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香港中文大學醫學院
Faculty of Medicine
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THE NETHERSOLE SCHOOL OF NURSING
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PNEUMOCONIOSIS COMPENSATION FUND BOARD

PROMOTE WORKER'S RESPIRATORY HEALTH

Speaker: Tika Rana

The Chinese University of Hong Kong
Faculty of Medicine
The Nethersole School of Nursing

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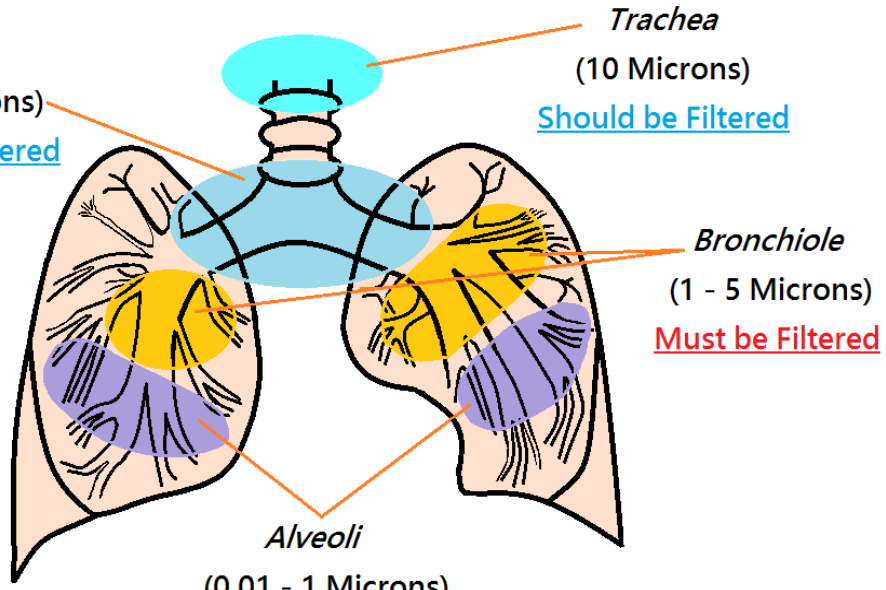
- 7) Consequences of getting pneumoconiosis
- 8) Prevention of pneumoconiosis
- 9) Q&A Session

Anatomy of Respiratory System



What is Pneumoconiosis?

Pneumoconiosis is a group of diseases characterized by a diffuse fibrotic reaction in the lungs induced by the inhalation of organic or inorganic particulate matter and chemical fumes and vapors.

What is Pneumoconiosis?

