

## Air-supplying RPE

Air-supplying RPE provides uncontaminated air from an independent source for breathing by the user. It includes the self-contained breathing apparatus which provides air from a gas cylinder, and the compressed air line breathing apparatus which provides uncontaminated air from a source through a long hose. Misuse of this type of RPE may seriously endanger the user and, therefore, stringent precautions must be followed.



Compressed air line breathing apparatus



Self-contained breathing apparatus

## Use of RPE as the last resort

In protecting workers from airborne hazards, a high priority should be accorded to engineering measures which effectively control the contaminants at their source or, failing that, at their transmission. RPE should only be used as the last line of protection, when there are still residual risks after all reasonably practicable control measures have already been taken. It is because:

- ◆ RPE only protects the user, but not other workers in the work area.
- ◆ The user may not be adequately protected if RPE is not used properly.
- ◆ Wearing RPE, especially for long hours, is uncomfortable to the user.
- ◆ RPE may hinder the vision and movement of the user, and his communication with other workers.

Therefore, before RPE is used, an assessment should be made to determine whether its use is fully justified. The following are examples of typical situations where RPE may be used:

- ◆ the risk of exposure to contaminants remains after all other reasonably practicable control measures have been adopted; or
- ◆ emergency work where other control measures are not reasonably practicable.

**Under all circumstances, respiratory protection MUST NOT be regarded as a substitute for engineering control of air contaminants.**

## Managing provision and use of RPE

Prior to the use of RPE at the workplace, the employer should set up and implement a respiratory protection program to properly manage the provision and use of RPE. The program should include the following basic elements and should be administered by a responsible person who has a suitable technical and professional background:

1. Procedures for selecting suitable RPE;
2. Procedures for governing proper use of RPE;
3. Provision of adequate training and instructions to users;
4. Measures for ensuring proper maintenance and care of RPE;
5. Arrangements on:
  - ◆ Stock control and issuance of RPE; and
  - ◆ Fit testing for selection of tight-fitting RPE;
6. Surveillance of work conditions and supervision of use of RPE; and
7. Regular review of effectiveness of program.

It may not be suitable for workers with certain medical conditions (e.g. cardiovascular disease, asthma, and chronic bronchitis) to use RPE, especially those equipment that are heavy or require more breathing efforts. If necessary, users should seek medical advice on their medical fitness for wearing RPE. For using RPE in a complex work environment, additional safety procedures should also be incorporated into the program, as appropriate.

## Enquiries

For enquiries about this leaflet or advice on occupational health and hygiene matters, please contact the Labour Department's Occupational Safety and Health Branch through:

Telephone : 2852 4041  
Fax : 2581 2049  
E-mail : enquiry@labour.gov.hk

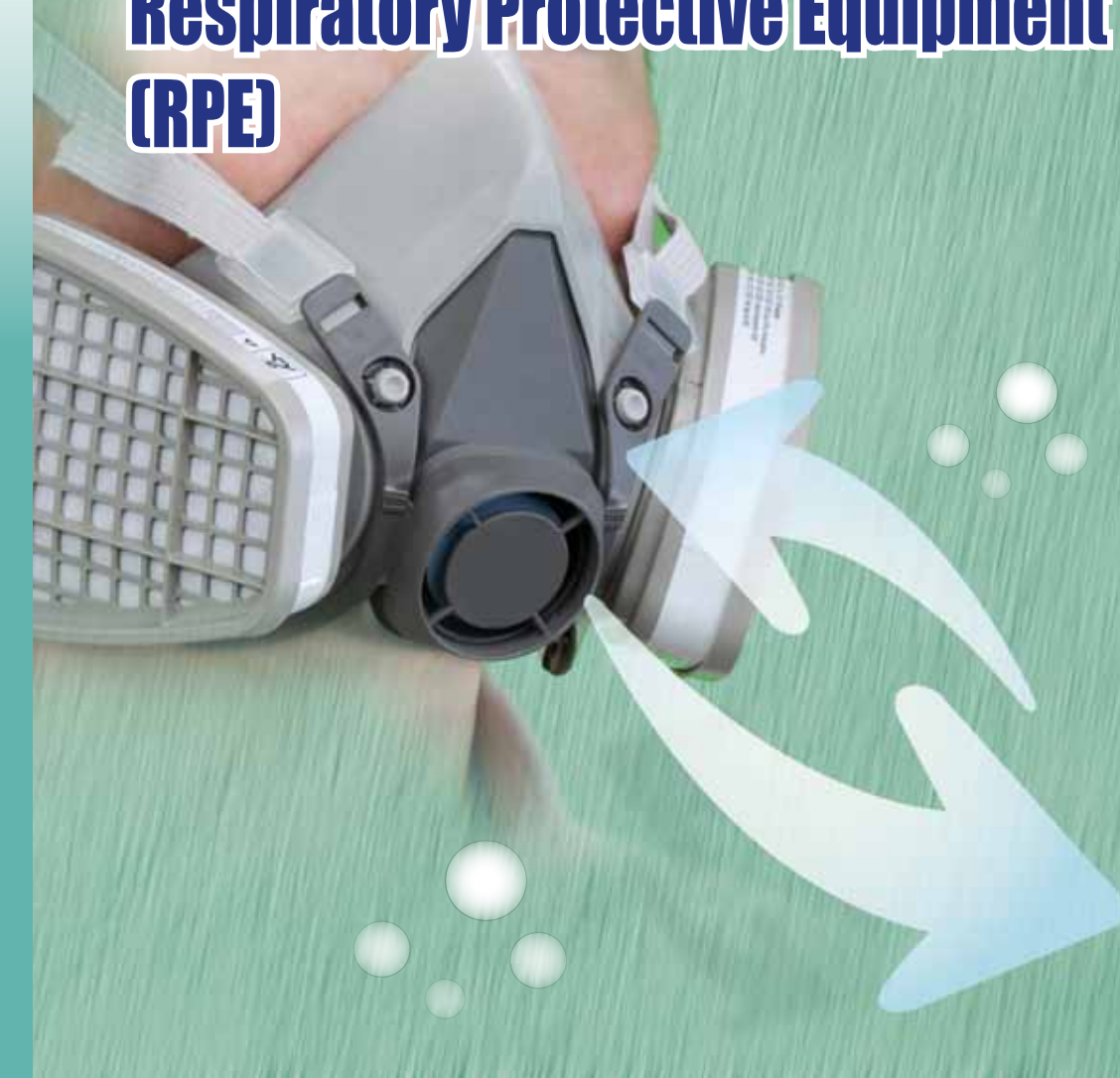
Information on the services offered by the Labour Department and on major labour legislation can also be found on our website at <http://www.labour.gov.hk>.

## Complaints

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

# Respiratory Protection Series

## 1. Introduction to the Proper Use of Respiratory Protective Equipment (RPE)





## Respiratory Protection Series

### 1. Introduction to the Proper Use of Respiratory Protective Equipment (RPE)

Respiratory Protective Equipment (RPE) is commonly used at work to protect workers from airborne hazards. If RPE is misused, the user may be inadequately protected or even exposed to greater risks. In accordance with the Occupational Safety and Health Ordinance (Cap. 509) and Factories and Industrial Undertakings Ordinance (Cap. 59), employers have a duty to ensure, so far as reasonably practicable, the safety and health of their employees at work. For the use of RPE, employers should, therefore, provide and maintain safe systems of work to adequately protect their employees' safety and health. Employees should, so far as reasonably practicable, co-operate with their employers in using RPE to protect their own health and enable the latter to comply with relevant legal requirements.

To help employers and employees better understand respiratory protection, the Labour Department has developed a series of three leaflets covering general concepts about RPE and its use. This leaflet, the first one in the series, introduces RPE and fundamental principles on its proper use. The second leaflet provides information about proper selection of RPE, and the last one focuses on practical issues in using RPE at the workplace, particularly points to note when wearing RPE and proper maintenance of such equipment.

