Uses of Gas Masks

Safety of old gas masks

Gas masks have a limited useful lifespan that is related to the absorbent capacity of the filter. Once the filter has been saturated with hazardous chemicals, it ceases to provide protection and the user may be injured. Most gas masks use sealing caps over the air intake to prevent the filter from degrading before use, but the protective abilities also degrade as the filter ages or if it is exposed to moisture and heat. Very old unused gas mask filters from World War II may not be effective at all in protecting the user, and can potentially cause harm to the user due to long-term changes in the filter chemical composition.

Modern gas masks are quite safe and do not use asbestos, but it is still important to be careful when using a modern gas mask. Typically masks using 40mm connections are more recent design. Rubber also degrades with time so new in box "Modern type" masks can be cracked and leak.

When people work in environments with insufficient oxygen or where harmful dusts, fogs, smokes, Mists, fumes, gases, vapors, or sprays are present, they need respirators. These health hazards may cause cancer, Lung impairment, other diseases, or death. Where toxic substances are present in the workplace and engineering controls are inadequate to reduce or Eliminate them, respirators are necessary. Some atmosphere supplying respirators can also be used to protect against Oxygen-deficient atmospheres.

Increased breathing rates, accelerated heartbeat, and impaired thinking or coordination Occur more quickly in an oxygen-deficient or other hazardous atmosphere. Even a momentary loss of co-ordination can be devastating if it occurs while a worker is performing a potentially dangerous activity such as climbing a ladder.

History of Gas masks

A first gas mask was introduced by Alexander von Humboldt in 1799 to be used by miners, when he worked as a mining engineer in Prussia . In the early days of World War I, the Canadian Army made field expedient gas masks to protect themselves from the deadly chlorine gas used by the Germans by urinating on rags and holding them to their faces. *Safety Hood and Smoke Protector* invented by African American inventor, Garrett A. Morgan in 1912, and patented in 1914. It was a simple device, consisting of a cotton hood with two hoses which hung down to the floor, allowing the wearer to breathe the safer air found there. Dr. Cluny MacPherson of The Royal Newfoundland Regiment, while serving in Gallipoli in 1915, where he acted as an advisor on poisonous gas, used a helmet taken from a captured prisoner to fashion a canvas hood with transparent eyepieces that was treated with chlorine-absorbing chemicals

Military Gas Masks

A gas mask is also called as a respirator covers the face to protect the body from airborne toxic pollutants. The mask forms a sealed cover over the nose and mouth, but may also cover the eyes and other vulnerable soft tissues of the face. The gas masks were initially invented to protect our country men working in military against poisonous gases during wars. In addition to military use (see chemical warfare), gas masks are widely used in mining, industrial chemistry, and by firemen and rescue squads. The wide used military gas mask is Draeger military gas mask (M65A)

A gas mask in its simplest design consists essentially of a face cover with two eyepieces and a mouthpiece that communicates with a canister containing a filter. The filter absorbs noxious gases as they pass through the canister to the mouth and the face cover also has a one-way outlet valve for exhaled air. Modern gas masks like MESTEL SGE 400 series has additional features like a drinking device to help the wearer to hydrate himself during the exhausting moments of waging wars.
How gas masks work?

Any respirator that you are likely to use will have a filter that purifies the air you breathe. How does the filter remove poisonous chemicals and deadly bacteria from the air?

Any air filter can use one (or more) of three different techniques to purify air:

- Particle filtration
- Chemical absorption or adsorption
- Chemical reaction to neutralize a chemical

Note : A typical disposable filter cartridge for a respirator: When you inhale, air flows through the inlet on the left, through a particulate filter, through an activated charcoal filter, through another particulate filter (to trap charcoal dust) and through the outlet on the right into the mask. When the particulate filter clogs or the activated charcoal becomes saturated, you must replace the cartridge.

Particle filtration is the simplest of the three. If you have ever held a cloth or handkerchief over your mouth to keep dust out of your lungs, you have created an improvised particulate filter. In a gas mask designed to guard against a biological threat a very fine particulate filter is useful. An anthrax bacteria or spore might have a minimum size of one micron. Most biological particulate filters remove particle sizes as small as 0.3 microns. Any particulate filter eventually clogs, so you have to replace it as breathing becomes difficult. A chemical threat needs a different approach, because chemicals come as mists or vapors that are largely immune to particulate filtration. The most common approach with any organic chemical (whether it be paint fumes or a nerve toxin like Sarin) is activated charcoal.

Charcoal is carbon. Activated charcoal is charcoal that has been treated with oxygen to open up millions of tiny pores between the carbon atoms. According to Encyclopedia Britannica: The use of special manufacturing techniques results in highly porous charcoals that have surface areas of 300-2,000 square meters per gram. These so-called active, or activated, charcoals are widely used to adsorb odorous or colored substances from gases or liquids.

The word adsorb is important here. When a material adsorbs something, it attaches to it by chemical attraction. The huge surface area of activated charcoal gives it countless bonding sites. When certain chemicals pass next to the carbon surface, they attach to the surface and are trapped. Activated charcoal is good at trapping carbon-based impurities ("organic" chemicals), as well as things like chlorine. Many other chemicals are not attracted to carbon at all -- sodium and nitrates, to name a couple -- so they pass right through. This means that an activated-charcoal filter will remove certain impurities while ignoring others. It also means that, once all of the bonding sites are filled, an activated charcoal filter stops working. At that point you must replace the filter.