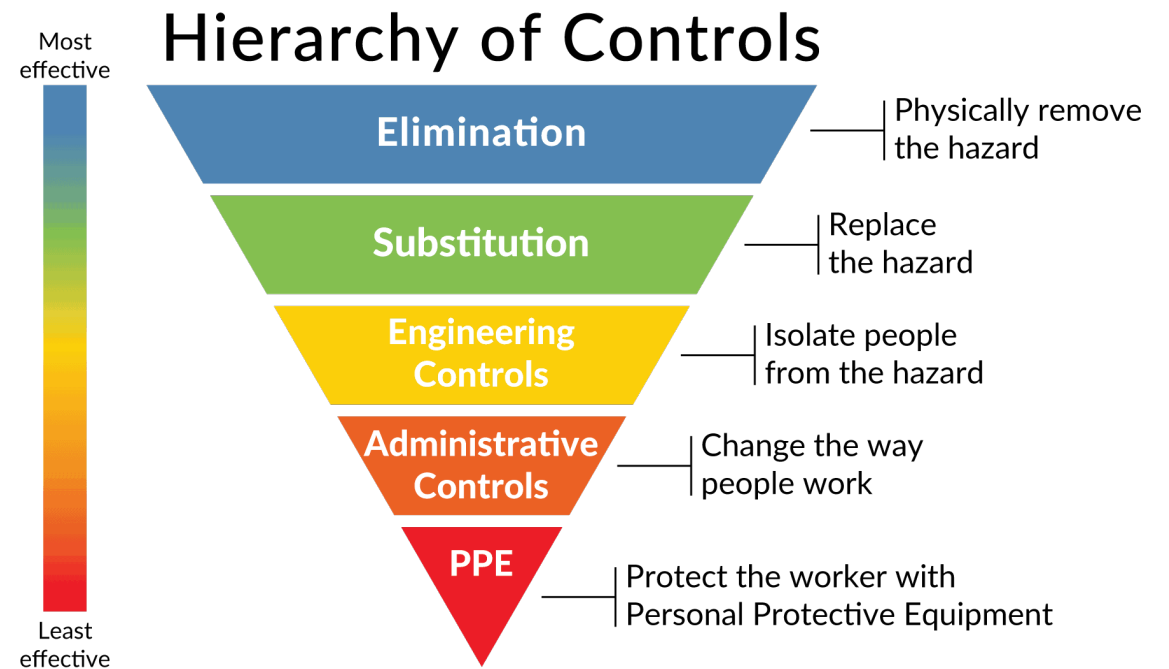




RESPIRATORY PROTECTION GENERAL OVERVIEW

Respirators are NOT the first line of defense

- ▶ Engineering controls, administrative measures and good work practices are the first line of defense. It is best to design the work so that hazardous contaminants don't get to the worker in the first place, or if they do, to minimize the amount.
- ▶ Respirators are used as necessary additional protection to workers' respiratory systems.
- ▶ Even if needed for only a short time, use the respirator. With some materials it does not take long to damage the lungs.



Types of Respirators

There are four categories of respirators:

- ▶ Air-purifying respirators (APR)
- ▶ Supplied-air respirators (SAR)
- ▶ Self-contained breathing apparatus (SCBA)
- ▶ Combination respirators

What you are protecting against when you wear a respirator

Respiratory Hazards

There are three main categories of respiratory hazard:

- ▶ Oxygen Deficiency
- ▶ Toxic Contaminants
- ▶ Biological Agents

Oxygen Deficiency

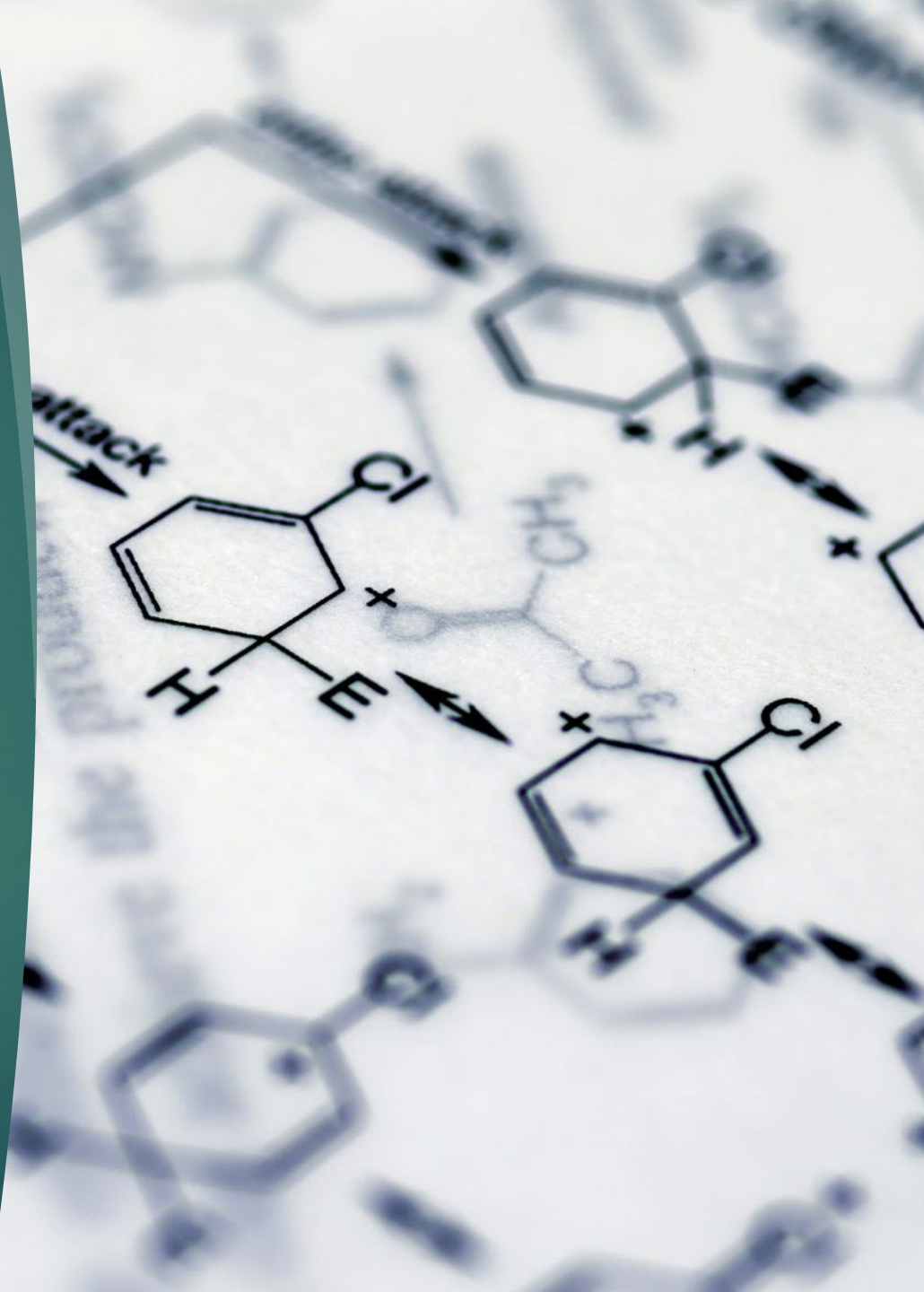
- ▶ Oxygen Deficiency occurs where other gases have displaced the oxygen (such as in low spots in confined spaces) or consumed it (fires).
- ▶ If used in sufficient quantity, certain firefighting materials such as carbon dioxide from fire extinguishers can displace oxygen. Exit a fire area immediately.



Toxic Contaminants

There are three categories of toxic contaminants:

- ▶ Gases and Vapors (carbon monoxide, gasoline)
- ▶ Particulates (asbestos, silica)
- ▶ Combinations of gases/vapors and particulates



Biological Agents

- ▶ • Respirators are also used to protect against inhalation of certain contagious biological agents such as bacteria and viruses. N95 respirators have been used to protect medical personnel from biological agents such as tuberculosis (TB) and SARS.

Short OSHA VIDEO

- ▶ <https://www.youtube.com/watch?v=p1yYmABesZE>

Respiratory protection program



THE EMPLOYER
MAINTAINS A WRITTEN
RESPIRATORY
PROTECTION
PROGRAM (RPP)
AVAILABLE TO ALL
EMPLOYEES FOR
REVIEW



EMPLOYER'S
ENVIRONMENTAL,
HEALTH, AND SAFETY
DIRECTOR IS THE
PROGRAM ADMINISTRATOR



EACH EMPLOYEE MUST
UNDERGO A MEDICAL
EVALUATION BEFORE
USING A RESPIRATOR



EACH SPECIFIC
RESPIRATOR MUST BE
FIT-TESTED TO THE
EMPLOYEE BEFORE USE



ALL EMPLOYEES MUST
BE TRAINED ON THE
PROPER USE AND
REQUIREMENTS



ALL RESPIRATORS,
MEDICAL
EVALUATIONS, AND
CLEANING SUPPLIES
ARE PROVIDED BY
EMPLOYER

Respirator fit-test

- ▶ Fit-testing is an OSHA requirement
- ▶ Used to determine proper respirator size to ensure a good seal
- ▶ Even the best designed and manufactured respirator will not protect the wearer if there is an improper match between facepiece and wearer or improper wearing practices by the user