Irritating mineral dust

Inhale excessive mineral dust triggers lung inflammation

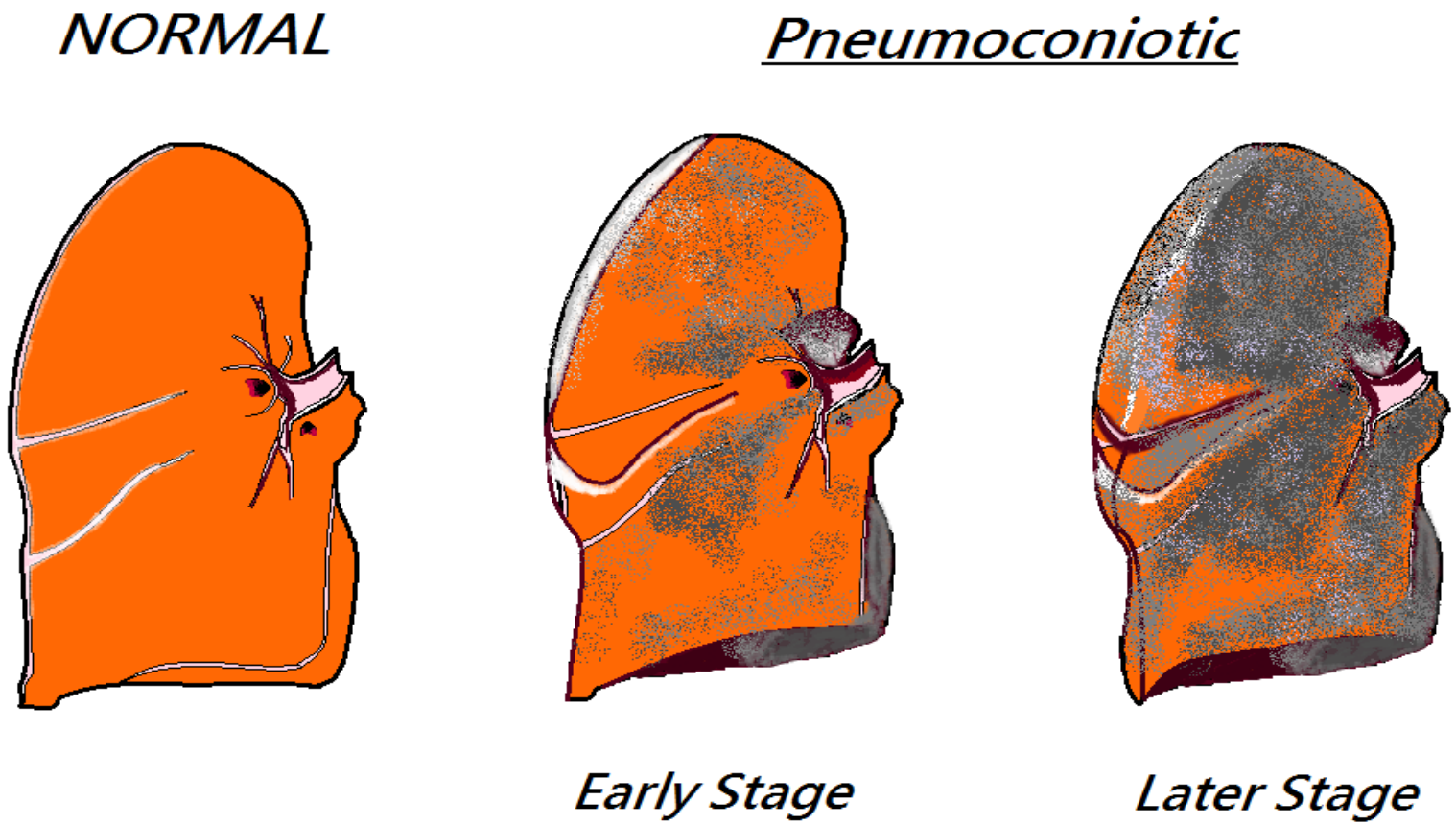
Fibrosis

Damaged areas progress to form tough and fibrous tissue deposits

Damage lung function

Fibrosis stiffens the lungs and interferes with the lung's normal exchange of oxygen and carbon dioxide

Normal Lung Vs Pneumoconiotic Lung



Types of pneumoconiosis

Silicosis

- Fibrosis of the lungs caused by the inhalation of dust that contains free silica which significantly decrease the lung function.
- Long incubation period of 15 to 20 years.
- Incurable.

Note: In Hong Kong, silicosis is an notifiable occupational disease

Where can I find silica?

Sources of Silica:

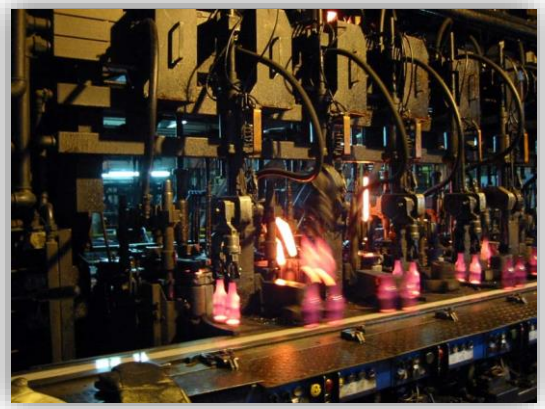
- Rocks such as quartz, sandstone and granite contain 99%, 80% and 65% silica respectively.
- Filed spare and quartz are the most significant silicate minerals

Am I at risk?

Quarry

Casting

Glass Industry



Construction

Monumental Masons

Am I at risk?

Drilling

Metal grinding

Mixing

Trenching

Cutting

Asbestos Related Diseases

Asbestosis:

- Fibrosis of lungs caused by inhalation of dust containing asbestos
- Incubation period can be up to 10-40 years.
- Incurable.

Mesothelioma:

- A relatively rare cancer of the pleura and peritoneum caused by exposure to asbestos.
- Incubation period can be up to 30-40 years.
- Difficult to diagnose and treat.

Smokers who are heavily exposed to asbestos are as much as 90 times more likely to develop lung cancer than non-exposed individuals who do not smoke.

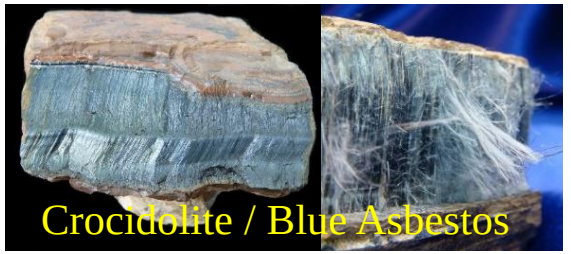
Where can I find asbestos?

Sources of Asbestos :

- Chrysotile or white asbestos (curly, flexible white fibers), which accounts for about 90% of the asbestos currently used in the industry.

