



**Department of Environmental Health & Safety**

# Respiratory Protection Program

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## **RESPIRATORY PROTECTION PROGRAM**

### **1.0 SCOPE**

- 1.1 OHIO University (OHIO) intends to provide a safe and healthful workplace for its employees. It is also the intent of the University to comply with the requirements of the Ohio Public Employee Risk Reduction programs and the OSHA Respirator Standard (Jan. 1998) which requires a written respiratory protection program for personnel using respirators. This OHIO Respiratory Protection Program has been established to accomplish these goals. This program establishes the specific guidance for protection of OHIO personnel from inhalation exposure hazards associated with specific work performed at OHIO facilities, branch campuses, and field stations. This program is designed to cover routine, non-routine, and emergency activities conducted by OHIO personnel.
- 1.2 The OHIO Respirator Protection Program is coordinated by the OHIO Department of Environmental Health & Safety (EHS) Respiratory Protection Program Administrator.

### **2.0 PURPOSE**

- 2.1 This program is meant to insure the health and safety of all employees and applies to all OHIO personnel required or who voluntarily utilize respiratory equipment in the course of their work at OHIO. All forms of respiratory equipment shall comply with this program.
- 2.2 Controlling occupational diseases caused by breathing air contaminated with potentially harmful dusts, fumes, mists, sprays, fogs, smokes, vapors, aerosols, gases, radionuclides, or biological agents is the primary objective of this program.
- 2.3 This program is designed to ensure: (a) the protection of personnel by using engineering and administrative controls, (b) conformance to sound industrial hygiene practices, (c) compliance with applicable OSHA Respiratory Protection and other governmental regulations, and (d) adherence to applicable national standards.
- 2.4 A copy of the OSHA Respirator Standard can be found in Appendix G of this program.

### 3.0 REFERENCES AND DEFINITIONS

#### 3.1 References

- 3.1.1 29 Code of Federal Regulations 1910.134 (Respirator Standard, General Industry)
- 3.1.2 29 Code of Federal Regulations 1926.134 (Respirator Standard, Construction)
- 3.1.3 42 Code of Federal Regulations 84 (NIOSH, Respirator Certification)
- 3.1.4 30 Code of Federal Regulations 11 (NIOSH Respirator Certification)
- 3.1.5 American National Standards Institute Z88.2-1992 - Respiratory Protection Practices
- 3.1.6 American National Standards Institute Z88.10 (in development) Respirator Fit Testing

#### 3.2 Definitions

- 3.2.1 abrasive blasting respirator: A respirator designed to protect the wearer from inhalation of, impact of, and abrasion by materials used or generated in abrasive blasting.
- 3.2.2 aerodynamic diameter: The diameter of a unit density sphere having the same terminal settling velocity as the particle in question.
- 3.2.3 aerosol: Particles, solid or liquid, suspended in air.
- 3.2.4 airline respirator: An atmosphere supporting respirator in which the respirable gas is not designed to be carried by the wearer (formerly called *supplied air respirators*).
- 3.2.5 air-purifying respirator: A respirator in which ambient air is passed through an air purifying element that removes the contaminant(s). Air is passed through the air-purifying element by means of the breathing action or by a blower.
- 3.2.6 approved: See *certified*.

- 3.2.7 assigned protection factor (APF): The expected workplace level of respiratory protection that would be provided by a properly functioning respirator or a class of respirators to properly fitted and trained users.
- 3.2.8 atmosphere-supplying respirator: A class of respirators that supply a respirable atmosphere, independent of the workplace atmosphere.
- 3.2.9 bioassay: A determination of the concentration of a substance in biological fluids and tissue by analysis of urine, feces, blood, bone, tissue, etc.
- 3.2.10 canister/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.
- 3.2.11 ceiling concentration: The concentration of an airborne substance that shall not be exceeded during any part of the working exposure.
- 3.2.12 certified: Evaluated and listed as permissible by the National Institute for Occupational Safety and Health (NIOSH).
- 3.2.13 confined space: An enclosed space that has the following characteristics:  
\*Its primary function is something other than human occupancy;  
\*It has restricted entry and exit;  
\*It may contain potential or known hazards.
- Examples of confined spaces include, but are not limited to:  
tanks, silos, vessels, pits, sewers, pipelines, tank cars, boilers, septic tanks, utility vaults.
- Tanks and other structures under construction may not be considered confined spaces until completely closed. Restricted entry and exit means physical impediment of the body, e.g.--use of the hands or contortion of the body to enter or exit from the confined space.
- 3.2.14 contaminant: A harmful, irritating, or nuisance airborne material.
- 3.2.15 continuous flow respirator: An atmosphere-supplying respirator that provides a continuous flow of respirable gas to the respiratory inlet covering.

- 3.2.16 demand respirator: An atmosphere-supplying respirator that admits respirable gas to the facepiece only when a negative pressure is created inside the facepiece by inhalation.
- 3.2.17 disposable respirator: A respirator for which continued use and maintenance is not intended and that is designed to be discarded after excessive resistance, sorbent exhaustion, physical damage, or end-of-service-life renders it unsuitable for use. Examples of this type of respirator are a disposable half-mask respirator or a disposable escape-only self-contained breather apparatus (SCBA).
- 3.2.18 dust: An aerosol consisting of mechanically produced solid particles derived from the breaking up of larger particles. Dusts generally have a larger particle size when compared to fumes.
- 3.2.19 emergency situation: Any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control, equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
- 3.2.20 employee exposure: Exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
- 3.2.21 end-of-service-life indicator (ESLI): A system that warns the user of the approach of the end of adequate respiratory protection.
- 3.2.22 escape-only respirator: A respirator intended only for use during emergency egress from a hazardous atmosphere.
- 3.2.23 exposure limit: The maximum allowable concentration of a contaminant in the air to which an individual may be exposed. These may be time-weighted averages, short-term limits, or ceiling limits.
- 3.2.24 filter: A component used in respirators to remove solid or liquid aerosols from the inspired air.
- 3.2.25 filtering facepiece (dust mask): A negative pressure particulate respirator with a filter as integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- 3.2.26 fit check: A test conducted by the wearer to determine if the respirator is properly sealed to the face.

