

**OSHA's  
Respiratory Protection Standard  
29 CFR 1910.134**



# Training and Information

- ✎ Employees who are required to use respirators must be trained such that they can demonstrate knowledge of at least:
  - 🕒 why the respirator is necessary and how improper fit, use, or maintenance can compromise its protective effect
  - 🕒 limitations and capabilities of the respirator
  - 🕒 effective use in emergency situations
  - 🕒 how to inspect, put on and remove, use and check the seals
  - 🕒 maintenance and storage
  - 🕒 recognition of medical signs and symptoms that may limit or prevent effective use
  - 🕒 general requirements of this standard

# Organization of Standard

- (a) Permissible practice
- (b) Definitions
- (c) Respirator program
- (d) Selection of respirators
- (e) Medical evaluation
- (f) Fit testing
- (g) Use of respirators
- (h) Maintenance and care
- (i) Breathing air quality and use
- (j) Identification of filters, cartridges, and canisters
- (k) Training and information
- (l) Program evaluation
- (m) Recordkeeping
- (n) Dates
- (o) Appendices (mandatory)
  - A: Fit Testing Procedures
  - B-1: User Seal Checks
  - B-2: Cleaning Procedures
  - C: Medical Questionnaire
  - D: Information for Employees Wearing Respirators When Not Required Under the Standard

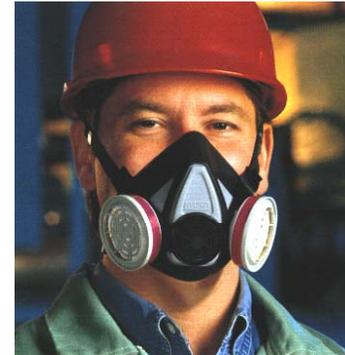
# Permissible Practice

- ✎ The primary means to control occupational diseases caused by breathing contaminated air is through the use of **feasible engineering controls**, such as enclosures, confinement of operations, ventilation, or substitution of less toxic materials
- ✎ When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to this standard
- ✎ Employer shall provide respirators, when necessary, which are applicable and suitable for the purpose intended
- ✎ Employer shall be responsible for establishment and maintenance of a respirator program which includes the requirements of paragraph (c), *Respiratory protection program*

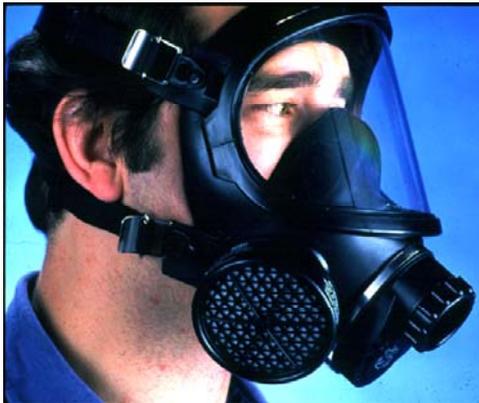
# Tight -Fitting Coverings



**Quarter Mask**



**Half Mask**



**Full Facepiece**



**Mouthpiece/Nose Clamp**  
(no fit test required)

# Loose-Fitting Coverings



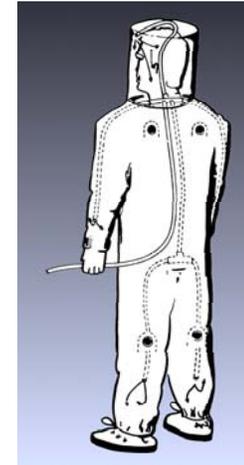
**Hood**



**Helmet**



**Loose-Fitting  
Facepiece**



**Full Body Suit**

# Filter

A component used in respirators to remove solid or liquid aerosols from the inspired air. Also called air purifying element.



# Canister or Cartridge

A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.



# Negative Pressure Respirator

A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

# Filtering Facepiece (Dust Mask)

A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.



# Air-Purifying Respirator (APR)

A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.



# Powered Air-Purifying Respirator (PAPR)

An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.



# Supplied Air Respirator (SAR)

An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user. Also called airline respirator.



# Self-Contained Breathing Apparatus (SCBA)

An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.