- Amosite (straight, brittle fibbers that are light grey to pale brown in color); and

- Crocidolite or blue asbestos (straight blue fibbers)



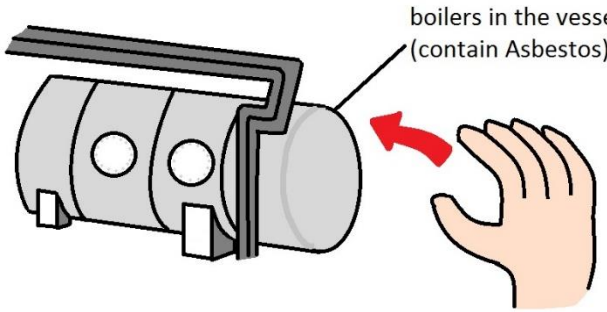
Am I at risk?

- If asbestos is dilapidated or disturbed due to engineering work, it may torn and release asbestos dust. Workers involving the following processes may have higher risk

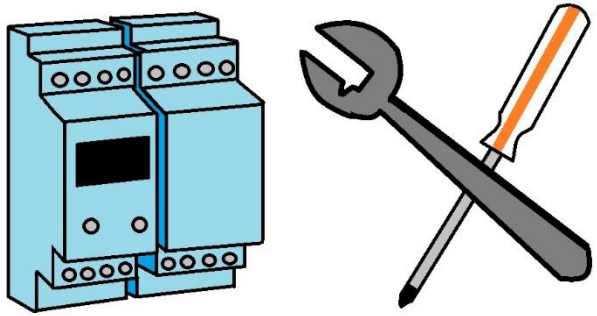
Breaking down of asbestos products

Asbestos products

Contact with boilers in the vessels

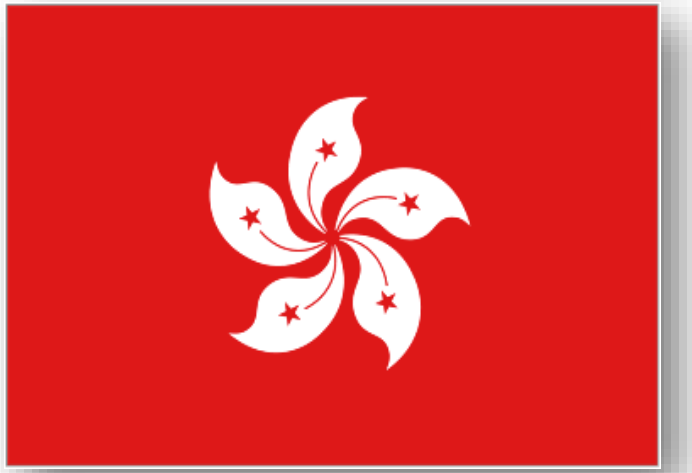


Work with insulation devices



Pneumoconiosis Prevention
among South Asian Construction Workers

How serious is Pneumoconiosis?



Worldwide:

- In 2013, 259,700 died of pneumoconiosis.

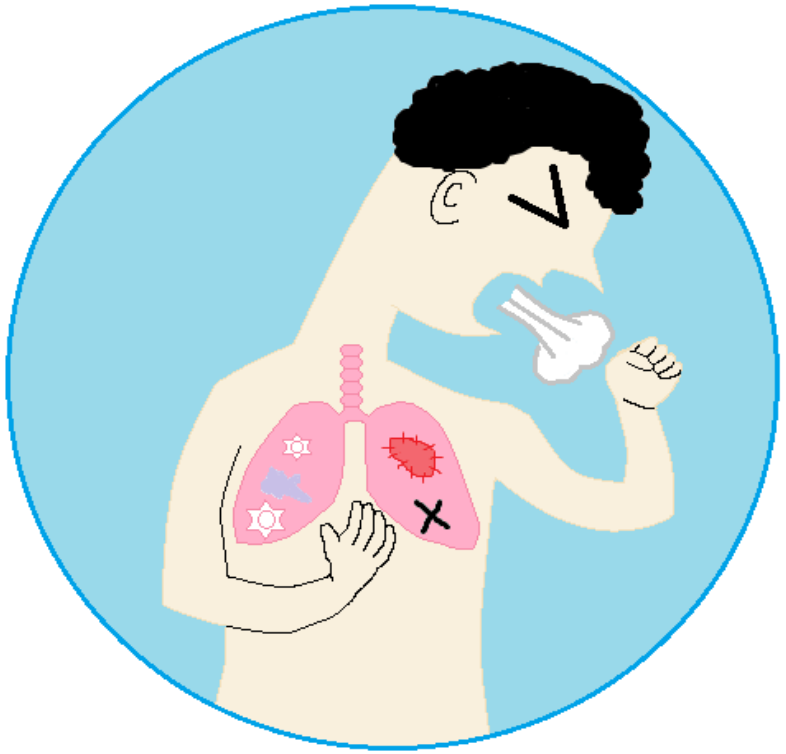
In Hong Kong:

- Since establishment of " Statutory Pneumoconiosis Compensation Scheme in 1981", 5068 cases have been identified.
- In 2016, 54 cases were newly diagnosed including 7 mesothelioma and 4 asbestosis.