- 3.2.27 fit factor: A quantitative measure of the fit of a particular respirator to a particular individual.
- 3.2.28 fit test: The use of a challenge agent to evaluate the fit of a respirator on an individual.
- 3.2.29 fume: Solid aerosols formed by condensation of a gas or vapor. Fumes generally have a smaller particle size when compared to dusts.
- 3.2.30 gas: A fluid that has neither independent shape nor volume and tends to expand indefinitely at room temperature.
- 3.2.31 hazardous atmosphere: An atmosphere that contains a contaminant(s) in excess of recognized exposure limit is potentially explosive, or that is oxygen deficient.
- 3.2.32 hazard ratio: A number obtained by dividing the concentration of a contaminant by its exposure limit.
- 3.2.33 helmet: A hood that offers head protection against impact and penetration.
- 3.2.34 high-efficiency particulate air (HEPA) filter: A filter that removes from the air 99.97% or more of the aerosols having a diameter of 0.3  $\mu\text{m}$ .
- 3.2.35 hood: A respiratory inlet covering that completely covers the head and neck and may cover portions of the shoulders.
- 3.2.36 immediately dangerous to life or health (IDLH): Any atmosphere that poses an immediate hazard to life or poses immediate irreversible debilitating effects on health.
- 3.2.37 interior structural firefighting: The physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage.
- 3.2.38 loose-fitting facepiece: A respiratory inlet covering that is designed to form a partial seal with the face, does not cover the neck and shoulders, and may or may not offer head protection against impact and penetration.
- 3.2.39 mass median aerodynamic diameter (MMAD): A point in an aerodynamic particle size distribution where half of the mass lies

in particles with a diameter less than the MMAD and half in particles with diameters greater than the MMAD.

- 3.2.40 mist: An aerosol composed of liquid particles.
- 3.2.41 mouthpiece and nose-clamp assembly: A respiratory inlet covering that is held in the wearer's mouth and must always be used in conjunction with a nose clamp.
- 3.2.42 negative-pressure respirator: A respirator in which the air pressure inside the respiratory inlet covering is negative during inhalation with respect to the ambient air pressure.
- 3.2.43 occupational health professional: An individual whom, by experience and education, is competent at recognizing, evaluating, and controlling health hazards in the workplace.
- 3.2.44 oxygen deficient atmosphere: An atmosphere with oxygen content below 19.5% by volume.
- 3.2.45 physician or other licensed health care professional (PLHCP): An individual whose legally permitted scope of practice allows him/her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.
- 3.2.46 poor warning properties: A substance whose odor, taste, or irritation effects are not detectable or not persistent at concentrations below the exposure limit.
- 3.2.47 positive-pressure respirator: A respirator in which the pressure inside the respiratory inlet covering is normally positive with respect to ambient air pressure.
- 3.2.48 powered air-purifying respirator: An air-purifying respirator that uses a blower to force the ambient atmosphere through air purifying elements to the inlet covering, maintaining positive pressure in the facepiece.
- 3.2.49 pressure-demand respirator: A positive pressure atmosphere-supplying respiratory that admits respirable gas to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

- 3.2.50 qualitative fit test: A pass/fail fit test that relies on the subject's sensory response to detect the challenge agent (for example: irritant smoke, banana oil, or saccharin tests).
- 3.2.51 quantitative fit test: A fit test that uses an instrument to measure the challenge agent inside and outside the respirator quantitatively giving a fit factor number (for example: Portacount, Dynatech.)
- 3.2.52 radionuclide: An atom that spontaneously emits particles, gamma, or x-radiation.
- 3.2.53 respirator: A personal device designed to protect the wearer from the inhalation of hazardous atmospheres.
- 3.2.54 respiratory inlet covering: That portion of a respirator that connects the wearer's respiratory tract to an air-purifying device or respirable gas source, or both. It may be a facepiece, helmet, hood, suit, or mouthpiece/nose-clamp.
- 3.2.55 sanitization: The removal of contaminants and the inhibiting of the action of the agents that cause infection or disease.
- 3.2.56 self-contained breathing apparatus (SCBA): An atmosphere-supplying respirator in which the respirable gas source is designed to be carried by the wearer.
- 3.2.57 service life: The period of time that a respirator provides adequate protection to the wearer.
- 3.2.58 sorbent: A material that is contained in a cartridge or canister and removes specific gases and vapors from the inhaled air.
- 3.2.59 suit: A respiratory inlet covering designed to cover the entire body. This term does not include protective clothing that only provides skin protection.
- 3.2.60 supplied-air respirator (SAR) or airline respirator: An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
- 3.2.61 tight-fitting facepiece: A respiratory inlet covering that is designed to form a complete seal with the face. A half-facepiece (includes quarter masks, disposable masks, and masks with elastomeric facepieces) covers the nose and mouth; a full facepiece covers the nose, mouth, and eyes.



- 3.2.62 time-weighted average (TWA): The average concentration of a contaminant in air during a specific time period (commonly 8 hours for OSHA compliance).
- 3.2.63 user seal check: An action conducted by the respirator user to determine if the respirator is properly seated to the face.
- 3.2.64 vapor: The gaseous phase of matter that normally exists in a liquid or solid state at room temperature.

#### **4.0 ENGINEERING AND/OR ADMINISTRATIVE CONTROLS**

- 4.1 First consideration shall be given to controlling atmospheric contaminants through use of engineering and/or administrative controls, or substitution of a less toxic material.
- 4.2 Respirators shall be considered as an interim control used for routine, non-routine, and emergency activities. Respirators shall be used when additional protection is desirable or where OSHA Standards require it.
- 4.3 Respirator use will comply with the Respirator Standard and all other applicable OSHA regulations on the use of respirators for various workplace activities or specific substance. Use of a respirator does not exempt the wearer from any other OHIO policies and procedures.
- 4.4 Where a supervisor feels that respirators may need to be considered, they must follow the “Procedures for Respirator Use” in Appendix E for assessment by EHS.

#### **5.0 RESPONSIBILITIES**

- 5.1 Supervision Responsibility
  - 5.1.1 The Director of the Department of Environmental Health and Safety (EHS) shall assign a designee (herein called the “Respirator Program Administrator”) to be responsible for the administration of this program. All supervisors shall coordinate their activities with EHS in regard to respirator use.
  - 5.1.2 Supervision is responsible to insure that jobs, which are suspected of exposing employees to respirable exposure hazards, are evaluated by the EHS Department. A summary of the required procedure for workplace and respirator use can be found in Appendices B and E.

