

Respirators: One Way of Protecting Workers Against Pandemic Flu

When a person who is infected with the pandemic flu virus coughs, sneezes, or talks, very small particles containing the flu virus are put into the air. These particles can then be inhaled by someone else (airborne transmission) and infect them. Infection control measures need to be put in place to make sure that the small particles are not inhaled.

One part of a control approach is for workers to wear particulate respirators (see page 2 of this fact sheet for information on some occupations where respiratory protection is most important). **In order to provide protection against inhaling the virus particle, it is essential that workers be provided a respirator – and not a surgical mask. It is also essential that every worker who wears a respirator be fit-tested** to make sure the respirator fits properly. Employers must comply with all the requirements of “OSHA’s Respiratory Protection Program” (see below).

Particulate Respirators – Not Surgical Masks!

A respirator is designed to prevent the wearer from inhaling airborne toxic chemicals or particles. Respirators filter out the chemicals or particles from the air as a worker breathes and reduce exposure to the hazardous substance. Most respirators are designed to fit tightly on the face and provide a seal around the nose, mouth and face. Having a tight seal with a respirator is necessary so that most of the air the wearer inhales is pulled through the filtering material. Otherwise, the contaminant in the air will bypass the filtering material and leak directly into the lungs.

A particulate filtering respirator is designed to filter particles that are suspended in the air. Because the influenza virus is a particle, only particulate respirators are effective in preventing inhalation of the pandemic virus.

The National Institute for Occupational Safety and Health (NIOSH) tests and certifies all respirators for use in the workplace in the United States, including particulate respirators. Under OSHA’s respirator standard, only NIOSH certified respirators can be worn by workers.

Surgical masks are not respirators. A surgical mask is not designed to give the wearer protection from inhaling particles into the respiratory system and lungs. It is designed to prevent contamination of the work environment from large particles that are released **by the wearer** (saliva, mucus). Surgeons wear them to prevent organisms in their mouth and nose from infecting a patient. Surgical masks can also protect the wearer from splashes of blood and body fluids reaching their nose and mouth.

Surgical masks do not fit tightly on the face and do not provide an effective seal around the nose, mouth and face. Because they do not provide a tight fit, surgical masks leak

contaminated air through gaps between the mask and the face and allow the particles to enter the wearer's respiratory system. The filtering materials of surgical masks are also not designed to efficiently capture the particles. Surgical masks are not certified by NIOSH as respirators and OSHA prohibits their use for protection against inhalation hazards in the workplace. **Surgical masks must never be used to prevent inhalation of airborne pandemic influenza virus particles such as the H1N1 flu virus.**

Types of Particulate Respirators and Filtering Efficiencies

There are several types of particulate filtering respirators that workers can wear to protect against inhaling the pandemic flu virus:

- **Disposable filtering face pieces:** With these, the entire face piece is made of the filtering material. They are designed to be used once and then disposed of.
- **Reusable elastomeric respirators:** These respirators use replaceable filters and the face piece can be cleaned and disinfected and equipped with new filters (cartridges).
- **Powered air purifying respirators (PAPRs).** These respirators use a battery-powered blower to pull contaminated air through the filter, providing clean air for inhaling by the wearer. These respirators can be cleaned, disinfected, and equipped with new filters.

Particulate filtering respirators are available at three different efficiencies of capturing small particles – 95%, 99%, and 100% (actually 99.97 %). Particulate filters are also available in three types that rate their resistance to exposure to oil – “N” (not resistant), “R” (somewhat resistant), and “P” (oil proof).

OSHA recommends that high exposure risk workers, such as health care employees and emergency medical technicians be provided with N95 or higher rated filter respirators for most situations involving people known or suspected of being infected with pandemic flu. For procedures that are likely to generate aerosols, such as bronchoscopy and intubation, OSHA recommends use of a powered air-purifying respirator (PAPR).

CDC recommends that workers in health care settings use N-95 or higher respirators during activities that are likely to generate aerosols, including such high risk activities as bronchoscopy and intubation. Powered air-purifying respirators (PAPRs) may be considered for these high risk activities as well. CDC also believes that it is “prudent” for health care workers to use N-95 respirators for other direct care activities involving patients with confirmed or suspected pandemic flu.