Symptoms of Pneumoconiosis

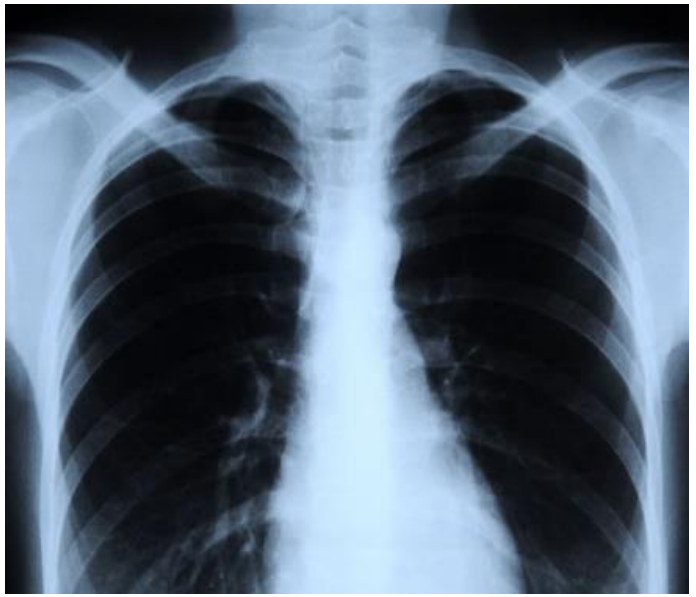
Symptoms may not be easily noticed at an early stage

- Cough
- Chest tightness
- Shortness of breath
- Fatigue



Diagnosis of Pneumoconiosis

- Occupational and health history
- Physical examination
- Chest X-ray
- Pulmonary function test



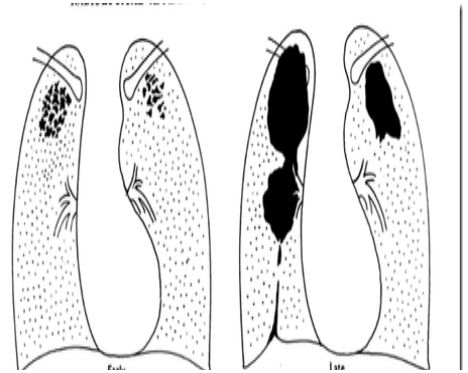
Consequences of getting Pneumoconiosis

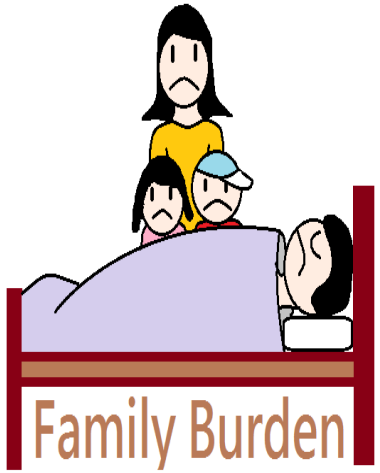
INCURABLE

!!!