- 5.1.3 Supervision shall provide respirators when such equipment is necessary to protect the employee and only when recommended and approved by EHS.
  - 5.1.3.1 Respirators not required, but voluntarily worn, must still meet all the requirements of the OHIO program.
  - 5.1.3.2 EHS may grant waivers from this requirement for voluntary use as outlined in the OSHA Respirator Standard. Employees must sign the “Voluntary Use” form found in Appendix E.
- 5.1.4 Supervision shall consult with EHS to ensure that the proper respiratory protection is provided. The cost of required respirators will be borne by the employee’s department.
- 5.1.5 Supervision shall permit an employee to leave a hazardous work area for any respirator-related cause.
- 5.1.6 Supervisors shall report any malfunction of respiratory equipment to EHS to determine accident cause and then take appropriate corrective measures. Where manufacturing defects are suspected, these should be reported to the manufacturer and certifying agency (NIOSH) through EHS.
- 5.1.7 Supervision shall not permit the use of unapproved respirators.
- 5.1.8 Supervisors shall insure that employees enrolled in the Respiratory Protection Program are sent for their initial (and any subsequent) medical evaluations, receive training, and are signed up for their annual fit testing at the appropriate time intervals throughout the year.

## 5.2 Employee Responsibilities

- 5.2.1 Employees working at OHIO facilities shall use the provided protection in accordance with training received.
- 5.2.2 Each employee shall guard against damage to the respirator.
- 5.2.3 If the employee experiences a respirator malfunction, detects vapor or gas odors, then that employee must exit the area immediately and report this to their supervisor and/or EHS. Employees must leave the work area when respirator problems are experienced for

any of these problems, to wash up to prevent irritation, or to change cartridges.

- 5.2.4 The employee shall report any change in medical status which may impact respirator usage to their supervisor.
- 5.2.5 All employees required to wear a tight-fitting respirator shall not have facial hair which interferes with the face-to-face piece seal of the respirator.
- 5.2.6 Employee shall maintain their personal respirator in a clean and sanitary condition at all times, and protect it from contamination when not in use.
- 5.2.7 Supervisors will inform employees of their required annual medical, training, and fit testing requirements. EHS will assist with record keeping to alert supervisors of approaching due dates.

### 5.3 Respiratory Protective Program Administrator Responsibilities

- 5.3.1 The Director of EHS shall have responsibility for this program. He shall appoint a Respirator Program Administrator from among the EHS staff to manage the program. The Program Administrator shall be suitably trained and qualified for the position.
  - 5.3.1.1 The current OHIO Respiratory Program is administered by the Environmental Safety Coordinator.
- 5.3.2 The Administrator shall provide for respirator fit testing for all employees enrolled in the Respirator Program.
- 5.3.3 The Respiratory Program Administrator shall be provided for the necessary training to properly administer the program.
- 5.3.4 Additional responsibilities include, but are not limited to, record-keeping, monitoring respiratory hazards, and conducting program evaluation.
- 5.3.5 The Respiratory Program Administrator will evaluate the program periodically and document the review in writing.

## **6.0 MEDICAL EVALUATION**

### **6.1 EHS Work Evaluation**

6.1.1 No employee will use respirators until the work process has been evaluated by EHS. This may include information gathering, site visits, air sampling, or other measures.

6.1.1.1 Supervisors are responsible for insuring that employees under their supervision do not use respirators in the workplace without proper EHS evaluation and enrollment in the respirator protection program.

6.1.2 If respirators are recommended, the employee will be referred to Occupational Health by EHS for medical evaluation.

6.1.3 If an employee chooses to wear a respirator voluntarily, or if EHS does not require a respirator after a work assessment and the employee still prefers to wear one, they must still comply with the requirements of the OHIO Respiratory Protection Program, unless a waiver has been granted pursuant to Section 5.1.3.2.

### **6.2 Physician or other licensed health care professional (PLHCP) Evaluation**

6.2.1 All employees who need to wear respirators must receive a medical evaluation from designated occupational health physician or their personal physician before they will be enrolled in the Respirator Program.

6.2.2 A PLHCP written medical evaluation is required for any employee required to wear a respirator. The PLHCP shall review the medical questionnaire required by the OSHA Standard and determine whether a physical exam or tests are required.

6.2.3 A PLHCP shall determine whether an employee is physiologically and psychologically able to utilize respiratory equipment.

6.2.4 The PLHCP shall determine if an individual has specific limitations of use of specific respiratory equipment.

6.2.5 Appendix A contains some of the medical factors for respirator use (for informational purposes only).

6.2.6 Upon request the Respirator Program Administrator shall provide the PLHCP with the following information, on the "Employee Information to Physician" form found in Appendix D:

- What types and weight of respirators are to be used for normal or emergency use
- Substances employee may be exposed to
- Expected work activities or effort  
(and any special requirements, like rescue operating)
- Environmental conditions  
(humidity, temperature, confined space, etc.)
- Frequency and duration of respirator use
- Any additional requirements for protective clothing and equipment
- A copy of the Respirator Standard
- A copy of the OHIO written Respirator Program

6.2.7 All employees in the Respiratory Protection Program will be evaluated whenever required by the PLHCP and at any time the employee experiences difficulties or problems. The employees supervisor shall schedule the evaluation immediately upon request of the PLHCP, the employee, or when due.

6.2.7.1 At OHIO, PLHCP re-evaluation shall be done when workplace conditions change or at the request of EHS, the employee, or OHC.

## **7.0 RESPIRATOR SELECTION**

- 7.1 The Respirator Protection Program Administrator shall be responsible to select the proper respiratory protection for those work areas requiring such protection. The respirator shall be selected on the basis of the hazard the employee is exposed to.
- 7.1.1 All respirators used will be NIOSH approved under 30 CFR 11, or the newer 42 CFR 84 approvals as they become effective.
- 7.1.2 All cartridges approved under the new 42 CFR 84 standard will be converted to as soon as available.
- 7.1.3 A cartridge change schedule must be developed in writing for any cartridges used that do not have ESLI's.
- 7.2 The following information should be determined prior to making the respirator selection:
- 7.2.1 The nature of the process or operation.

- 7.2.2 Type of hazard:
  - Physical and Chemical Properties
  - Oxygen Deficiency
  - Physiological and health effects of hazard
  - Concentration of toxic material or radioactivity level (monitoring results)
  - Established exposure limits for materials
  - Established limits for radioactive material
  - Established IDLH concentration for toxic material
- 7.2.3 Determine if material is skin absorbable.
- 7.2.4 If material is a gas or vapor, determine odor threshold, taste, irritation concentration, and warning levels.
- 7.2.5 Location of hazardous area and area where respirable air may be found.
- 7.2.6 How long respirators must be worn.
- 7.2.7 The limitations of respirators considered for use.
- 7.2.8 The protection factors for respirators considered for use.
- 7.2.9 If the toxic material has a comprehensive health standard (e.g. asbestos, lead)
- 7.2.10 Physical and functional characteristics of the respirator to be used (e.g. how large, how heavy)
- 7.3 Supervisors and EHS shall continue to monitor the workplace for work change in conditions and proper field use of respirators.

