **More than 100,000 people die each year** from exposure to harmful asbestos fibers worldwide.
- **About 125 million people** in the world are exposed to asbestos in the workplace
- **All types of asbestos**, including chrysotile, are carcinogenic to humans.



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Risk from Asbestos Containing Materials (ACMs)

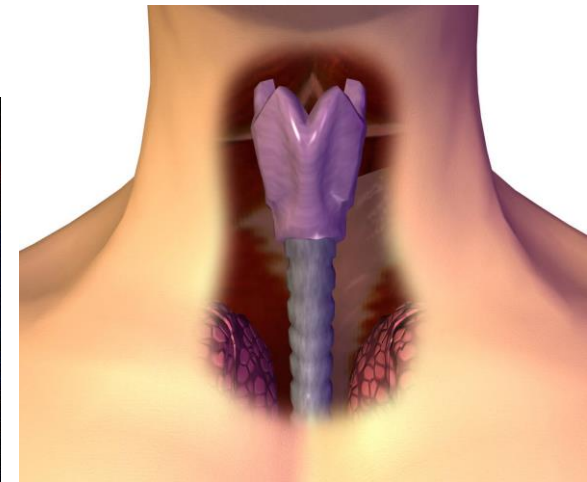
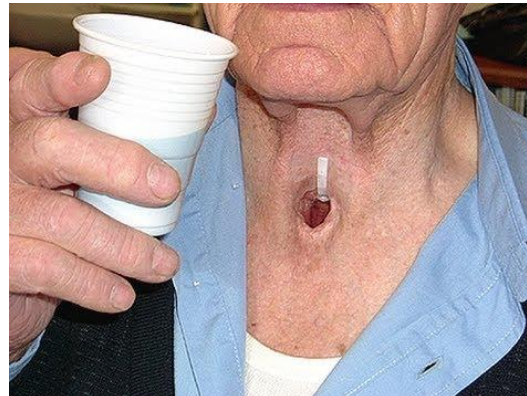
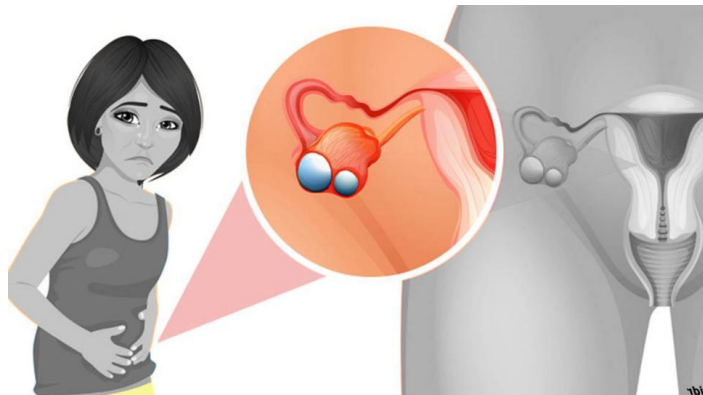


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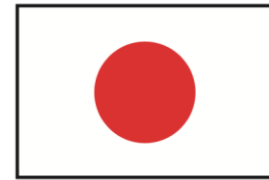


All types of asbestos are classified by the International Agency for Research on Cancer (IARC) as a Group 1 of substances with proven carcinogenicity to humans, causing the following occupational diseases:

- Asbestos
- Cancer of the larynx
- Cancer of bronchi and lungs
- Ovarian cancer
- Malignant mesothelioma of the pleura, peritoneum, and pericardium
- Pleural plaques, thickening and effusion
- Other types of cancer