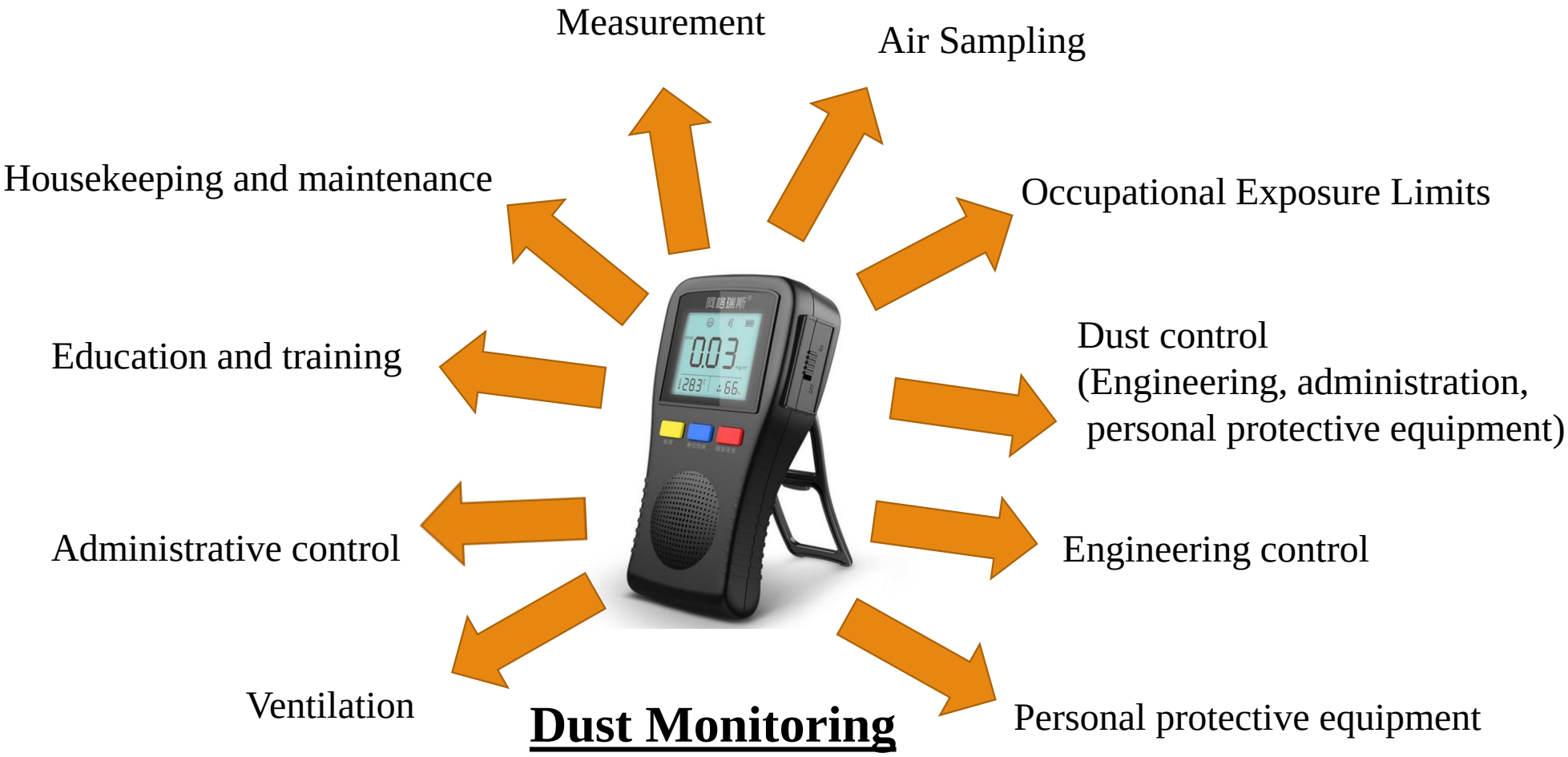
Consequences of getting Pneumoconiosis

- ⬆ Lung cancer
- ⬆ Risk of tuberculosis
- ⬆ Risk of heart failure
- Progressive respiratory failure
- Loss ability to work
- Affect quality of life
- ⬆ Family burden
- Death





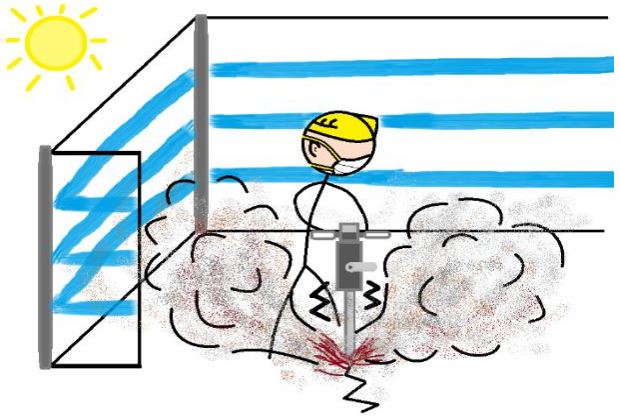
Dust Monitoring



Prevention of Pneumoconiosis

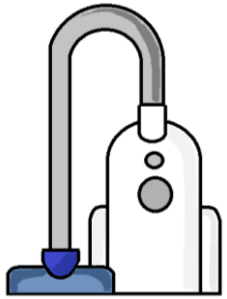
Substitute less hazardous materials

Isolation



Ventilation

Prevent accumulation of dust



Water Spraying

Wear Respiratory Protective Equipment

- Disposable Mask

- Air Purifying Respirator

- Atmosphere Supplying Respirator

Types of respirators



(1) Air purifying Respirator:

- Remove air contaminates by filtering, absorbing or chemical reaction with the contaminants as they pass through the respirators Canister or cartridge.
- Must not be used in an oxygen deficient atmosphere or under immediately dangerous to life or health (IDLH) condition.

NIOSH Certification (42CFR84)

Respirators (Class of filter)	Efficiency	Types of contaminant
N-Series : N100/N95	99.7/99/95	Solid and water based particulates (not resistant to oil)
R-Series : R100/R99/R95	99.7/99/95	Any particulates (resistant to oil)
P- Series :P100/P99/P95	99.7/99/95	Any particulate (oil proof)

(2) Atmosphere –supplying respirators

- Used when contaminant has insufficient odor, taste, or irritating warning properties.


(a) Linked to an air supply system

(b) Self- contained breathing apparatus

How to wear respirators

Step-1: Cup the respirator in your hand with the nosepiece at your fingertips.