## **8.0 RESPIRATOR CLEANING AND MAINTENANCE**

- 8.1 Personnel assigned a respirator shall be responsible to clean, sanitize, and maintain it.
- 8.2 All respiratory equipment shall be cleaned, disinfected, and maintained using the established methods found in Appendix B-2 of 29 CFR 1910.134 of the Respirator Standard and procedures outlined in Appendix B of this manual.

- 8.3 Field personnel shall be trained in the following areas in order to ensure that they may properly inspect their respirators:
- cleaning and sanitizing
  - inspection for defects
  - maintenance and repair
  - storage
  - assurance of breathing air quality where breathing air is used
- 8.4 SCBA and other required emergency use respirators shall be cleaned when used and maintained at the storage location. (Currently SCBA is only authorized to be used by OHIO Corrosion Center and Coal Research Center).
- 8.5 SCBA and other emergency use respirators shall be maintained on a monthly basis.
- 8.6 Disposable, single-use respirators shall be disposed of at the end of each days use.
- 8.7 Reusable respirators shall be cleaned, inspected, maintained, and stored at the end of each days use.

## **9.0 STORAGE OF RESPIRATORS**

- 9.1 Respirators shall be stored, after cleaning and drying, in a plastic bag and placed in an uncontaminated location where it will not be subject to physical agents, chemical agents, or have heavy objects placed upon it. See Appendix B.

## **10.0 HAZARD DETERMINATION**

- 10.1 It is the responsibility of the Supervisor, in consultation with EHS, to determine the initial magnitude of the hazard for which respirators are selected.
- 10.2 It is the responsibility of Supervisor and EHS to monitor the hazard to insure that the selected respirator continues to be the proper selection.

## **11.0 TRAINING**

Annual respirator training will be provided by EHS or arranged with an outside contractor. The cost associated with outside training will be paid by EHS. Training shall be understandable to employees and the opportunity to ask and have questions answered will always be provided.

- 11.1 Written records of the names and dates of worker training and the instructor's name shall be maintained by the Respirator Program Administrator.
- 11.2 Supervision (person who has responsibility for overseeing workers who are required to use respiratory equipment) is responsible to see that personnel assigned respirators are trained and fit tested.

Training for supervision shall occur annually in the following areas:

- 11.2.1 All basic respirator use practices.
  - 11.2.2 The hazards to which his/her personnel are exposed (coordinated with Hazard Communication Training).
  - 11.2.3 Recognition of respirator use problems and how to resolve them.
  - 11.2.4 The reasoning for selection of specific respiratory equipment for his/her personnel.
  - 11.2.5 Aware of fitting requirements and methods.
  - 11.2.6 Aware of medical determination requirements.
  - 11.2.7 How to inspect respirators to determine deficiencies in use.
  - 11.2.8 Maintenance and storage.
  - 11.2.9 OSHA regulations, including specific standards which may affect respirator work being done.
- 11.3 Respirator User

In order to insure that the respirator assigned to the worker is used properly, training shall include and employees must demonstrate knowledge about the following elements:

- 11.3.1 The exposure potential and need for respiratory protection.



- 11.3.2 The reasons for selection of the respirator which shall be used.
- 11.3.3 The effects of respiratory hazards which the worker will encounter in the workplace.
- 11.3.4 The need to inform supervision of any problems experienced by them or their coworkers.
- 11.3.5 An explanation of why engineering and/or administrative controls are not adequate or are not being employed to reduce or eliminate exposure.
- 11.3.6 An explanation of operation, capabilities and limitations of respirators being selected.
- 11.3.7 How to put on and inspect the respirator.
- 11.3.8 How to conduct a positive or negative pressure fit check and the importance of a good fit.
- 11.3.9 A successful fit test in accordance with protocol listed in Appendix A of the OSHA Respirator Standard and personal discussion with trainer/fit tester.
- 11.3.10 How to maintain their assigned respirator.
- 11.3.11 How to properly store their assigned respirator.
- 11.3.12 How to respond to standard operating procedures.
- 11.3.13 How to use emergency respiratory devices at locations where they are necessary to be kept (Corrosion Center).
- 11.3.14 Regulations affecting respirator use including 29 CFR 1910.134, 29 CFR 1910.1000 (asbestos), etc.
- 11.3.15 How to recognize signs or symptoms of respirator failure.
- 11.3.16 What to do when respirator fails.

#### 11.4 Respirator Issuing Personnel

- 11.4.1 For first-time respirator users, EHS shall assign a make, model and size of respirator to be purchased based on the results of fit testing.
- 11.4.2 The person(s) who shall be given the responsibility of purchase and issuance of respirators shall be trained to ensure that the correct respirators are issued for the work involved.
- 11.5 Emergency Respirator Users
  - 11.5.1 OHIO does not normally have emergency response teams that use respirators for this purpose at this time, with the exception of the asbestos crew and at the Corrosion Center.
  - 11.5.2 Emergency Response is done through the Athens Fire Department and a Hazardous Materials Contractor.
- 11.6 Frequency of Respiratory Training
  - 11.6.1 All personnel required to use respiratory protection shall receive initial training and updating at least annually, or when there are significant changes in the workplace situation or apparent inadequacies in the employee's understanding or use of respirators.
  - 11.6.2 The employees supervisor is responsible to see that their employees assigned respirators attend the annual training.
  - 11.6.3 Initial training includes "hands-on" demonstration of employee's understanding of concepts and fitting.
  - 11.6.4 Annual evaluation of employee's needs, problems, etc. with respirator will be conducted at all annual retraining courses.

## **12.0 RESPIRATOR FIT TESTING**

Both qualitative and quantitative fit testing can be provided by EHS. EHS has the capabilities to conduct qualitative fit testing by the saccharin, irritant, smoke and bitrex methods and quantitative fit testing by the Portacount method.

- 12.1 Tight face to face piece fitting respirators.
  - 12.1.1 Negative pressure air purifying respirators.

12.1.2 Qualitative or quantitative fit test protocols shall be conducted on all tight fitting respirators per OSHA Respirator Standard Appendices.

12.1.2.1 Generally Ohio University - EHS uses quantitative fit testing by the Portacount Method.

12.1.3 The results of this fit test shall be used to determine which selected make of respirator shall be used by individual users.