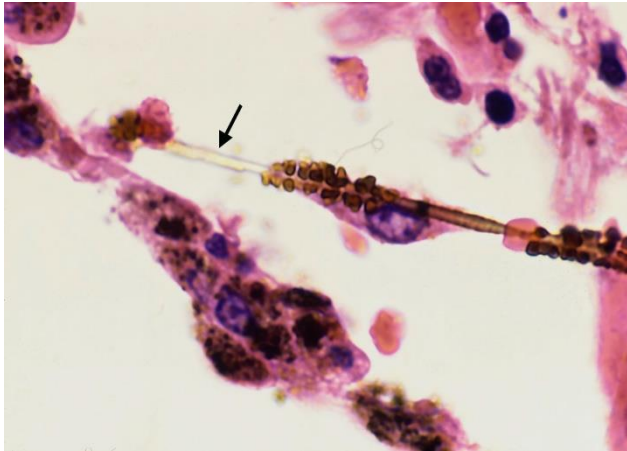
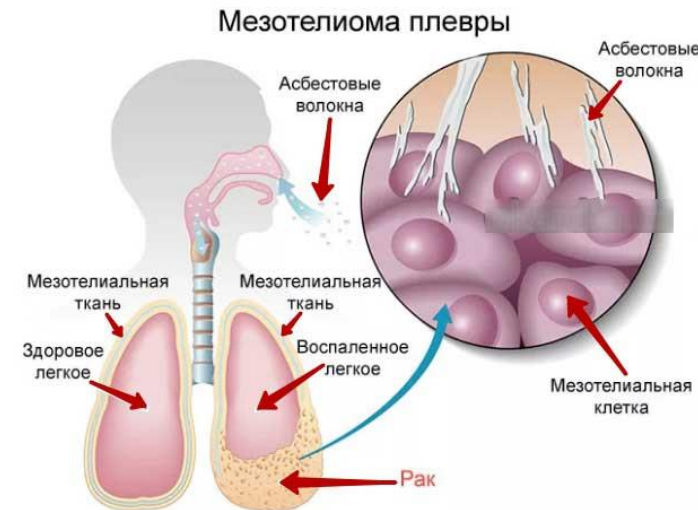
Risk from ACMs (2)



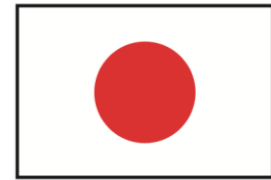
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- Asbestos exposure occurs when a person inhales fibers from polluted air in the work/occupational environment
- From ambient air near sources of such pollution or in rooms containing fragile asbestos-containing materials.
- The highest level of exposure occurs in the process of repacking asbestos containers, mixing it with other raw materials and dry cutting of asbestos-containing materials with abrasive tools.



Risk from ACMs (3)



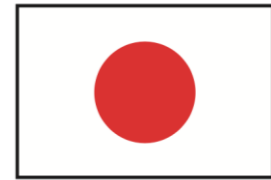
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- When asbestos-containing materials are damaged, asbestos fibers are emitted into the atmosphere. When fiber is inhaled, it remains in your lungs for months and even years.
- The latent period can be 30-40 years, which makes it difficult to diagnose the disease in a timely manner.
- WHO, IARC and EU concluded that all forms of asbestos cause cancer
- There is no safe use of asbestos, nor is there an acceptable safe exposure limit.
- Tobacco smoking increases the risk of disease several times



Types of ACMs from demolition (1)



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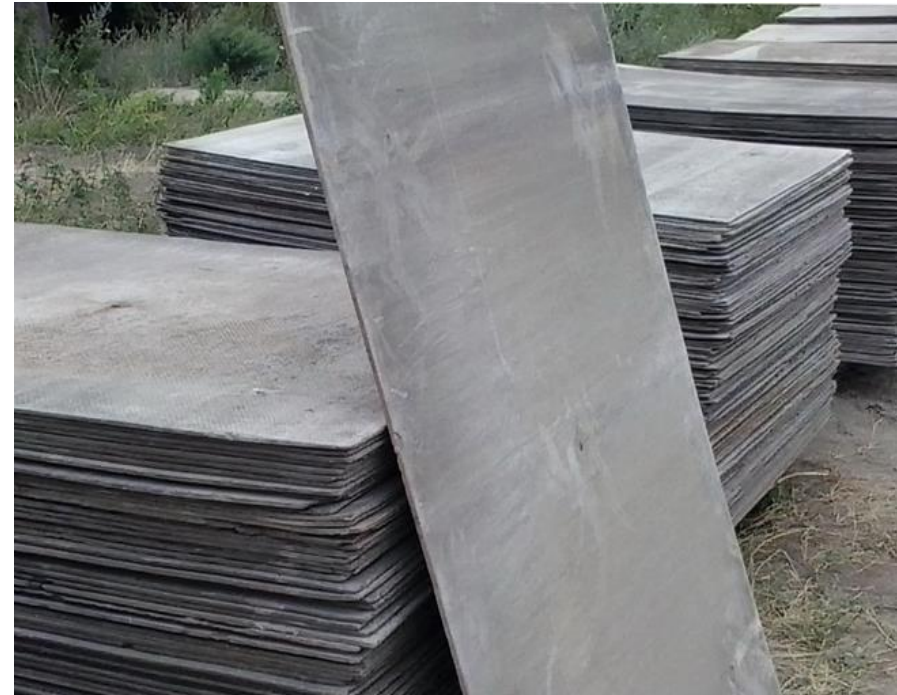


