

Respirator Use

The air you breathe has been blowing around the earth for millions of years. It's been contaminated with almost every naturally produced chemical known. It stays good to breathe because the natural processes of rain and snow clean it on a very large scale.

But sometimes that air can be contaminated on a large scale over a wide area. When this happens we call it air pollution.

You may often hear warnings that older people, people with respiratory problems, and young children should stay indoors when the air pollution is especially bad. Some people who must go outdoors wear a small, disposable dust mask if the main air pollutant is dust. Most frequently these people are hay-fever sufferers during the pollen seasons.

People who wear those masks are using a simple means of protecting themselves, yet most of them know very little about how and why to wear respiratory protection.

NOTE TO DISCUSSION LEADER:

Show the most used and available respirators in your workplace. Briefly describe the specific material contaminant that requires their use.

A number of respiratory hazards may be found in the workplace:

- Smoke and fumes are produced when solids are heated during burning, smelting, welding and other operations.
- Hazardous sprays occur when liquids containing substances like paint, acids or pesticides are sprayed or mixed. When liquids evaporate or are distilled, or when chemical actions occur, hazardous mists may form.
- Insufficient oxygen in enclosed areas can also be a threat. Oxygen can be depleted when a substance burns, when oxygen is intentionally replaced by another gas, or when oxygen is displaced by a heavier gas or vapor.
- Dusts are especially hazardous when they contain asbestos, silica, toxic chemicals, lead, vegetable fibers and other dangerous particles.
- Gases and vapors may contaminate the air, including hydrogen chloride, ammonia and vinyl chloride. Some processes using high temperatures, such as welding, can change harmless elements into toxic gases; nitrogen and oxygen, for example, may become nitrogen oxides.

Three basic respirators are available for protection against breathing hazards--air-purifying, supplied-air and self-contained breathing apparatuses (SCBA). The first type cleans the contaminated air before it's breathed; the particle-filtering respirator traps the particles in dusts, mists, sprays and fumes, while the vapor- and gas-removing model absorbs or chemically removes gases and vapors.

These respirators are one measure of protection against air contaminants.

If we have determined that a contaminant vapor, fume or dust is in the air we have to breathe to do a specific job, then we may have to rely on the respirator. During emergencies like accidental spills we may have to rely on respirators alone.

Most vapors, fumes or dusts are harmful when the amount in the air is high. The hoods and dust collectors remove the contaminants from the air.

The amount left in the air around us is called the concentration. We use a respirator to eliminate or reduce the concentration in that air we breathe. We choose the respirator according to the type of contaminants it removes and by how much it will lower the concentration.

NOTE TO DISCUSSION LEADER:

Review the procedures at your plant for the election, distribution, fit testing and maintenance of the most used respirator at your plant.

Respirators do have limitations, however. Of the particle-filtering type, all of the models, including the replaceable filter and reusable filter, can become clogged, making breathing difficult. If you notice this problem, have the filter changed. Particle-filtering respirators are not effective against vapors and gases. In addition, neither the particle-filtering nor vapor- and gas-removing respirator protects against oxygen deficiency. Air-purifying respirators should also not be used in oxygen-deficient atmospheres.

In the vapor- and gas-removing respirators, chemical cartridges are not effective against dangerous mists, dusts or fumes.

Supplied-air or positive-air-purifying respirators provide breathable air from an outside source. Hose masks supply noncompressed air through a large hose by a motor. Air-line devices move compressed air through a pressurized line. Air flows into the facepiece continuously to prevent contaminated air from leaking in.

Supplied-air respirators must not be used in life-threatening situations, unless they have auxiliary - self-contained air supplies, because the air hose could be cut or damaged.

A self-contained breathing apparatus supplies air from a source carried by the user, such as a scuba tank, for example. SCBAs, except combination devices, cannot be used for long periods because of the limited air supply.

For every type of respirator that we use, choice and use is extremely important. It's also important that you be fit tested for the type of respirator you use. If you have any questions concerning the use of any respirator, please get in touch with me.

We can have the best protection from these respirators if we use them when we need to and if we use them correctly.