# Escape-Only Respirator

A respirator intended to be used only for emergency exit.



# Respirator Program

- ✎ Must develop a **written program** with **worksite-specific procedures** when respirators are necessary or required by the employer
- ✎ Must update program as necessary to reflect changes in workplace conditions that affect respirator use
- ✎ Must designate a **program administrator** who is qualified by appropriate training or experience to administer or oversee the program and conduct the required program evaluations
- ✎ Must provide respirators, training, and medical evaluations at no cost to the employee

Note: OSHA has prepared a *Small Entity Compliance Guide* that contains criteria for selection of a program administrator and a sample program.

# Respirator Program (cont'd)

## Where Respirator Use is Not Required

- ✎ Employer may provide respirators at employee's request or permit employees to use their own respirators, if employer determines that such use in itself will not create a hazard
- ✎ If voluntary use is permissible, employer must provide users with the information contained in Appendix D
- ✎ Must establish and implement those elements of a written program necessary to ensure that employee is medically able to use the respirator and that it is cleaned, stored, and maintained so it does not present a health hazard to the user

Exception: Employers are not required to include in a written program employees whose only use of respirators involves voluntary use of filtering facepieces (dust masks).

# Respirator Program Elements

1. Selection
2. Medical evaluation
3. Fit testing
4. Use
5. Maintenance and care
6. Breathing air quality and use
7. Training
8. Program evaluation

# UT PROGRAM RESPONSIBILITIES

## Central Administration

1. Endorsement of the written plan.
2. Delegation of sufficient authority to the respective department heads involved, to effectively implement the plan.

Appropriate the necessary resources required to effectively implement the plan.

## Department Heads of Employees Who Are Covered by the Respirator Protection Plan

1. Assure that the authorized individual(s) receive all necessary training to enable them to safely wear a respirator.
2. Assure that all necessary equipment and respirators to effectively protect the health and safety of the workers are provided and maintained in a good state of repair.
3. Enforce the protection principles of the written control plan.

# Department of Environmental Health and Safety

1. Develop a written control plan and perform a periodic review to determine if revisions are necessary.
2. Provide guidance and technical assistance to departments in the design and selection of appropriate engineering and administrative controls which will reduce the need for the use of respirators.
3. Provide guidance and technical assistance to departments in the selection of the most appropriate types and quantities of personal protective equipment.
4. Provide consultation to the departments to assist them in fulfilling their training needs.
5. Serve as a campus liaison to the System-Wide Safety Office.
6. Promote campus compliance with the OSHA Respiratory Protection Standard.
7. Provide a means by which employees can voice suggestions, complaints and concerns regarding the campus Respirator Protection Program.
8. Identify, log, evaluate and make recommendations regarding those operations and locations requiring respiratory protection.

# Employee

1. Participate willingly in all training programs offered by the University and learn as much as possible about the Respiratory Protection Program.

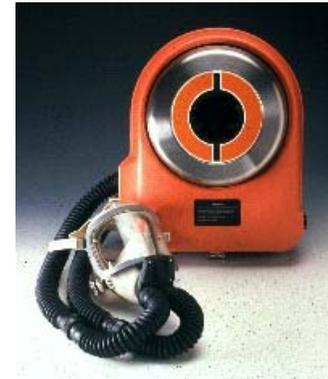
2. Abide by all rules and apply to the fullest extent possible the safety and health precautions specified by the University.

3. Report to the University administration, through their immediate supervisor, any problems that are observed which could compromise health and safety.

Maintain his or her respirator in a safe and sanitary condition.

# Selection of Respirators

Employer must select and provide an appropriate respirator based on the respiratory hazards to which the worker is exposed and workplace and user factors that affect respirator performance and reliability.