12.1.4 Fit factors as designated by OSHA substance specific standards will be followed.

12.1.5 Where no specific OSHA Standard is in effect, quantitative fit tests are performed, a fit factor of at least ten (10) times greater than the negative pressure respirators assigned protection factor or  $FF = 100$ , shall be obtained before it is assigned to the user. (See Table 1 for assigned protection factors.)

12.1.6 Where quantitative fit tests are performed, only validated protocols may be used.

12.1.7 Employees shall not be fit tested where facial hair interferes with the face-to-face piece seal or where facial hair interferes with the inhalation or exhalation valve.

12.1.7.1 Beards and facial hair interfere with the respirator face seal and prevent a proper fit. Discuss options with EHS.

## 12.2 Positive-Pressure Respirators

12.2.1 Positive-pressure respirators which have a tight face to face piece seal shall be quantitatively fit tested in a negative pressure mode. A fit factor of at least 1,000 shall be obtained, unless this is specified by an OSHA substance specific standard.

12.2.2 Where no OSHA Standard exists, see ANSI Standard, Table 1.

## 12.3 Fit Test Frequency

12.3.1 Fit tests shall be performed once every 12 months for each employee who uses a tight fitting face piece respirator.

12.3.2 If substance specific standards require more frequent fit testing, the Standard will be complied with.

12.3.3 A tight fitting respirator user shall be fit tested when he/she has a condition which may change the fit. Such change may include, but not be limited to, weight loss or gain (10% or more), dental changes, scarring, and reconstructive surgery.

12.3.4 It is the supervisor's responsibility to arrange a fit test with EHS when it is due annually.

12.3.5 EHS will offer fit testing and training as often as necessary, but at least annually.

12.3.6 See Appendix C for a survey of fit test requirements.

#### 12.4 Fit Testing and Use of Other Personal Protective Equipment

12.4.1 Where additional personal protective devices are required which may affect the fit, these devices shall be worn while the fit testing is being done.

12.4.2 Such protective devices may include, but are not limited to, spectacles, goggles, face shield, or welding hood.

12.4.3 The respirator should be put together and worn in the way it would be worn in the field.

#### 12.5 Employee Familiarity and Acceptance

12.5.1 The employee shall be given an opportunity to wear the respirator and select the most comfortable make if a proper fit can be achieved.

**ANSI Z88.2-1992 - RESPIRATORY PROTECTION**

**Table 1 - Assigned Protection Factors**

**Respiratory Inlet Covering**

<b>Type of respirator</b>	<b>Half mask<sup>1)</sup></b>	<b>Full facepiece</b>
Air purifying	10	100
Atmosphere supplying SCBA (demand) <sup>2)</sup>	10	100
Airline(demand)	10	100

**Respiratory Inlet Covering**

<b>Type of respirator</b>	<b>Half mask</b>	<b>Full face</b>	<b>Helmet/Hood</b>	<b>Loose-fitting facepiece</b>
Powered air purifying Atmosphere supplying airline pressure demand	50	1000 <sup>3)</sup>	1 000 <sup>3)</sup>	25
continuous flow Self-contained breathing apparatus Pressure demand open/closed circuit	50	1000	1000	25
	—	4)	—	—

<sup>1)</sup> Includes 1/4 mask, disposable half masks, and half masks with elastomeric facepieces.

<sup>2)</sup> Demand SCBA shall not be used for emergency situations such as fire fighting.

<sup>3)</sup> Protection factors listed are for high-efficiency filters and sorbents (cartridges and canisters). With dust filters, an assigned protection factor of 100 is to be used due to the limitations of the filter.

<sup>4)</sup> Although positive-pressure respirators are currently regarded as providing the highest level of respiratory protection, a limited number of recent simulated workplace studies concluded that all users may not achieve protection factors of 10,000. Based on this limited data, a definitive assigned protection factor could not be listed for positive-pressure SCBAs. For emergency planning purposes where hazardous concentrations can be estimated, an assigned protection factor of no higher than 10,000 should be used.

NOTE - Assigned protection factors are not applicable for escape respirators. For combination respirators, e.g., airline respirators equipped with an air-purifying filter, the mode of operation in use will dictate the assigned protection factor to be applied.

## Assigned Protection Factors<sup>5</sup>

Type of Respirator <sup>1,2</sup>	Quarter Mask	Half Mask	Full Facepiece	Helmet/Hood	Loose-Fitting Facepiece
1. Air-Purifying Respirator	5	10 <sup>3</sup>	50	—	—
2. Powered Air-Purifying Respirator (PAPR)	—	50	1,000	25/1,000 <sup>4</sup>	25
3. Supplied-Air Respirator (SAR) or Airline Respirator	—	10	50	—	—
• Demand mode	—	50	1,000	25/1,000 <sup>4</sup>	25
• Continuous flow mode	—	50	1,000	—	—
• Pressure-demand or other positive-pressure mode	—	50	1,000	—	—
4. Self-Contained Breathing Apparatus (SCBA)	—	10	50	50	—
• Demand mode	—	—	10,000	10,000	—
• Pressure-demand or other positive-pressure mode (e.g., open/closed circuit)	—	—	10,000	10,000	—

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### Notes:

<sup>1</sup> Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

<sup>2</sup> The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

<sup>3</sup> This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

<sup>4</sup> The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

<sup>5</sup> These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

## 12.6 Fit Test Records

- 12.6.1 Written standard operating procedures which include pass/fail criteria.
- 12.6.2 Specific fit test protocol used.
- 12.6.3 Type of fit test instrumentation and equipment used.
- 12.6.4 Instrument calibration, maintenance, and repair.
- 12.6.5 Make, model and size of exact type of respiratory device tested.
- 12.6.6 Name and ID of person tested.
- 12.6.7 Date of test.
- 12.6.8 Name of person performing fit test.
- 12.6.9 Test Results: Fit factor as determined using quantitative methods. Success or failures of fit based on qualitative fit test. Any special considerations observed or determined (scarring, dentures, glasses, etc.).
- 12.6.10 Ohio University generally uses Portacount quantitative fit testing methods. Protocols used are those found in the Portacount Manual and Appendix A of 29 CFR 1910.134 Respirator Standard. Employees receive a signed copy of the fit test with the information referenced above on it, and a copy is retained in computers at EHS.

## **13.0 BREATHING AIR FOR SELF-CONTAINED BREATHING APPARATUS AND SUPPLIED AIR RESPIRATORS**

- 13.1 Ohio University does not generally use SCBA or airline respirators at this time. However, if considered, the following general guidelines will be followed, and more specific program guidelines will be developed, implemented, and added to this manual at that time.
- 13.2 Compressed gaseous or liquid oxygen shall meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen.