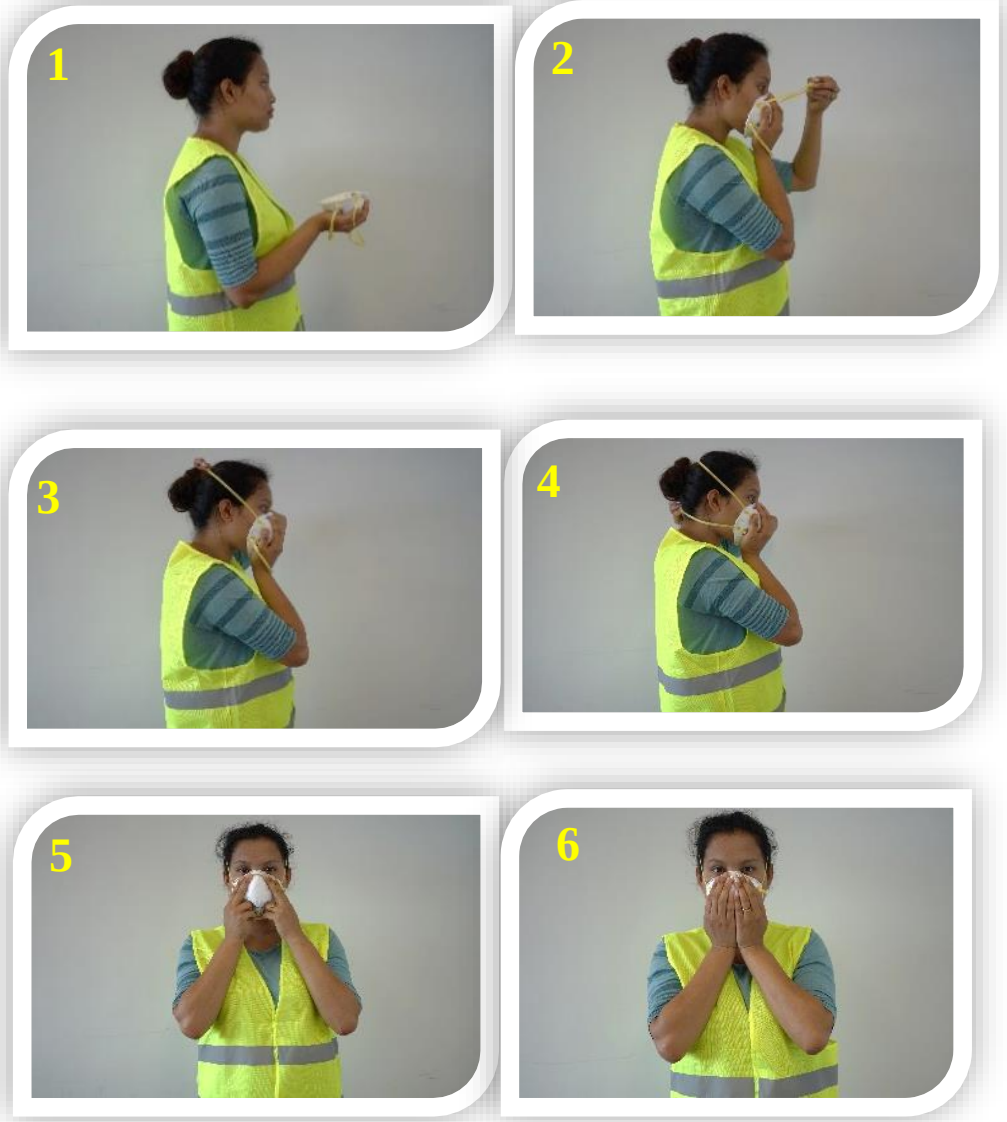
Step-2: Hold a mask with a cupped hand and place it firmly over your nose, mouth & chin.

Step -3: Stretch and position top band at the back of head.

Step-4: Stretch and position bottom band under the ears.

Step-5: Press the thin metal wire along the upper edge gently against the bridge of your nose, so that the mask fits nicely on your face.

Step-6: At the end, perform a fit check by inhaling and exhaling. During exhaling, check for air leakage around face.



Fit Checking

1) User Seal Check Procedures:

The individual who uses a tight-fitting respirators is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on.

2) Facepiece Positive and /or Negative Pressure Checks:

a) Positive pressure check :

- Close off the exhalation valve and exhale gently into the facepiece.
- The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece
- Without any evidence of outward leaking of air at the seal.
- Method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation
- Valve and then carefully replacing it after the test.

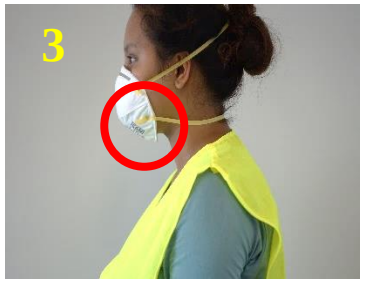
b) Negative pressure check:

- Close off the inlet opening of the canister or cartridge(s) by covering with palm of the hands or replacing the filter seal, inhale gently so that he facepiece collapses slightly and hold the breath for ten second.

