

“Protective clothing” is a type of “personal protective equipment”. In addition to being used as working clothes or uniform, it also protects workers against injuries caused by hazards such as contact with chemicals or flame, striking, stabbing, radiation, extreme cold, hot or adverse weather conditions. This leaflet provides practical guidelines in the selection and maintenance of protective clothing.

Besides providing employees with appropriate protective clothing and equipment, employers are also responsible for providing them with relevant information, instructions, training and supervision, so that they understand why they have to use personal protective clothing and equipment and how to use it properly.

Employees should co-operate with their employers by taking instruction, undergoing training and making use of the personal protective equipment provided.

Through co-operations between employers and employees, the potential safety and health hazards at work can be reduced, with work efficiency improved and unnecessary losses minimised.

## Selection of suitable protective clothing begins with thorough risk assessment

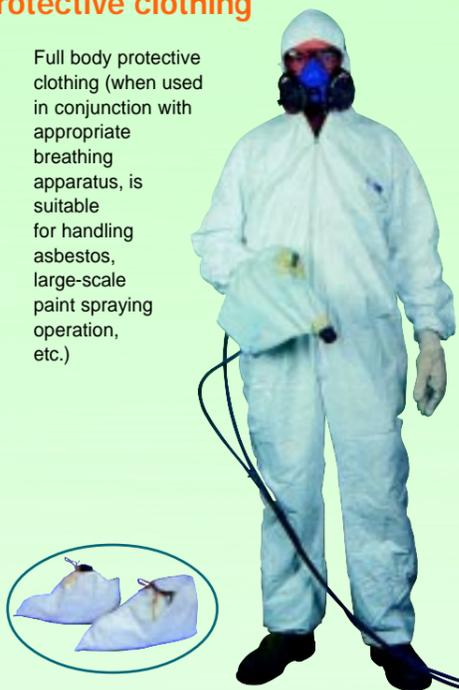
Protective clothing varies in its degree of protection, materials, design and labelling. We should select suitable protective clothing according to the results of the risk assessment. When conducting the assessment, the following should be noted:

- (1) Devise a checklist first. Ensure all risks, necessary information and safety measures taken are addressed.
- (2) Assess the risks in the workplace as a start. When assessing the risks, consider whether there are other safety measures that are more effective than using protective clothing.
- (3) Assess its effectiveness to guard against risks from accidents and diseases when protective clothing has to be used. Employees or other representatives should take part in the assessment. Base on the assessment, select the type and level of protection of the required protective clothing.
- (4) Take the potential hazards related to the work concerned as the basis for consideration. Other information like accident rates, case studies on occupational diseases, results of chemical and physical analysis of the material used should be taken into account. Moreover, the workflow and the guidelines provided by the protective clothing manufacturer should also be considered.
- (5) Document the assessment results as part of the company record on the provision of personal protective equipment.
- (6) Review the assessment methods and the relevant safety measures at appropriate time and revise when necessary.

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## Guide on the types and use of protective clothing

Full body protective clothing (when used in conjunction with appropriate breathing apparatus, is suitable for handling asbestos, large-scale paint spraying operation, etc.)



Full body protective suit (used in cleaning chemical spill)

Fireproof and heat resistant full body protective clothing (when used in conjunction with appropriate face mask, is suitable for metal casting, welding operation, etc.)



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Sleeves, aprons and gloves (used in handling chemicals such as acid, alkali, etc.)



## Tips for selecting protective clothing

### 1. Fire and heat resistance

- During fire fighting, casting, welding or related processes, firemen or workers are exposed to fire and strong heat. To avoid burns and severe scalds, fireproof and heat resistant protective clothing should be selected. For adequate protection for the work concerned, the resistance of the protective clothing against flame, radiant heat or direct contact with other heat sources (such as sparks and molten metal) should be verified by the management.
- The design of protective clothing for welders and casting workers should be free of pleat or pocket to prevent sparks or splashes of hot metal generated from the work process from being trapped and burning holes in the clothing. For the same reason, breast pockets should have wide flaps; side pockets openings should be vertical.



### 2. Protection against chemical hazard

- When selecting protective clothing against chemical hazards, the following questions have to be addressed:
  - Is the chemical in liquid or solid form (such as powder), acidic, alkaline or a solvent in nature?
  - Is the protective clothing able to provide adequate protection against acid, alkali or solvent? and
  - Is disposable or reusable protective clothing to be used?
- A lot of chemical-proof clothing material is impervious. Arrangement should be made for workers to work in shifts to avoid heat stroke resulting from exhaustion under high temperature.