- 13.3 Compressed gaseous air shall meet the requirements for Grade D breathing air.
- 13.4 The requirements of the OSHA Respirator Standard will be complied with. See Appendix F.
- 13.5 Compressed Oxygen
  - 13.5.1 Compressed oxygen shall not be used in equipment which has previously had compressed breathing air pass through it due to the potential for oil to be present in the equipment.
  - 13.5.2 Oxygen concentrations greater than 23.5% shall be used only in systems designed for oxygen service.
- 13.6 Air Cylinders
  - 13.6.1 Air cylinders shall be tested and maintained in accordance with applicable Department of Transportation specifications for shipping containers. (49 CFR 173, 178) (See Table 2).

**TABLE 2**

<b>METHOD OF PREPARATION</b>	<b>ANALYSIS RECOMMENDED</b>
Compression-Supplier does not fit cylinder with any other gases.	Check 10% of cylinders from each lot for ppm CO and odor.
Compression-Supplier fills cylinders with gases other than air.	Analyze all cylinders for percent oxygen. Check 10% of cylinders from each lot for ppm CO and odor.
Reconstitution	Analyze all cylinders for percent oxygen. Check 10% of cylinders from each lot for ppm CO and odor.

- 13.7 Air Compressors
  - 13.7.1 Air intakes to compressors shall be located to avoid entry of contamination.
  - 13.7.2 Suitable in-line, air-purifying sorbent bed and filtration shall be used to assure breathing air quality.
  - 13.7.3 Maintenance of in-line filtration, carbon monoxide monitor, and sorbent media shall be performed based on manufacturer's recommendations by trained personnel.
  - 13.7.4 Acceptance Testing



13.7.4.1 Air tests shall be performed prior to initial use at the compressor output and at each of the system distribution points based on a frequency determined by the EHS Manager or designer.

13.7.4.2 Testing shall be performed based on sample types listed in Table 3. Compressors are classified as oil lubricated, non-oil lubricated, and combustion engine powered compressors.

13.7.4.3 Breathing air couplings shall be incompatible with non-respirable gas couplings.

**TABLE 3  
COMPRESSOR AIR SAMPLING GUIDANCE**

SAMPLE TYPE	OIL LUBRICATED	NON-OIL LUBRICATED	COMBUSTION ENGINE POWERED
Water Vapor	X	X	X
Carbon Monoxide	X		X
Condensed Hydrocarbon	X		X
Carbon Dioxide			X
Odor	X	X	X

#### **14.0 RESPIRATOR PROGRAM EVALUATION**

14.1 The Respiratory Protection Program Administrator shall evaluate the program and document necessary adjustments as needed.

## **APPENDIX A**

### **MEDICAL DETERMINATION**

#### **1.0 PHYSIOLOGICAL FACTORS**

- 1.1 Air purifying respirators - wearer experiences resistance to inhalation and exhalation.
- 1.2 Pressure demand and respirators - wearer also experiences resistance to inhalation and exhalation.
- 1.3 The SCBA, PAPR, and airline respirators tend to be bulky and heavy. The SCBA unit may weigh as much as 35 pounds.
- 1.4 Wearers will experience additional heat load from having their face and/or bodies covered.

#### **2.0 PULMONARY FACTORS**

- 2.1 Examine respirator user for evidence of respiratory impairment such as:
  - emphysema
  - obstructive lung disease
  - bronchial asthma.
- 2.2 Historical and clinical evidence of impairment of pulmonary function such as:
  - x-ray findings
  - reduction in vital capacity for forced expiratory volume.

Such findings may justify forbidding a person to wear a respirator which restricts inhalation and exhalation, however, the person may be able to function adequately using a continuous-flow, supplied-air respirator.

#### **3.0 CARDIOVASCULAR**

- 3.1 An evaluation of the individual cardiovascular system in relation to the additional stresses imposed by use of an air-purifying, demand-type, or pressure-demand supplied air device should be conducted.
- 3.2 Consideration shall also be given to a job assignment where the individual with cardiovascular disease would not have to respond to an emergency situation or work in a contaminated atmosphere.

#### 4.0 HEALTH PROBLEMS

Conditions which may prevent an employee from wearing a respirator and therefore, working in a contaminated atmosphere:

- Diabetes, insipidis or mellitus
- Epilepsy, Grand Mal or Petit Mal
- Alcoholism
- Use of certain medication
- Punctured ear drum
- Skin sensitivity
- Impaired or nonexistent sense of smell
- Emphysema
- Chronic pulmonary obstructive disease
- Bronchial asthma
- X-ray evidence of pneumoconiosis
- Evidence of reduced pulmonary function
- Coronary artery disease or cerebral blood vessel disease
- Severe or progressive hypertension
- Anemia, Pernicious
- Pneumomediastinum gap
- Communication of sinus through upper jaw to oral cavity
- Experiences breathing difficulty when wearing a respirator
- Experiences claustrophobia when wearing a respirator
- Any other condition that the physician determines could place the employee at additional physical risk.

#### 5.0 PSYCHOLOGICAL LIMITATIONS

The physician may determine that an employee should not wear a respirator due to some psychological factors.

## **APPENDIX B**

### **INSPECTION, CLEANING, MAINTENANCE AND STORAGE**

#### **1.0 INTRODUCTION**

Respirator maintenance must be an integral part of the overall respirator program. Wearing a poorly maintained or malfunctioning respirator is, in one sense, more dangerous than not wearing a respirator at all. Workers wearing defective devices think they are protected when, in reality, they are not.

The following items are required for a good respiratory protection program:

- a. Inspection for defects, including a leak check.
- b. Cleaning and disinfecting.
- c. Repair as required.
- d. Proper and sanitary storage of equipment.

A proper maintenance program ensures that the worker's respirator remains as effective as when it was new.

#### **2.0 INSPECTION FOR DEFECTS**

- 2.1 The most important part of a respirator maintenance program is continual inspection of the devices. If properly performed, inspections will identify damaged or malfunctioning respirators before they can be used.
- 2.2 The OSHA Standard outlines procedures required in Appendix B-2 of the Respirator Standard.

#### **3.0 FREQUENCY OF INSPECTION**

- 3.1 Respirators should be inspected before and after each use, and those not used routinely; i.e., emergency escape and rescue devices "shall be inspected after each use and at least monthly."
- 3.2 Records of inspections for respirators used for emergency use shall be maintained.

#### **4.0 INSPECTION PROCEDURES**

- 4.1 Respirator inspection shall include checking of:
  - a. Tightness of the connections.