Note: Positive and negative pressure checking is necessary before wearing the mask.

Improper use of respirators

1. The upper band are not band high over the ears.
2. The mask does not cover the nose and mouth.
3. The mask does not cover the chin firmly.
4. The mask just hang on the ear.
5. The mask is not at the appropriate position.
6. The mask is not at the appropriate position.

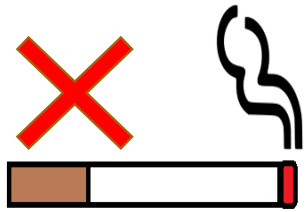


Point to be remembered while wearing masks

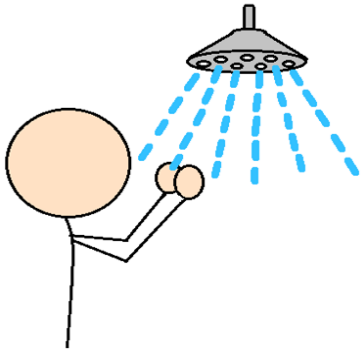
- Assess the work environment to identify the nature and extent of hazards.
- Choose respirator that is certified/ approved for the function.
- Carry out the fit test to ensure the respirator fits tightly against the face.
- Ensure there is no interference between the sealing surface of the facepiece and the face.

Implement Personal Protective Measures

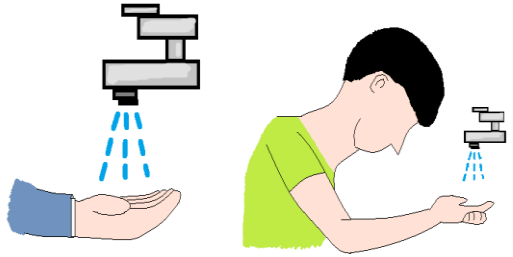
- Do not Smoke



- Shower before leaving the workplace



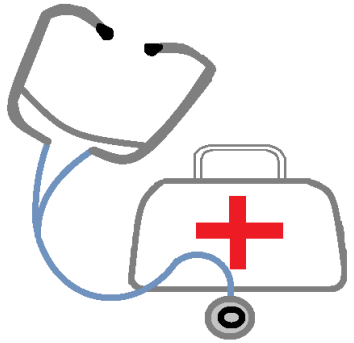
- Wash face and hand before eating and drinking



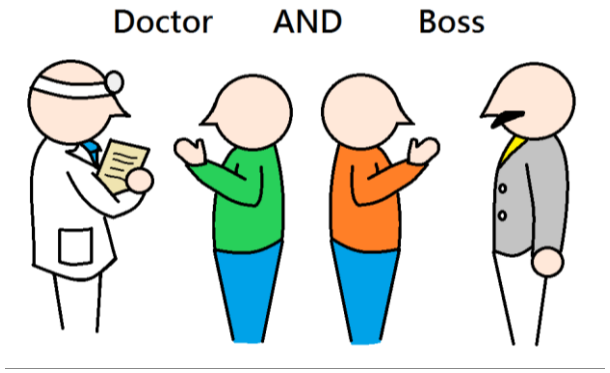
Implement Personal Protective Measures

- Wash dusty clothing separately

- Periodic Medical examination



- Report if you have any symptoms



Possible barriers of implementing preventive measures

- Lack of knowledge
- Uncomfortable
- Resistance from employers to use controls
- Lack of resources
- Lack of training in using controls effectively

NO TREATMENT

Symptomatic management

Maintain quality of LIFE

90% Oxygen Therapy

Antibiotic for infection

Medical Surveillance Programme

Eligibility:

- Hong Kong resident aged 30 years or above
- Currently employed in construction industry and employed for a period of more than one year (holder of valid work permit or proof of employment issued by employer)

How to participate?

- Download application form from Pneumoconiosis Compensation Fund Board
- Summit by mail or email contact@pcfb.org.hk