Fragile asbestos-containing materials are still found in many homes and remain sources of human exposure during operation, modification, and removal or demolition:

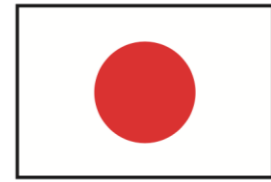
Corrugated slate



Flat slate



Types of ACMs from demolition (2)



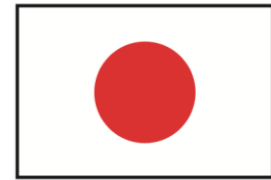
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Painted flat slate on the territory of kindergarten



Types of ACMs from demolition (3)



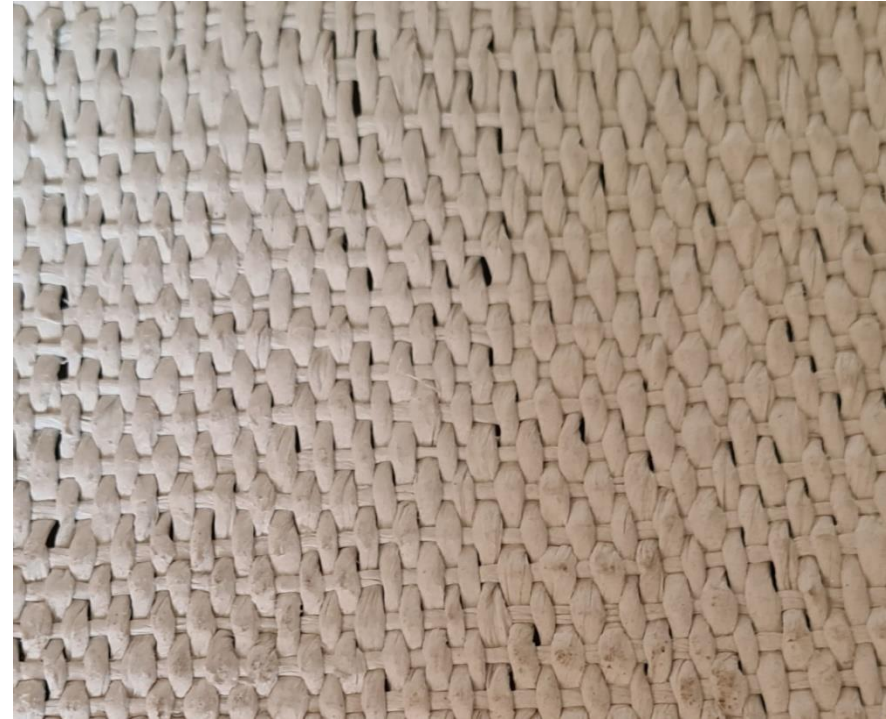
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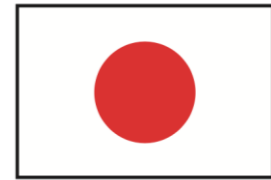
Asbestos-cement pipe



Asbestos fabric



Types of ACMs from demolition (4)



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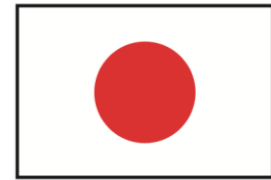
Asbestos cardboard