# Selection of Respirators (cont'd)

- ✎ Select a **NIOSH-certified respirator** that shall be used in compliance with the conditions of its certification
- ✎ Identify and evaluate the respiratory hazards in the workplace, including a reasonable estimate of employee exposures and identification of the contaminant's chemical state and physical form
- ✎ Where exposure cannot be identified or reasonably estimated, the atmosphere shall be considered Immediately Dangerous to Life or Health (IDLH)
- ✎ Select respirators from a sufficient number of models and sizes so that the respirator is acceptable to, and correctly fits, the user

# **Immediately Dangerous to Life or Health (IDLH)**

An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

# Oxygen Deficient Atmosphere

-  An atmosphere with an oxygen content below 19.5% by volume
-  All oxygen deficient atmospheres are considered IDLH

# Respirators for IDLH Atmospheres



**Full Facepiece Pressure Demand SCBA certified by NIOSH for a minimum service life of 30 minutes**



**Combination Full Facepiece Pressure Demand SAR with Auxiliary Self-Contained Air Supply**

# End-of-Service-Life Indicator (ESLI)

A system that warns the user of the approach of the end of adequate respiratory protection; e.g., the sorbent is approaching saturation or is no longer effective.



# Respirators for Atmospheres Not IDLH Gases and Vapors

- ✎ Atmosphere-supplying respirator, or
- ✎ Air-purifying respirator, provided that:
  - 👤 respirator is equipped with an **end-of-service-life indicator (ESLI)** certified by NIOSH for the contaminant; or
  - 👤 if there is no ESLI appropriate for conditions in the workplace, employer implements a **change schedule** for canisters and cartridges based on objective information or data that will ensure that they are changed before the end of their service life
    - 📄 employer must describe the information and data relied upon and basis for the change schedule and reliance on the data

# NIOSH Respirator Certification Requirements

## 42 CFR Part 84

- ✎ On July 10, 1995, 30 CFR 11 (“Part 11”) was replaced by 42 CFR 84 (“Part 84”)
- ✎ Only certifications of nonpowered, air-purifying, particulate-filter respirators are affected by this change
- ✎ Remaining portions of Part 11 were incorporated into Part 84 without change

# Classes of Nonpowered Air-Purifying Particulate Filters

Nine classes: three levels of filter efficiency, each with three categories of resistance to filter efficiency degradation due to the presence of oil aerosols

<u>N</u>	<u>R</u>	<u>P</u>
100	100	100
99	99	99
95	95	95

**N for *Not* resistant to oil**

**R for *Resistant* to oil**

**P for oil *Proof***

# Selection and Use

- ✎ If no oil particles are present, use any series (N, R, or P)
- ✎ If oil particles are present, use **only** R or P series
- ✎ Follow the respirator filter manufacturer's service-time-limit recommendations

# High Efficiency Filters

Filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter.  
(HEPA filter per NIOSH 30 CFR 11)



Equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.



# Respirators for Atmospheres Not IDLH (cont'd)

## Particulates

-  Atmosphere-supplying respirator; or
-  Air-purifying respirator equipped with HEPA filters certified by NIOSH under 30 CFR Part 11 or with filters certified for particulates under 42 CFR Part 84; or
-  Air-purifying respirator equipped with any filter certified for particulates by NIOSH for contaminants consisting primarily of particles with mass median aerodynamic diameters of at least 2 micrometers

# Medical Evaluation Procedures

- ✎ Must provide a medical evaluation to determine employee's ability to use a respirator, **before fit testing and use**
- ✎ Must identify a PLHCP to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information
- ✎ Medical evaluation must obtain the information requested by the questionnaire in Sections 1 and 2, Part A of App. C
- ✎ Follow-up medical examination is required for an employee who gives a positive response to any question among questions 1 through 8 in Section 2, Part A of App. C or whose initial medical examination demonstrates the need for a follow-up medical examination