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### 3. Cold resistance

- When selecting protective clothing for a cold working environment, factors like temperature, humidity and strong wind have to be taken into account.
- In cold and highly humid environment, the following have to be considered in particular:
  - Is the work light or strenuous?
  - Is the work to be carried out indoors or outdoors? and
  - Is the user exposed to windchills or adverse weather conditions?
- Selecting suitable underwear is another important issue. When working in a cold environment, avoid wearing underwears made of materials that absorb moisture, e.g. cotton. Such material, after taking up moisture, will make the skin feel cold and stiff. In extreme conditions, silk and wool are the best materials for underwear. If workers perspire when labouring, man-made materials such as polypropylene that do not absorb moisture will make us feel warmer than cotton. The clothing material over the underwear should be of moisture absorbing material. The outermost layer is best made of breathable clothing material.



### 4. High visibility clothing

- Many accidents resulting in injuries and deaths occur when workers are working in environments where they could not be easily seen. When making work arrangements, it is important not to subject workers to such undesirable situations. If this is not practicable, workers should be provided with high visibility clothing.
- Under the following circumstances, clothing with high visibility shall be used:
  - Workers working along highways to set up signalling system for directing traffic, performing road works or street cleaning.
  - Workers who must be seen to avoid being subject to danger at work, e.g. workers assisting in the lifting of loads by cranes or handling containers at container yards.



- The degree of visibility, the fluorescent materials and the position of reflective strips should be taken into account when considering high visibility clothing. Reflective strips should be placed at the front and back. If workers need to bend down frequently, reflective strips should also be placed on the sleeves and trousers.

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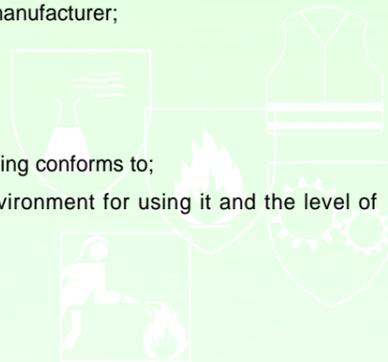
## 5. Beware of dangers caused by clothing

Protective clothing may pose hazards. For example, sleeves or pockets could be trapped by machines or revolving drums. When operating machines, workers should wear clothing that is not too loose but a tight-fit. Zips, buttons and other protruding features should be covered. Thread should be flat and only inner pockets are provided.



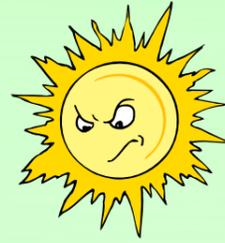
## 6. Comfort and cleaning

- Protective clothing should be well fit and comfortable. Try it on before buying. In addition, the following should also be considered:
  - Is flexibility or movement affected?
  - Is the clothing durable?
  - Is cleaning of the clothing easy? and
  - What types of under garments should be used with the protective clothing?
- For certain protective clothing, such as full body protective clothing for handling asbestos, the way of how to handle it after use shall be considered.
- Read and understand the information on the labels on the protective clothing. Such information includes:
  - product name;
  - trademark or other means to identify the manufacturer;
  - types of product;
  - business name or coding;
  - size;
  - international safety standard that the clothing conforms to;
  - symbols (to indicate the appropriate environment for using it and the level of protection); and
  - cleaning instructions.



## Maintenance of protective clothing

- Wash protective clothing regularly to ensure that it is clean, hygienic and can provide adequate protection. Store it properly so that it can be more durable.
- Avoid storing protective clothing in the following environments:
  - high temperature;
  - humid;
  - dirty;
  - under direct sunlight;
  - with chemicals or chemical gases; and
  - with rats or insects.



- Place protective clothing that is not frequently used into its original packing and store in designated places.
- Examine protective clothing regularly. If damage is found, replace it immediately.
- Follow manufacturers' instructions on the storage and the durability of different personal protective clothing.



## Relevant publications

- A Guide to the Factories and Industrial Undertakings (Protection of Eyes) Regulations
- A Guide to the Factories and Industrial Undertakings (Dangerous Substances) Regulations
- A Guide to the Factories and Industrial Undertakings Ordinance (Section 6B) – General Duties of Persons Employed
- A Guide to the Factories and Industrial Undertakings Ordinance (Section 6A) – General Duties of Proprietors
- Code of Practice : Safety and Health at Work for Gas Welding and Flame Cutting
- Guide for Safety at Work – Electric Shock Hazard of Manual Electric Arc Welding Work
- Safety at Work – A Guide to Personal Protective Equipment
- Safety at Work – Use Eye Protectors (Chinese version only)



## Enquiry

If you wish to obtain more occupational safety and health information, you may contact the Occupational Safety and Health Branch of the Labour Department through:

Telephone : 2559 2297 (auto-recording after office hours)  
Fax : 2915 1410  
E-mail : enquiry@labour.gov.hk

Information on the services offered by the Labour Department and on major legislation can also be found by visiting our Home Page at <http://www.labour.gov.hk>.

Information on the services offered by the Occupational Safety and Health Council can be obtained through the hotline 2739 9000.

If you have any complaints about unsafe workplaces and practice, please call the Labour Department's occupational safety and health complaint hotline on 2542 2172. All complaints will be treated in the strictest confidence.

# Safety at Work

## Personal Protective Clothing