Asbestos cord



Types of ACMs from demolition (5)



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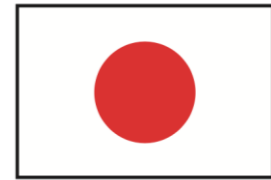
Thermal isolation



Paronite coating and gasket



Workplace safety (1)



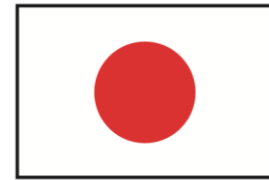
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- In the working area and in a prominent place - information stands:
"Attention, danger! Asbestos" and "Work with the use of respiratory protection equipment".
- In case of significant contamination, the working area must be closed.
- In cases where fencing is not used - risk assessment to prevent the spread of asbestos.



Workplace safety (2)



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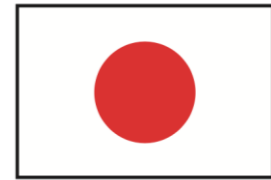


Technical and personal protective equipment to the removal of ACM waste are as follows:

- tapes, fences, designations, warning signs
- materials to protect the territory from pollution – polyethylene wrap of the required thickness, plastic, wood, metal frame elements;
- a vacuum cleaner with a HEPA filter;



Workplace safety (3)



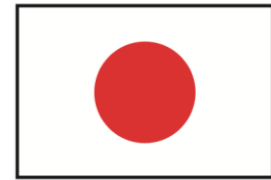
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- properly labelled bags and containers for ACM waste;
- cleaning equipment and supplies;
- sanitary and physical hygiene equipment to flush out contaminants, storage areas for work clothes and protective clothing, separated from wardrobes for everyday wear;



Workplace safety (4)



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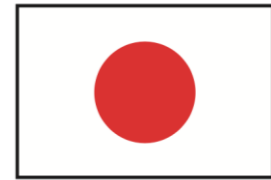


Actions on the sites when work is completed:

- To apply security measures to the dismantled ACMs waste
- Workplaces, communication routes, machines and tools must be cleaned from asbestos dust using a wet method or using vacuum filtering and ventilation equipment
- Work clothes and footwear, as well as personal protective equipment must be cleaned of asbestos dust using **high-performance filtration and ventilation equipment** or by a **wet method**.
- Used filters of filtration devices and disposable personal protective equipment should be packed in sealed bags and disposed of like ACM



Workplace safety (5)



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PROHIBITED

on the workplace:



- Removal of protective clothing and respiratory protective equipment in an area contaminated with asbestos dust
- Making changes to the filter elements of respiratory protective equipment in an area contaminated with asbestos dust.
- Using of work clothes and footwear intended for work on the removal of ACM waste outside the work site

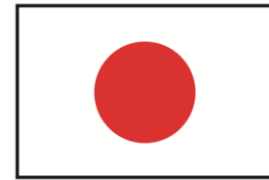


Workplace safety (6)

PROHIBITED

on the workplace:

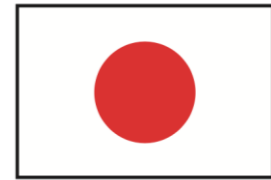
- Eating, drinking, smoking
- Keeping personal items, and staying unnecessarily in work areas where there is a risk of exposure to asbestos dust.
- Dry sweeping or cleaning with compressed air of premises, working tools and tools after completion of work in the area of asbestos dust exposure.
- Mixing ACM waste with other waste



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Personal Protective Equipment (PPE)



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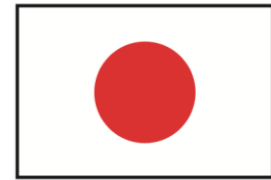
Respiratory protective equipment :
(respirators, gas masks, pneumatic helmets, pneumatic masks);



Special clothes
(overalls, semi-overalls, jackets, pants, suits);



Personal Protective Equipment (PPE)



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Special footwear:
(Easy clean - boots,
semi-boots, shoes,
galoshes; shoe covers)