For workplaces where employees have high frequency contact with the general population (such as schools, high population density environments, and some high volume retail establishments), OSHA advises that the use of a respirator may be considered if there is an expectation of close contact with people who have symptomatic influenza infection, or if employers choose to provide protection against a risk of airborne transmission.

IMPORTANT NOTE: The United Steelworkers International Union and the AFL-CIO recommend, as a minimum level of respiratory protection, that high exposure risk workers in health care and emergency response should wear a P100 respirator with an elastomeric face piece seal or a PAPR equipped with high efficiency filters.

OSHA's Respiratory Protection Program

In a flu pandemic, workers may be required to wear respirators to protect them from inhaling the airborne virus. But it is not enough for an employer to just hand a worker a respirator and tell him or her to wear it. Instead, anytime an employer requires respirators to be worn, the employer must establish a complete respiratory protection program under the OSHA Standard 1910.134. For employers who are not covered by OSHA, the OSHA Standard is still a good model to follow in order to protect workers.

The OSHA respirator standard has comprehensive requirements that employers must follow whenever workers are provided with respirators. Before giving out respirators, the standard says that employers must first use feasible "engineering controls" to prevent workers from inhaling the pandemic flu virus. Engineering controls are methods used to prevent workers from coming into contact with the virus, such as portable ventilation systems, physical barriers like plastic sneeze guards worn by infected individuals, and negative pressure infection isolation rooms. Respirators – which are personal protective equipment, not engineering controls – should be used to protect workers from pandemic flu only when effective engineering controls are not feasible, or while engineering controls are being installed.

Some of the major requirements of the standard include:

- A **written respiratory protection program** must be developed and an administrator assigned to oversee the entire program.
- Respirators, training, and medical evaluations are to be provided **at no cost to the employee.**
- Only respirators certified by the **National Institute for Occupational Safety and Health (NIOSH)** can be used by workers. Surgical masks, which are not certified by NIOSH, are not permitted to be worn by workers to protect against inhalation of the pandemic flu virus under the OSHA standard.
- The employer must select a respirator that will protect workers from the airborne hazard they are exposed to. Since the pandemic flu virus is a "particle," in most cases workers should be provided with an air-purifying respirator that has filters that will capture **particulates.**

- Employers must give all workers a **medical evaluation** to determine their ability to wear a respirator. A physician or other licensed health care professional must evaluate the worker and issue a **written recommendation** on the worker's ability to use the respirator. Workers must receive a copy of the recommendation.
- Anytime a worker is given a **tight-fitting face piece respirator** (where the respirator face piece is supposed to seal tightly on the face of the wearer), the employer must perform **fit-testing** before the respirator is worn for the first time. A fit test is used to identify a make, model and size of a respirator that fits correctly on the face of a worker so it does not leak air around the seal of the face piece. If it leaks, the worker inhales contaminated air instead of air that has passed through the filter. Note that there are some respirators that do not seal tightly on the face and do not require fit-testing, such as loose-fitting hoods and helmets.
- The employer is required to conduct **annual fit testing** for workers who must wear respirators.
- Employers must not allow workers to wear a tight-fitting face piece respirator if they have any condition that interferes with getting a tight seal of the respirator with the face. This would prohibit workers from having **beards or facial hair** that come between the face and the seal of these types of respirators.
- Every time a worker puts on a tight-fitting respirator, they must perform a **user seal check** to make sure they have put it on correctly so that it seals properly with the face.
- Workers must receive **training and information** before the first use of the respirator. The standard identifies what subjects are to be covered in the training, including the uses and limitations of respirators, how to inspect and properly put on and take off the respirator, and how to do a seal check. The standard also requires **annual retraining**.
- Employers are required to do a **program evaluation** to make sure their written respiratory protection program is working effectively. Employers must also talk with workers to make sure they are using respirators properly.
- Employers must **keep records** under the standard, including medical evaluations, fit test results, and a copy of the current written respiratory protection program. These records must also be made available to workers upon request.

Following the requirements of the OSHA Respiratory Protection Standard is a critical element of protecting workers during a pandemic flu. All employers should be familiar with the standard and comply with all the requirements of the standard.

This fact sheet has been adapted by the United Steelworkers International Union (USW) from a fact sheet on pandemic flu originally developed by the AFL-CIO in June 2009.