- b. Face-piece.
- c. Valves.
- d. Connecting tubes.
- e. Canisters, filters or cartridges.
- f. Where SCBA's are used, regulators and warning devices shall be checked for proper function.

## 4.2 Field Inspection of Air Purifying Respirators

4.2.1 Routinely used air-purifying respirators should be checked as follows before and after each use:

4.2.1.1 Examine the facepiece for:

- a. Excessive dirt.
- b. Cracks, tears, holes, or physical distortion of shape from improper storage.
- c. Inflexibility of rubber face-piece (stretch and knead to restore flexibility).
- d. Cracked or badly scratched lenses in full facepieces.
- e. Incorrectly mounted full facepiece lenses, or broken or missing mounting clips.
- f. Cracked or broken air-purifying element holder(s), badly worn threads, or missing gasket(s) if required.

4.2.1.2 Examine the head straps or head harness for:

- a. Breaks.
- b. Loss of elasticity.
- c. Broken or malfunctioning buckles and attachments.
- d. Excessively worn serrations on head harness, which might permit slippage (full facepieces only).

4.2.1.3 Examine the exhalation valve for the following after removing its cover:

- a. Foreign material, such as detergent residue, dust particles, or human hair under the valve seal.
- b. Cracks, tears or distortion in the valve material.
- c. Improper insertion of the valve body in the facepiece.
- d. Cracks, breaks, or chips in the valve body, particularly in the sealing surface.
- e. Missing or defective valve cover.
- f. Improper installation of the valve in the valve body.

4.2.1.4 Examine the air-purifying element for:

- a. Incorrect cartridge, canister, or filter for the hazard.
- b. Incorrect installation, loose connections, missing or worn gasket, or cross threading in the holder.

- c. Expired shelf-life date on the cartridge or canister.
- d. Cracks or dents in the outside case of the filter, cartridge, or canister, indicated by the absence of sealing material, tape, foil, etc. over the inlet.
- e. Maximum approved exposure level will not be exceeded in field.

4.2.1.5 If the device has a corrugated breathing tube, examine it for:

- a. Broken or missing end connectors.
- b. Missing or loose hose clamps.
- c. Deterioration, determine by stretching the tube and looking for cracks.

4.2.1.6 Examine the harness of a front or back-mounted gas mask for:

- a. Damage or wear to the canister holder, which may prevent its being held in place.
- b. Broken harness straps for fastening.

#### 4.3 Atmosphere-Supplying Respirators

4.3.1 For a routinely used atmosphere-supplying device, use the following procedures:

4.3.1.1 If the device is a tight-fitting face-piece, use the procedures outlined under section 4.2 air purifying respirators, except for section 4.2.1.4.

4.3.1.2 If the device is a loose fitting hood, helmet, or full suit, use the following procedures:

- a. Examine the hood, helmet, or suit for rips, tears, seam integrity, etc.
- b. Examine protective headgear, if required, for general condition with emphasis on the suspension inside the headgear.
- c. Make sure the protective screen is intact and secured correctly over the face shield of abrasive blasting hoods and blouses.

4.3.1.3 Examine the supplied air systems for:

- a. Integrity and good condition of air supply lines and hoses, including attachment and end fittings.
- b. Correct operation and condition of all regulators, or other air flow regulators.

- 4.4 Self-Contained Breathing Apparatus (SCBA)
    - 4.4.1 In addition to the above, for SCBA units, also determine that:
      - 4.4.1.1 The high pressure cylinder of compressed air or oxygen is sufficiently charged for the intended use, preferably fully charged.
      - 4.4.1.2 On open circuit SCBA, the cylinder has been recharged if less than 25% of the useful service time remains.
  - 4.5 Air-Purifying or Atmosphere Supplying Devices Used for Emergency Purposes
    - 4.5.1 Respirators stored for emergency use shall be inspected once a month by the responsible individual assigned to inspection task.
    - 4.5.2 Records shall be kept of inspection dates and findings for respirators maintained for emergency use.
  - 4.6 Defects Found in Field Inspection
    - 4.6.1 If the defect is minor, repair and/or adjustment may be made in the field.
    - 4.6.2 If the defect is major, the respirator shall be removed from service until it can be repaired.
      - 4.6.2.1 A like spare unit should replace the unit removed from service.
      - 4.6.2.2 A defective respirator shall never be permitted to remain in service.
  - 4.7 Inspection During Cleaning
    - 4.7.1 The respirator shall be inspected for worn and deteriorated parts when it is disassembled and reassembled during cleaning.
- 5.0 CLEANING AND SANITIZING
- 5.1 Respirators assigned to one person shall be thoroughly washed and cleaned after each use.

- 5.2 Respirators which may be assigned to more than one worker shall be cleaned and disinfected after each use.
- 5.3 Workers maintaining their own respirators should be thoroughly briefed on cleaning and disinfection.
  - 5.3.1 Disinfection is not absolutely necessary if the respirator is reused by the same person. However, where individual issue is not practical, disinfection shall be done.
- 5.4 Respirators should be cleaned in warm water (about 110 deg F) and mild detergent. A cleaning brush can be used as long as it is not a wire brush.
- 5.5 Disinfectants
  - 5.5.1 Quaternary Ammonia compounds may be best suited as they do not damage rubber as quickly as other disinfectant products. A solution of 200 ppm concentration and a two-minute immersion, or as directed.
  - 5.5.2 A Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of bleach (such as Clorox) to one liter of water, or one tablespoon of bleach per gallon of water. A two-minute immersion disinfects the respirators.
  - 5.5.3 Aqueous solution of iodine (50 ppm of iodine) made by adding approximately 0.8 milliliters of tincture of iodine per liter of water, or one teaspoon of tincture of iodine per gallon of water. Again, a two-minute immersion is sufficient.
  - 5.5.4 Do not use alcohol routinely or any solvents.
- 5.6 Rinsing
  - 5.6.1 Rinse freshly washed respirator face pieces in clean tepid water (110 deg F maximum) thoroughly. This is very important to prevent skin irritation.
  - 5.6.2 Allow facepiece to dry at room temperature.
- 5.7 Reassemble and Inspection
  - 5.7.1 The clean, dry respirator facepieces should be reassembled and inspected in an area separate from the disassembly area to avoid contamination.



- 5.7.2 The respirator should be thoroughly inspected and all defects corrected.
- 5.7.3 New or retested cartridges and canisters should be installed, and the completely reassembled respirator should be tested for leaks.
- 5.7.4 For SCBA devices, the facepiece should be combined with the tested regulator and the fully charged cylinder, and an operational check performed.