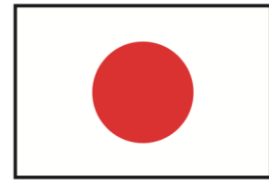
Hand protection
(sturdy fabric gloves,
latex gloves - powder
free)



Eye protection
(safety goggles)



Respiratory Protective Equipment (RPE) (1)



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Disposable respirator:

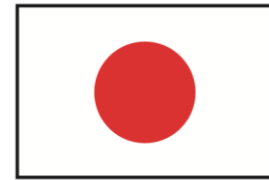
- respirator ШБ-1 «Пелюстка -200» (“Petal-200”)
- respirator ШБ-1 «Пелюстка -40» (“Petal-40”)
- respirator ШБ-1 «Пелюстка -5» (“Petal-5”)



The numbers mean the use for protection against harmful aerosols with a particles diameter of up to $2\text{ }\mu\text{m}$ at concentrations that exceed the MAC by 200, 40, 5 times.



Respiratory Protective Equipment (RPE) (2)



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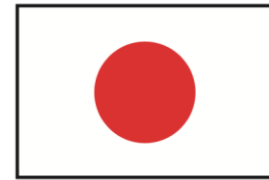


Reusable RPEs are:

- Respirator «ACTPA -2» (“Astra -2”) – with particles diameter of up to $2\text{ }\mu\text{m}$ at concentrations that exceed the MAC by **30 times**;
- Respirator «Φ-62Ш» – with particles diameter of up to $2\text{ }\mu\text{m}$ at concentrations that exceed the MAC by **10 times**



Respiratory Protective Equipment (RPE) (3)



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RPE with an **Assigned Protection Factors (APF) of 20 or higher:**

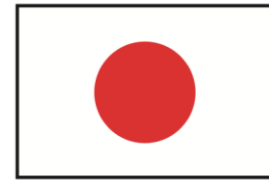
- disposable respirator according to **EN 149 standards (FFP3 type)** or **EN 1827 (FMP3 type)**;
- half facepiece respirator (in accordance with the **EN 140 standard**) with a **P3 filter**;
- a semi-disposable respirator (according to **EN 405**) with a **P3 filter**.



Protective Clothing and Footwear (1)

To be adequate and appropriate in the circumstances, protective clothing should:

- be user-sized;
- be of sufficient size to avoid stretching and tearing of seams;
- be comfortable and, if appropriate, allow for physical effort;
- be suitable for low ambient temperature;
- prevent ingress of asbestos fibers;
- have elastic details on the cuffs, ankles and on the hood of the jumpsuit, providing a snug fit on the wrists, bones, face, and neck;
- not have pockets or other parts in which asbestos dust can accumulate
- easy to decontaminate or dispose.
- completely cover all work clothes

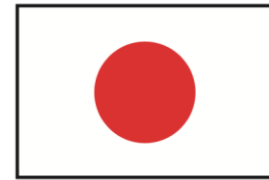


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Irina Rusyaeva (Courtesy Photo)

Protective Clothing and Footwear (2)



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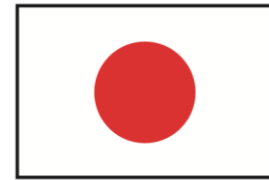


If the protective clothing does not have cuffs:

- the ends of the sleeves **must be taped to the arm**
- the ends of the trousers must be pulled over the boots and preferably covered with duct tape.
- The hood must be put on the head in such a way that the straps of the RPE remain under the hood.



Protective Clothing and Footwear (3)



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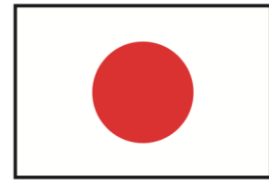


RIGHT CHOICE:

- If possible protective clothing should be **disposable** and made of **dust-proof material**.
- Disposable jumpsuits **Type 5** must be used (EN ISO 13982-1:2009).
- For outdoor work, the employee may be provided with **moisture-proof protective clothing**.
- Protective footwear must be **easy-to-wash** and **without laces**.



