

## DIFFERENT TYPES OF RESPIRATORY HAZARDS

Clean air is colorless and odorless, however so are many respiratory hazards. For this reason, it is important to understand the characteristics of each hazard to better protect yourself.

### Dust – Fumes - Mists

Dust, fumes and mists can irritate your nose, throat and upper respiratory system. Depending on their size and type, some particles can pass through to your lungs. This can damage the lung tissue as well as cause more serious health hazards.

### Gases - Vapors

Gases and vapors can pass immediately to your lungs and can be absorbed into your bloodstream where they can damage your brain and internal organs.

### Oxygen Deficiency - Temperature Extremes

Oxygen deficiency can lead to dizziness, increased heart rate and headache. Damage to your brain can be caused by a lack of oxygen and, after a few minutes, cause your heart to stop. Damage to tissue in your nose, mouth, throat, and lungs can be caused by very hot or cold air and can also interfere with normal breathing.

## NATURAL PROTECTION

Your body's respiratory system is designed to carry air and oxygen into your lungs and carry waste products out. These defenses are:

**Nose Hairs – Cilia  
Mucus Blanket - Cough Reflex**

## ATMOSPHERIC CONTAMINANTS TO BE PROTECTED AGAINST AND THE COLOR ASSIGNED TO EACH

- White – Acid Gases
- Black – Organic Vapors
- Green – Ammonia Gas
- Blue – Carbon Monoxide Gas
- Yellow – Acid Gases and Organic Vapors
- Brown – Acid Gases, Ammonia and Organic Vapors
- Red – Acid Gases, Ammonia, Carbon Monoxide, and Organic Vapors
- Olive – Other vapors and gases not listed above
- Magenta – Radioactive Material (except tritium and noble gases) and Asbestos
- Orange – Dust, Fumes and Mists (other than radioactive materials)
- A purple stripe shall be used to identify radioactive materials in combination with any other vapor or gas.
- An orange stripe shall be used to identify dusts, fumes and mists in combinations with any other vapor or gas.
- Where labels only are colored to conform with this table, the canister or cartridge body shall be gray or a metal canister or cartridge body may be left in its natural metallic color.
- The user shall refer to the wording of the label to determine the type of degree of protection the canister or cartridge will afford.



## RESPIRATORY PROTECTION



Personal protection is essential to help prevent you from exposure to hazards, which are often invisible and can cause health problems. Kent State University's Respiratory Protection Program is designed to provide for the safety of employees who are exposed to respiratory hazards in accordance with OSHA Standard 29 CFR 1910.134. For more information, contact the Manager of Environmental Health and Safety, (330) 672-1950, [dbaden@kent.edu](mailto:dbaden@kent.edu), (330) 672-9565 or [dehead@kent.edu](mailto:dehead@kent.edu)

**Environmental Health  
and Safety**

## TYPES OF RESPIRATORS

All respirators used at Kent State University are selected in accordance with the OSHA Selection Guide and must be NIOSH approved.

### Maintenance-Free Half Mask

Maintenance-free half mask respirators are the most common form of respiratory protection. These respirators are air-filtering devices made of fibers that trap and hold hazardous particles, or sorbents that trap and hold gases or vapors as you breathe in through the filter. Some maintenance-free respirators filter out hazardous dusts, fumes, and mists. Others offer protection against gases or vapors. There are also respirators that offer protection against a combination of hazards in your work area.

### Reusable Half Mask Gas & Vapor Respirators

Reusable half mask respirators are air-purifying devices that cover your nose, mouth and chin. Gas and vapor respirators have replaceable cartridges that capture gases and vapors from the air. When you inhale, the sorbents in the cartridge capture gases and vapors before they enter your airway. For your respirator to work properly, it is important to use the specific cartridge designed for the hazard and for your respirator. Half mask respirators can lower the specific gas or vapor hazards in your work area to safe levels. Before using your respirator, be sure to read and understand all labels and instructions. Reusable half mask respirators do not protect against oxygen deficiency, temperature extremes, or hazards not listed on the label.

## Full-Face Respirators

Full-face respirators work like half mask, with chemicals in the cartridges (or, on some models, a canister) to absorb gases and vapors. The face piece helps protect your eyes and face from eye irritation hazards, splashes, and flying particles at your worksite. A pre-filter may be added to remove dusts, fumes or mists from the air. Full-face respirators lower the specific gases, vapors or particle hazards and at the specific concentrations listed on the cartridge or canister label to safe levels inside the respirator. Full-face respirators do not protect against oxygen deficiency, temperature extremes or hazards not listed on the cartridge or canister label.

### Supplied-Air Respirators

Certain types of supplied-air respirators protect you from oxygen deficiency and temperature extremes. They can also protect against very high concentrations of dusts, fumes, mists, gases, and vapors.

Air-line respirators supply you with clean air from a hose attached to an air breathing pump, compressor or tank of compressed air. Air will either flow into your respirator as you inhale, or flow continuously into the respirator's hood or helmet. Controls allow you to cool or heat the air. You may be required to carry an emergency air tank, in case of respirator failure. Self-contained respirators allow you greater mobility since you carry your clean air in a tank on your back. The clean air flows through a regulator to your mask. Your air supply may be rated for 30 to 60 minutes, but how long it lasts depends on your size, condition and acidity. An alarm warns you when your supply is low.

## FITTING YOUR RESPIRATOR

Only a properly fitted respirator can help protect you, so follow the manufacturer's fitting instructions carefully. If more than one respirator size is available, find the one with the best fit. The shape of your face, glasses, presence of facial hair, missing dentures, and certain skin conditions can all prevent a proper fit. Fit tests are required before using any respirator and on a periodic basis. Doing positive or negative fit checks help you detect any leaks before entering a hazardous area.

## RESPIRATOR CARE

Maintenance-free respirators are designed to be thrown away when they are used to capacity, however their effectiveness can depend on the hazard concentration. If your respirator becomes clogged and breathing becomes difficult, throw it away and wear a new one.

Inspect all parts of your respirator regularly for damage and to ensure they are working properly before entering a contaminated area. Store it in an air-tight container in a clean, cool, dry place. Since cartridges become less effective with use, replace them when you detect contaminant break-through or according to policy. Notify your supervisor if your respirator needs to be repaired. Because supplied-air respirators may be used in highly hazardous areas, be sure to check that all parts of your system (respirator or hood, hose, regulator, and tank or compressor) are working properly before entering a contaminated area. Follow policy's and procedures on maintenance and store in a clean, dry place.