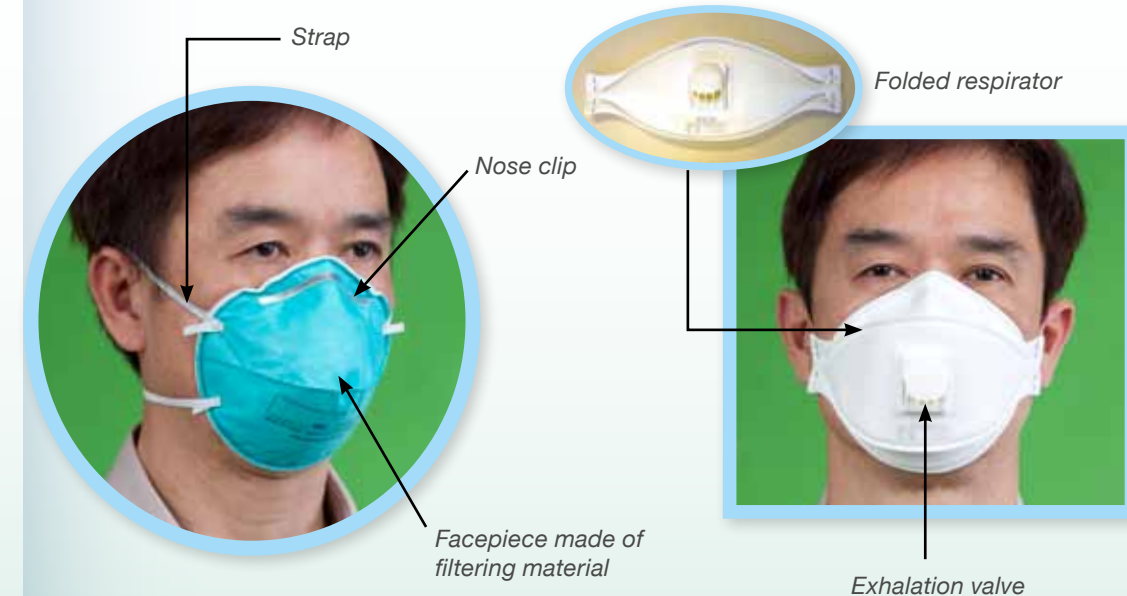
#### Features of RPE

RPE, commonly called "respirators", is a kind of personal protective equipment designed to protect the user against inhalation of airborne contaminants (e.g. dust, liquid particles, gases/vapours) in the workplace. It is broadly divided into two types – air-purifying and air-supplying.

#### Air-purifying respirators

Air-purifying respirators filter the contaminated air in the working environment when it is being inhaled by the user. They are applicable to tasks carried out in a working environment where oxygen is not deficient and the levels of contaminants are not very high. Some examples of such tasks are rock breaking, wood cutting or paint spraying in an open environment. The features of some common air-purifying respirators are as follows:

(a) Disposable particulate respirators – consisting of a tight-fitting facepiece made of filtering materials. The facepiece covers the nose, mouth and chin. There are straps and a nose clip for tightening the seal between the facepiece and the face. Some are foldable and have exhalation valves to facilitate breathing. They are light and compact, can be carried and stored easily, and are normally disposed of after using for a work shift. Most of these respirators are designed to protect against particulates (including dust and liquid particles), but not gases/vapours.



Respirator for use in health care setting to filter out very fine infectious particles

Foldable respirator with exhalation valve

(b) Half-face respirators (with filters) – consisting of a tight-fitting facepiece mounted with one or two filters. The facepiece covers the nose, mouth and chin. There are straps for tightening the seal between the facepiece and the face. The filters are capable of filtering particulates or a specific type of gases/vapours. These respirators can be reused by replacing the used filters with new ones. Some allow a particulate filter and a gas/vapour filter to be used together.



(c) Full-face respirators (with filters) – consisting of a tight-fitting facepiece mounted with one or two filters. The facepiece covers the whole face including the forehead, eyes, nose, mouth and chin. The filters are capable of filtering particulates or a specific type of gases/vapours. As such respirators can provide a very tight seal between the facepiece and the face, they provide a higher level of protection.



(d) Loose-fitting helmet or hood respirators – consisting of a loose-fitting helmet or hood with powered air purifier. Air drawn through the filter carried at the waist is supplied to the user through the helmet or hood.



For operations carried out in a working environment where oxygen is deficient or the levels of contaminants are very high, air-purifying respirators MUST NOT be used. In these circumstances, only air-supplying RPE should be used.