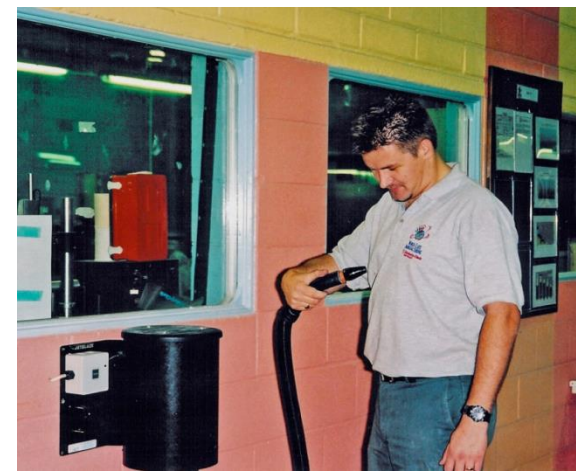
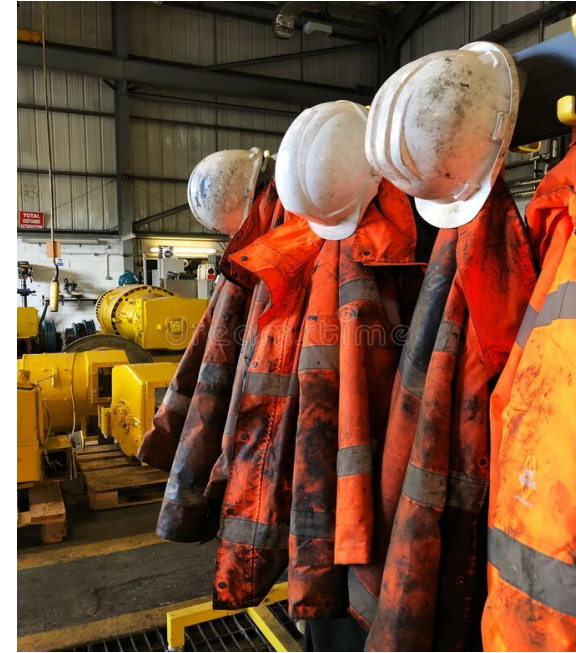
PROPER HANDLING with PPE (1)



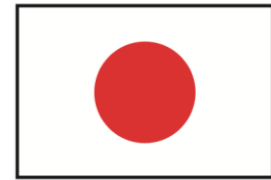
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- **Used disposable jumpsuits** – asbestos waste and properly disposed after each shift.
- Disposal jumpsuits after one use cannot be necessary if contamination is low.
- **Separate locker rooms** should be allocated to ensure that contaminated clothing is stored separately from personal clothing.
- Should daily **dedust their protective clothing** after a shift, using devices equipped with dust collectors, that located at the entrance to the locker rooms.



PROPER HANDLING with PPE (2)



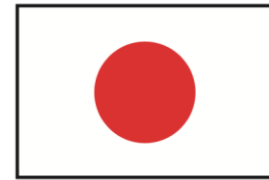
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- **Compressed air is strictly prohibited for blowing work wear**
- The used respirator should only be removed after it has been **completely cleaned** of dust.
- Special protective clothing must not be worn outside the workplace or locker room for contaminated clothing.
- Asbestos-contaminated clothing should be placed in bags that **dissolve in hot water** and can be loaded into the washing machine without opening before being sent to the laundry. These (inner) bags are to be placed in a second bag which is labelled and strong enough to keep out dust during transport and handling.



Debris handling with confirmed ACMs (1)



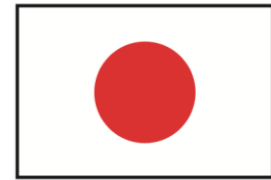
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- Works related to the disposal of ACM waste – the number of people involved in this process is **limited to the necessary minimum**.
- ACM waste must be placed in appropriate **labelled bags**; wrap or pack in packaging which, once sealed, ensures that asbestos fibers cannot be emitted into the air.
- Before starting transportation, ACM waste must be placed in a **closed container** or transport with a **covered cargo compartment** or wrapped in polyethylene.