Respirator fit-test



- ▶ Performed by the RP Program Administrator, a doctor, or a qualified person appointed by the employer:
 - Before initial use of a respirator
 - At least annually
 - Whenever a different respirator is used
 - Whenever there is a change in the employee's physical condition (e.g. weight gain, facial scarring) could affect the fit of a respirator
- ▶ May be qualitative (e.g. using irritant smoke (hydrogen chloride) or quantitative (using a computerized system)

Respirator seal check

When: Prior to each use

Why: For a respirator to work properly, it must seal tightly to the face. The seal keeps out the airborne contaminants.

Respirator Inspection

When:

- ▶ Before each use
- ▶ During cleaning

Respirator inspections should be formally documented routinely, typically at least once per month, or if less frequently, before each use

Respirator Inspection Cont.

- Check the facepiece to make sure it is in good condition: without any holes or tears.
- Check the cartridge connectors to make sure they are not cracked and are fully inserted into the mask.



Respirator Inspection Cont.

- ▶ Check all the valves to be sure they are present and in good condition. They should be lying flat, without any distortion, tears, or holes.



Respirator Inspection Cont.

- ▶ Check the head straps to be sure they have not lost their elasticity. Make sure the straps are not twisted.



Respirator Cleaning

- Respirators must be maintained in sanitary and operational condition
- Must be cleaned, disinfected, and dried after each use and between users
- Generally, a mild detergent and a soft brush (not wire) are used for cleaning



Respirator Storage

- ▶ Store to protect from damage, contamination, sunlight, extreme temperatures, moisture, etc.
- ▶ When storing a respirator:
 - Make sure rubber parts are not twisted or bent
 - Seal the respirator in a storage container or zip lock bag
 - Make sure it is completely dry

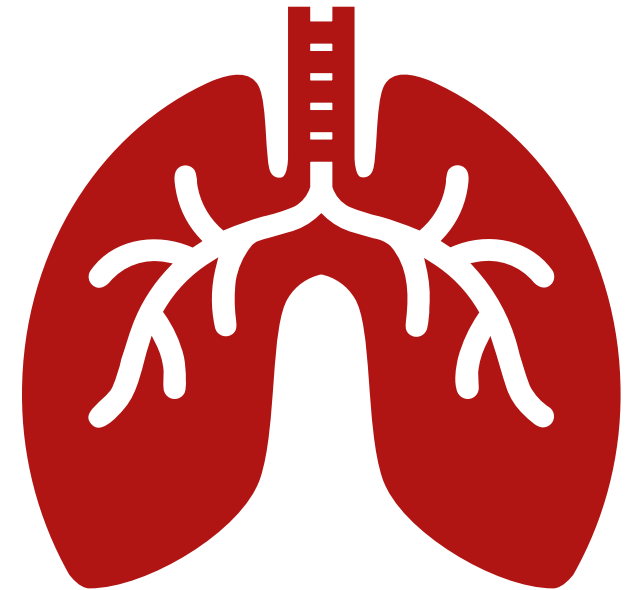


Respirator Limitations

- ▶ Examples of medical signs and symptoms to watch out for that can indicate respirator failure or negative response (thus requiring the employee to leave the work area where the respiratory hazard is present):
 - ▶ Dizziness
 - ▶ Headache
 - ▶ Breathing becomes difficult, shortness of breath, coughing, chest pain, wheezing
 - ▶ Odor of contaminant(s)
 - ▶ Taste of contaminant(s)

Exposure to Particulates

- ▶ Acute exposure-
- ▶ Chronic Exposure-



Asbestos Inhalation Exposure

Asbestosis develops due to overexposure to asbestos for over a long period (chronic exposure). Symptoms may develop which include:

- ▶ Shortness of breath
- ▶ Persistent dry cough
- ▶ Fatigue
- ▶ Wheezing
- ▶ Pain or tightness in the chest
- ▶ Weight loss due to reduced appetite
- ▶ Clubbed fingers in severe cases

Silica Inhalation Exposure

When silica dust is inhaled over time, the tiny particles cause scarring and inflammation. This leads to the formation of lung nodules, which may be a sign of lung cancer. The scarring can become so severe it stiffens the lungs, making it difficult to breathe, leading to pulmonary fibrosis or COPD.

Silicosis is a long-term lung disease caused by inhaling large amounts of crystalline silica dust, usually over many years.

Questions?

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FOR ANY ADDITIONAL QUESTIONS