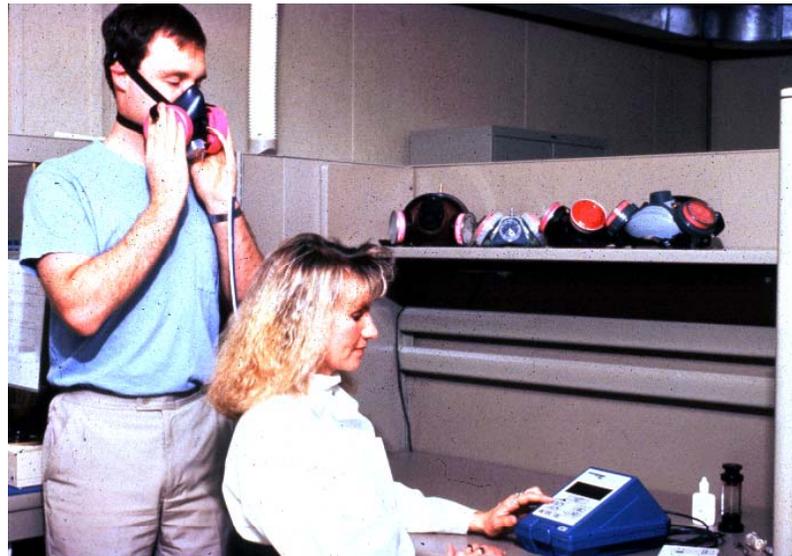
# Medical Evaluation

## Additional Medical Evaluations

- ✎ Annual review of medical status is not required
- ✎ At a minimum, employer must provide additional medical evaluations if:
  - 👤 Employee reports medical signs or symptoms related to the ability to use a respirator
  - 👤 PLHCP, supervisor, or program administrator informs the employer that an employee needs to be reevaluated
  - 👤 Information from the respirator program, including observations made during fit testing and program evaluation, indicates a need
  - 👤 Change occurs in workplace conditions that may substantially increase the physiological burden on an employee

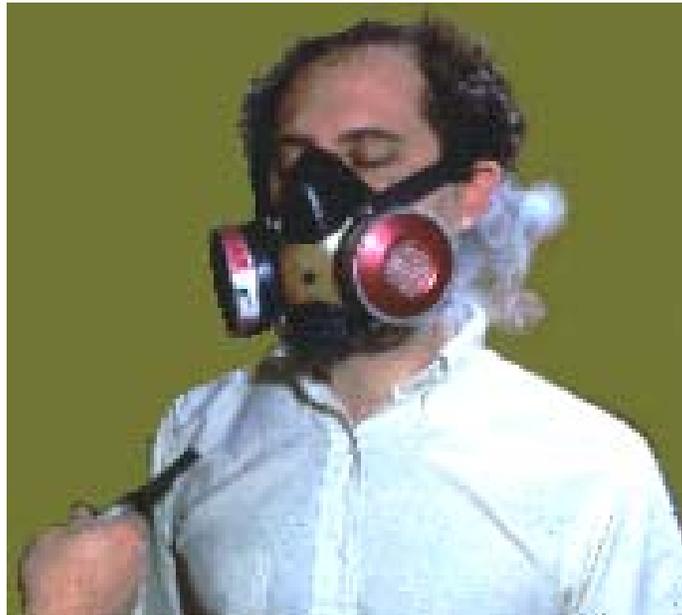
# Fit Testing

Before an employee uses any respirator with a **negative or positive pressure tight-fitting facepiece**, the employee must be fit tested with the same make, model, style, and size of respirator that will be used.



# Qualitative Fit Test (QLFT)

A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.



# Fit Testing (cont'd)

- ✎ Employees using tight-fitting facepiece respirators must pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT):
  - ⚠ prior to initial use,
  - ⚠ whenever a different respirator facepiece (size, style, model or make) is used, and
  - ⚠ at least annually thereafter
- ✎ Must conduct an additional fit test whenever the employee reports, or the employer or PLHCP makes visual observations of, changes in the employee's physical condition (e.g., facial scarring, dental changes, cosmetic surgery, or obvious change in body weight) that could affect respirator fit

# Fit Testing (cont'd)

 The fit test must be administered using an OSHA-accepted QLFT or QNFT protocol contained in Appendix A

## QLFT Protocols:

 Isoamyl acetate

 Saccharin

 Bitrex

 Irritant smoke

## QNFT Protocols:

 Generated Aerosol (corn oil, salt, DEHP)

 Condensation Nuclei Counter (PortaCount)

 Controlled Negative Pressure (Dynatech FitTester 3000)