Debris handling with confirmed ACMs (2)



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Works related to the disposal of ACM waste - the most effective methods or combinations of methods that **minimize the emission of fibers**:

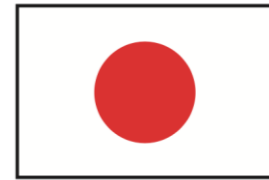
- **moistening of ACM waste with water** before their deconstructing and removal;
- **dismantling** of all ACM waste (slate, slabs, pipes, etc.) **without damaging** them;
- dismantling of ACM waste that are tightly bonded to the base - removed using a **handheld tool** or **low-speed/low-rotation tools**;
- avoid inadequate use of automatic tools and devices;
- clean the fine waste fraction by a **vacuum cleaner with HEPA filters**.



Debris handling with confirmed ACMs (3)



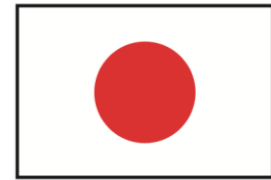
- **Sweep** debris/waste dry (moisten first);
- Large pieces of asbestos-cement waste cannot be broken, cut, or **shredded** in other ways, to minimize their volume and save during further storage in plastic bags (better break it).
- **Mix** ACM waste with other waste
- Loading and unloading of ACM waste **without their proper packaging** and into **open cargo compartments** of vehicles or other types of transport that are involved in the further transportation of this type of waste..



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Packaging of ACM waste (1)



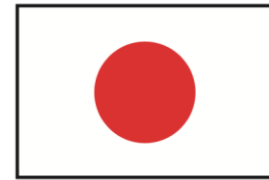
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Packing conditions:

- ACM waste that generates dust during handling are subject to **mandatory packaging**.
- materials for packaging ACM waste - **strength, tightness, dust tightness and resistance to ultraviolet radiation of sunlight**.
- In case of violation of the integrity of the package with ACM waste, it is allowed to eliminate the damage with the help of **adhesive tape**, followed by repacking in a sealed container.
- While preparation of a transportation package, packaging units (bags) with ACM waste must be securely fixed on a pallet or without a pallet, but using a shrink wrap or equivalent.

Packaging of ACM waste (2)



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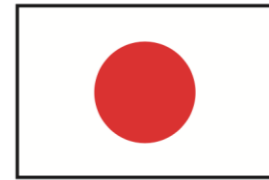
Packing requirements depending on the type of ACM:

Asbestos-containing building materials – corrugated slate, flat slate, pipes:

- For packaging, use of two layers of polyethylene sheeting approx. 200 microns (0.2 mm) thick
- The bags should be relatively small for ease of transportation.
- The necks of bags with ACM waste must be securely tied, sealed with adhesive tape, or fixed by any other method
- Marked with a warning sign **“CAUTION ASBESTOS!”**
- loading ACM waste directly into the cargo compartment of the vehicle - place the waste on two layers of polyethylene sheeting at a height of less than 1 m, completely wrap it up and seal it with tape. Mark the packaging with a warning sign **“CAUTION ASBESTOS!”**



Packaging of ACM waste (3)



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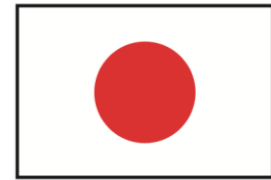
Packing requirements depending on the type of ACM:

Insulated lagged pipes, boilers, heaters, and equipment:

- For packaging, use of two layers of polyethylene sheeting approx. 200 microns (0.2 mm) thick
- Securely tied, sealed with adhesive tape, or fixed by any other method
- Mark the packaging with a warning sign
“CAUTION ASBESTOS!”



Packaging of ACM waste (4)



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Packing requirements depending on the type of ACM:

Friable asbestos and asbestos dust:

- Store this type of waste wet (unless wetting is not possible), in a polyethylene drum or container.
- Securely fix the lid of the drum or container using the provided clamps, screws, or bolts.

