

Annex 6. Respiratory protection

The level of respiratory protection required when sampling depends on a number of factors including:

- the type of sample to be taken (e.g. sampling for blood is less risky than taking a throat swab which may cause the patient to cough);
- the situation (e.g. taking a swab from a dead bird in the open air requires less protection than sampling inside a poultry shed);
- the type of respiratory risk (droplets, aerosols and dusts require different types of protection).

There are many types of respirators and masks available and the different types offer very different levels of respiratory protection. However it must be accepted that in some situations high efficiency respirators will not be available and basic gauze masks may be all that can be used.

- Appropriate procedures should be used to select a particulate respirator that fits well and a user seal check (fit check) should be performed each time a disposable particulate respirator is worn.
- Disposable particulate respirators, although similar in appearance to surgical masks, differ significantly from surgical masks because they are specifically designed to protect the wearer from exposure to airborne infectious diseases by sealing tightly to the face and filtering infectious particles from the air.
- If a particulate respirator is not available, a tightly fitting surgical or procedure mask should be used.
- Surgical and procedure masks do not provide protection against small-particle aerosols (droplet nuclei), and aerosol-generating procedures should not be performed if a particulate respirator is not available.

Some common terms:

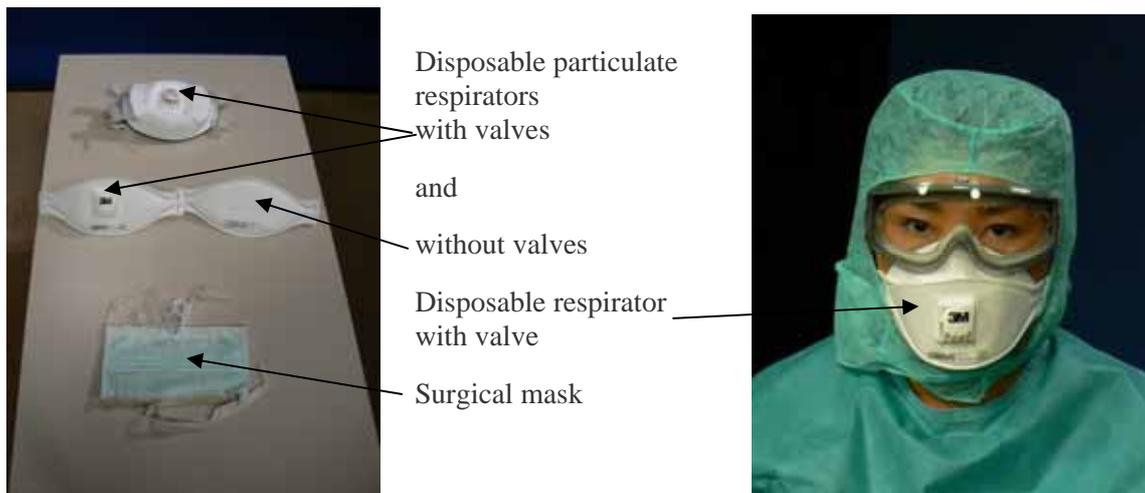
Fit test : evaluating the fit of a respirator on an individual.

High efficiency particulate air (HEPA) filter: means a filter that is at least 99.97% efficient in removing particles of 0.3 micrometers in diameter.

NIOSH: The National Institute for Occupational Safety and Health is the USA Federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness.

Types of Respirators

a) Disposable particulate respirators



Disposable respirators of this sort are light weight and fairly comfortable to wear. The type with exhalation valves cannot be used when working in a sterile area such as an operating room since the exhalation valve allows droplets and particles exhaled by the user to escape. Since air has to be drawn actively into the mask, the mask will increase the work of breathing (when used properly).

Also it is almost impossible to prevent occasional leaks of contaminated air into the mask.



Particulate respirator, goggles, coverall, apron and gloves (suitable for work such as sampling birds in a chicken shed)

b) Half-Mask and Full-Mask replaceable particulate filter respirators

These are lightweight respirators with single or dual filters. These can be for specified chemicals or can be HEPA filters.



These respirators can be uncomfortable to wear for extended periods of time, communication may be difficult and they cannot be used in areas where a sterile field is required (operating theatre).

The full mask version can easily fog up in use and an antifogging adapter ensuring that exhaled air passes through the filters and not into the mask should be used.

c) Powered air-purifying respirator (PAPR)

PAPRs use a blower to force air through filters which remove contaminants before supplying the air to the wearer. They can be tight fitting (where the air is supplied to the face piece) or loose fitting (where the air is supplied into the helmet rather than the face piece). The latter are more comfortable.

PAPRs are more protective than a half-mask respirator and breathing resistance is lower. They are also comfortable to use (especially in hot areas) because air is forced into the mask by the blower, producing a cooling effect. They are of particular value for extended periods of work in hot and dusty environments such as culling in chicken sheds. They can be bulky and noisy and communication between individuals can be difficult.

PAPRs cannot be used where a sterile field is required because air can exit around the face seal or through an exhalation valve (tight fitting type).

The batteries must be recharged and maintained to ensure proper flow rates into the mask.