 Controlled Negative Pressure (CNP) REDON

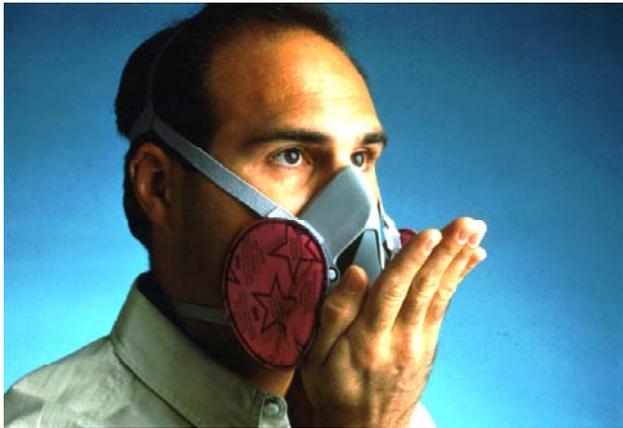
# Use of Respirators

## Facepiece Seal Protection

- ✎ Respirators with tight-fitting facepieces must not be worn by employees who have facial hair or any condition that interferes with the face-to-facepiece seal or valve function
- ✎ Corrective glasses or goggles or other PPE must be worn in a manner that does not interfere with the face-to-facepiece seal
- ✎ Employees wearing tight-fitting respirators must perform a user seal check **each time they put on the respirator** using the procedures in Appendix B-1 or equally effective manufacturer's procedures

# User Seal Check

An action conducted by the respirator user to determine if the respirator is properly seated to the face.



**Positive Pressure Check**



**Negative Pressure Check**

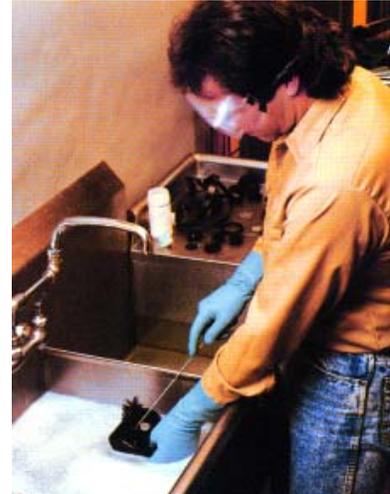
# Use of Respirators

## Continuing Respirator Effectiveness

-  Maintain appropriate surveillance of work area conditions and degree of exposure or stress; reevaluate the respirator's effectiveness when it may be affected by changes in these
-  Employees must leave the respirator use area:
  -  to wash their faces and respirator facepieces as necessary
  -  if they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece
  -  to replace the respirator or filter, cartridge, or canister
-  If employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece, employer must replace or repair the respirator before allowing employee to return to the work area

# Maintenance and Care

- ✎ Provide each user with a respirator that is clean, sanitary and in good working order
- ✎ Use procedures in Appendix B-2 or equivalent manufacturer's recommendations
- ✎ Clean and disinfect at the following intervals:
  - 🧑 as often as necessary when issued for exclusive use
  - 🧑 before being worn by different individuals when issued to more than one employee
  - 🧑 after each use for emergency respirators and those used in fit testing and training



# Identification of Filters, Cartridges, and Canisters

- ✎ All filters, cartridges and canisters used in the workplace must be labeled and color coded with the NIOSH approval label
- ✎ The label must not be removed and must remain legible
- ✎ “TC number” is no longer on cartridges or filters (Part 84)
- ✎ Marked with “NIOSH”, manufacturer’s name and part number, and an abbreviation to indicate cartridge or filter type (e.g., N95, P100, etc.)
- ✎ Matrix approval label supplied, usually as insert in box



# Training and Information

Employers must provide effective training to employees who are required to use respirators.



# Training and Information

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  - 🕸 why the respirator is necessary and how improper fit, use, or maintenance can compromise its protective effect
  - 🕸 limitations and capabilities of the respirator
  - 🕸 effective use in emergency situations
  - 🕸 how to inspect, put on and remove, use and check the seals
  - 🕸 maintenance and storage
  - 🕸 recognition of medical signs and symptoms that may limit or prevent effective use
  - 🕸 general requirements of this standard