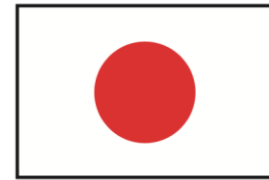
OR

- Store in double polythene bags approx. 200 microns (0.2 mm) thick
- A maximum bag size of 1200 mm (length) x 900 mm (width) should be used.
- The bagged dust should be wetted before the bags are tied and the loaded weight should not exceed 30 kg. Bags should only be filled to be half full.
- Each bag should be tied, tightly twisted, and its necks bent and sealed with tape.

For both variants - mark the packaging with a warning sign **“CAUTION ASBESTOS!”**



Packaging of ACM waste (5)



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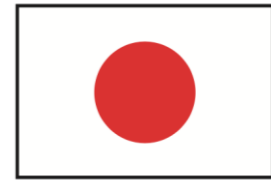
Packing requirements depending on the type of ACM:

Asbestos tiles, gaskets, brake linings, clutch plates, acoustic insulation, non-bonded textiles, gloves, protective clothing, and respirators:

- Store in double polythene bags approx. 200 microns (0.2 mm) thick.
- A maximum bag size of 1200 mm (length) x 900 mm (width) should be used.
- Each bag should be tied, tightly twisted, and its necks bent and sealed with tape.
- Mark the packaging with a warning sign **“CAUTION ASBESTOS!”**
- Place the bags in a closed container for further transportation (triple protection).



Transportation of ACMs



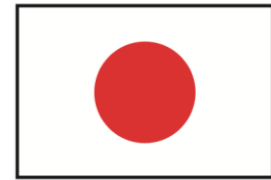
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- Transportation of unpackaged ACM waste in open cargo compartments of vehicles, on railway platforms or in wagons is **strictly prohibited**.
- Transportation of ACM waste, dust-forming materials and products must be carried out in a packaged form:
 - for overland transportation - in covered railway wagons or vehicles.
 - for water transportation - in closed cargo holds or containers.
- For all processes and operations related to the transportation of ACM waste, it is necessary to provide automation and mechanization tools of the main and auxiliary operations, that excluding or minimizing heavy manual labour.
- Cargo containing ACM waste must have a warning: **“Use personal protective equipment during mechanical processing of cargo. During mechanical processing indoors, take measures to prevent the spread of dust outside the premises”**.



Temporary storage of ACMs (1)



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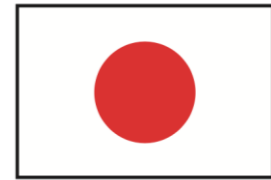


Places of temporary storage:

- 2 kilometers - from water fund facilities;
- 0.5 kilometers - from residential and public buildings, social infrastructure facilities;
- 0.2 kilometers - from agricultural land, public roads and railways of the general network;
- 0.05 kilometers - from the forests.



Temporary storage of ACMs (2)



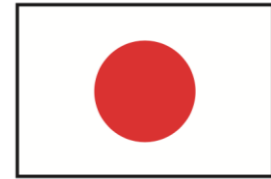
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- a **solid and leveled base** (coating), in particular from concrete, asphalt or compacted soil, covered with a geomembrane layer at least 1.5 mm thick, protected from mechanical damage by a layer at least 0.5 meters thick;
- organized **drainage of water**, which is formed as a result of precipitation (if necessary);
- **fenced perimeter** (if necessary);
- provision of **area lighting** (if necessary);
- **equipped entrance and access roads** providing unhindered passage of vehicles.
- ensures the possibility of **unhindered loading** onto a vehicle for removal from their temporary storage sites.



Utilization ACMs



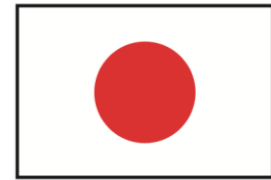
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- **Prohibited the recycling and reusing of ACM waste.**
- After storing ACM waste at the place of their disposal, they must be covered with an insulating layer (soil, clay, crushed construction waste, etc.) with a thickness of **at least 0.75 meters**
- If there are frequent cases of burning or arson of waste in the landfill area, ACM waste must be transferred to separate cells to prevent the emission of their particles into the air.
- **Issues related to the disposal of ACM waste at a landfill have to be agreed upon and approved by the authorized bodies.**



**Thank you
for your attention!!!**



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