## 5.8 Maintenance and Repair

- 5.8.1 Replacement or repair shall be done by persons trained in respirator repair.
- 5.8.2 Repair shall be accomplished using parts designed for the respirator.
- 5.8.3 Maintenance personnel must be thoroughly trained. They must be aware of the limitations and never try to replace components or make repairs and adjustment beyond the manufacturer's recommendations, unless they have been specially trained by the manufacturer.
- 5.8.4 Regulator valves and low pressure warning devices shall be returned to the manufacturer or to a trained technician for adjustment or repair.
- 5.8.5 A spare parts supply shall be maintained to repair available respirators.

## 5.9 Respirator Storage

- 5.9.1 Respirators shall be stored to protect against:
  - a. Dust.
  - b. Sunlight.
  - c. Heat.
  - d. Extreme cold.
  - e. Excessive moisture.
  - f. Damaging chemicals.
  - g. Mechanical damage.
- 5.9.2 Freshly cleaned respirators should be placed in sealed plastic bags until reuse.

- 5.9.3 Respirators should be stored in a clean, dry location away from direct sunlight.
- 5.9.4 Respirators should be stored in a single layer with the facepiece and exhalation valve in an undistorted position to prevent rubber or plastic from taking a permanent distorted set.
- 5.9.5 Storage of emergency use respirators:
  - 5.9.5.1 Air purifying respirators kept ready for emergency use should be stored in a cabinet with individual compartments.
  - 5.9.5.2 The storage cabinet should be readily accessible and all workers should be made aware of its location.
  - 5.9.5.3 SCBA for emergency use should be stored in a wall-mounted case.
  - 5.9.5.4 The location of the SCBA(s) should be well known and clearly marked.
  - 5.9.5.5 SCBA's should be located in areas that will predictably remain uncontaminated.

## **APPENDIX C**

### **RESPIRATOR FIT TEST REQUIREMENTS**

- 6.0 Fit Testing
  - 6.1 Pass annual OSHA standard fit test of fit factor of assigned respirator.
  - 6.2 Porta Count quantitative fit test utilized to determine fit factor.

**APPENDIX D**

**OHIO RESPIRATORY PROTECTION PROGRAM  
EMPLOYEE INFORMATION TO PHYSICIAN**

Name of Employee:	
Date:	
Department:	
Supervisor:	

The work process has been evaluated by EHS and respirator use is recommended by \_\_\_\_\_ of EHS, date: \_\_\_\_\_.

(i)	Type of respirator:	
(ii)	Substance(s):	
(iii)	Description of work:	
(iv)	Duration & frequency of respirator use:	
(v)	Type of work performed:	
	Any special responsibilities that could affect the safety of others (rescue, fire fighting, etc.):	
(vi)	Special environmental conditions (heat, confined space, etc.)	
(viii)	Any additional requirement for: protective clothing or equipment:	

On average, how often will employee wear the respirator and for how long each time?

Is respirator use permanent or temporary until other controls are in place?

Permanent    Temporary

## APPENDIX E

### PROCEDURES FOR RESPIRATOR USE AT OHIO UNIVERSITY

The use of respirators is regulated by the OSHA Respirator Standard, 29 CFR 1910.134. The standard requires certain minimum activities be conducted for an acceptable program.

In order to use respirators, you must:

1. Contact Environmental Health and Safety to assess the work processes and chemicals to see if respirators are necessary.
  - a. Collect and have available, all MSDS sheets for the chemicals in use prior to EHS meeting with you.
  - b. Consider all other possible control measures that might be used to eliminate the need for respirators, such as substitution of safer chemicals, ventilation, wet methods, etc. Respirators should be the last resort.
  - c. Air sampling is often necessary to evaluate the need for respirators. EHS can conduct the air sampling for you. As long as funds are available, there will not be a charge for sample analysis. The department requesting the assessment may need to pay the cost of sample analysis if funds are not available.
2. If no other method of control of employee exposure is feasible and EHS has validated the need for respirator use, the employee should be enrolled in the OHIO Respiratory Protection Program.
  - a. EHS will fill out the “Employee Information to Physician” form (Appendix D) and give it to the employee’s supervisor.
  - b. Steps 3 and 4 must be done before Step 6.
3. A physical evaluation and approval of a physician or PLHCP is required for an employee to use a respirator. Contact the Occupational Health Clinic at Hudson for availability of this service. If a cost is assessed for these services, it is the responsibility of the department to arrange for payment. Re-evaluation is required if any changes or problems occur in the employee or work situations.
  - a. The employee should take a copy of their “Information to Physician” form to OHC when they go for their physical for the first time.
4. After the required physical evaluation and approval by the physician and EHS notification of the approval, contact EHS for training and fit testing.

5. EHS will provide a training session for employees needing to use respirators. Retraining is required annually.
6. The employee must be fit tested in their respirator at least once annually. Do not purchase any respirators until this is done, as this will determine which respirator fits the employee. Fit testing is done by EHS at no cost to the department.
7. All beards or other facial hair which interferes with the respirator seal should be shaved off, if the employee is to use a half or full face, air-purifying respirator. The only exception would be to substitute a hooded, power air-purifying respirator (costing 20-30 times more than a half mask, air-purifying respirator).
8. Medical records are kept at Occupational Health and records of training and fit testing are kept at EHS. Supervisors are encouraged to also keep their own records for their staff as a management tool.
9. Supervisors must monitor the proper use, care and maintenance of the respirators.
10. Proper storage must be provided for each respirator. A plastic bag usually comes with the respirator and can be used to store the respirator.
11. Respirators must be cleaned and inspected before and after each use. If inspection finds a part defective or missing, the part must be replaced prior to reuse.
12. A formalized and documented evaluation of the respirator program must be conducted periodically. This is currently done by the EHS Respiratory Program Administrator on a regular basis.
13. Selection of respiratory equipment for each hazard shall be made in consultation with EHS, in order to assure that the proper equipment be used.

Contact EHS Respiratory Protection Coordinator, for information or questions at (614) 593-1666.

## VOLUNTARY RESPIRATOR USE

### Appendix D to Sec. 1910.134 (Non-Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

**Respirators are not required for my job. I want to wear one voluntarily. I have read the statement above and have been given a copy by OHIO Environmental Health & Safety.**

\_\_\_\_\_  
Name (Print)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name (Signature)

\_\_\_\_\_  
OHIO EHS Staff (Name)  
Issuing Copy

**APPENDIX F**

OSHA Respirator Standard  
29 CFR 1910.134

(Available upon request or at  
<http://www.osha.gov/SLTC/respiratoryprotection/index.html>)