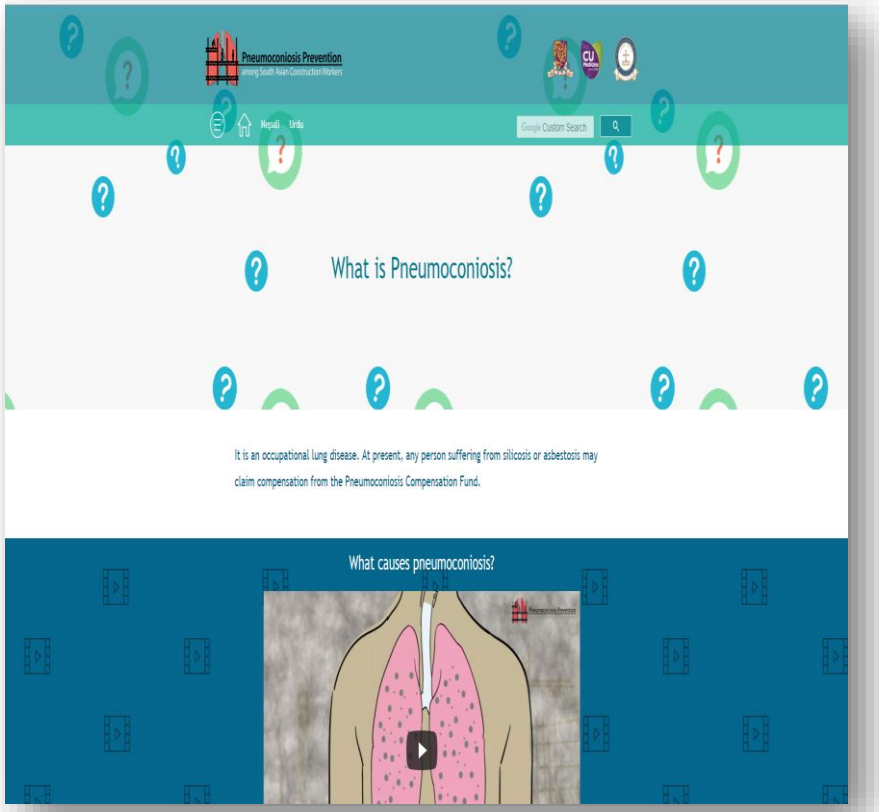
*Priority would be given to workers with high exposure to siliceous dust

*Workers who are under mandatory body check scheme (e.g. workers involve in asbestos handling and tunnelling works)

Pneumoconiosis Prevention
among South Asian Construction Workers

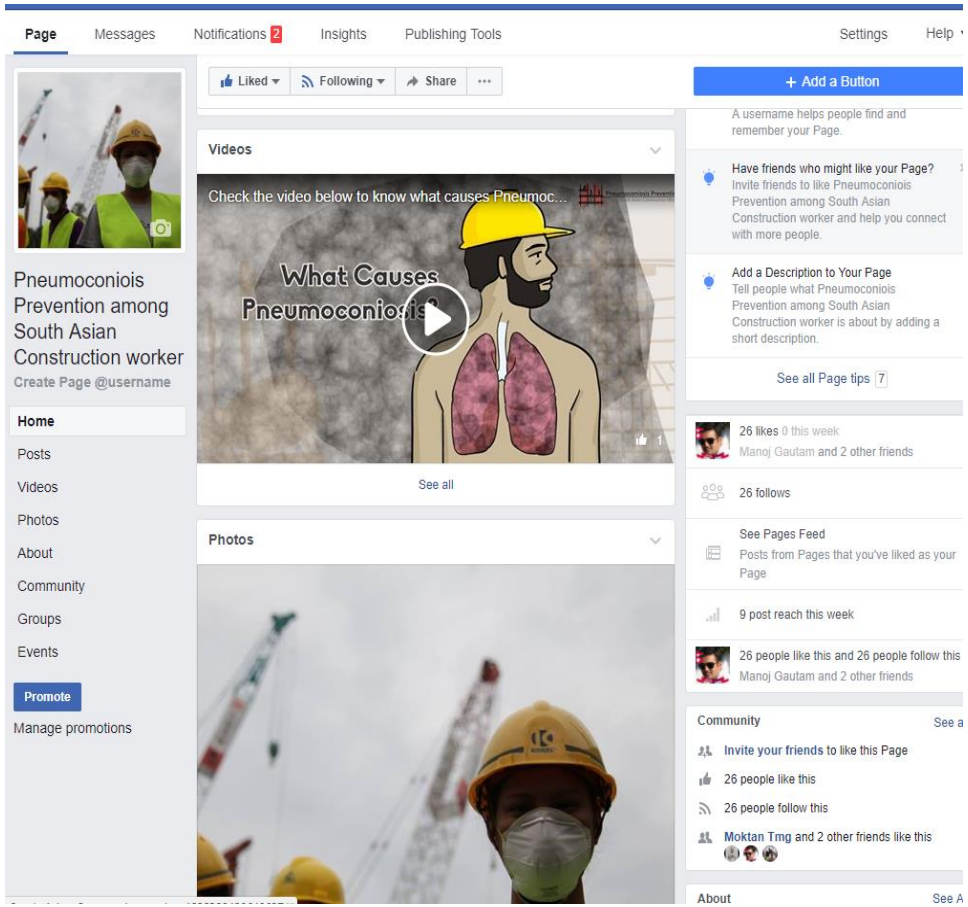
Visit our website

Website: http://www.cuhk.edu.hk/pneumo/ur/index.html



Pneumoconiosis Prevention
among South Asian Construction Workers

Facebook : https://www.facebook.com/Pneumoconiois-Prevention-among-South-Asian-Construction-worker-1939308429649637/



Q&A

Thank You !

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