

**University of Dayton**

# **Respiratory Protection Program**



**June 2010**

This program is intended to conform with OSHA Respiratory Protection Standard  
29 CFR 1910.134

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# RESPIRATORY PROTECTION PROGRAM

## Policy

It is the policy of the University of Dayton to protect its employees from hazardous atmospheres through a comprehensive program of recognition; evaluation; engineering, administrative and work practice controls; and personal protective equipment, including respirators. To the greatest extent feasible, hazard elimination and engineering and work practice controls shall be employed to control employee exposure to within allowable exposure limits. However, where these measures are not feasible or fully effective or are under development, the University of Dayton shall provide appropriate respirators to affected employees under this program. The University of Dayton is committed to full compliance with applicable federal and state regulations pertaining to employee respiratory protection.

## Purpose

The purpose of this program is to protect the health of University of Dayton employees who may be exposed to hazardous atmospheres in the conduct of their work and to provide appropriate protection from these hazards, without creating new hazards. This program sets forth the University's practices for respirator use, provides information and guidance on the proper selection, use, and care of respirators, and contains requirements for establishing and maintaining a respirator program.

## Scope

This program applies to all University of Dayton employees who need to wear a respirator to perform assigned duties. Examples of chemicals or operations that pose potential respiratory hazards and involve respirator use are:

- Certified and trained Facilities Management personnel that may be required to perform asbestos abatement in emergency situations.
- University of Dayton Research Institute personnel while conducting research that has been determined to pose a respiratory hazard to the employee.

## Roles and Responsibilities

### President of the University of Dayton

- Supports the University policies for safety and health, which includes the Respiratory Protection Program. Authorizes the Respirator Administrator the responsibility and resources to administer the program.

### Respirator Administrator (Environmental Safety Administrator)

- Has overall responsibility for the University of Dayton Respiratory Protection Program, including monitoring respiratory hazards, maintaining records and conducting program evaluations

- Has knowledge about respiratory protection and maintains an awareness of current regulatory requirements and good practices
- Approves Respiratory Protection Programs for each operation that involves use of respirators
- Approves training programs for employees
- Approves fit test procedures for employees
- Approves respirator makes and models for the University to purchase and use.

#### **Environmental Safety Department or consultant**

- Performs employee exposure monitoring upon initial work in a potentially hazardous atmosphere and whenever work conditions change that may affect employee exposure
- Performs employee exposure monitoring in accordance with Federal and State OSHA regulations
- Uses generally accepted sampling techniques and analytical methods, including generally accepted quality assurance and control measures
- Reports all findings to the supervisor within five days of receipt of analytical results from the laboratory, at a minimum
- Upon request, performs surveys and makes recommendations for hazard control.
- Complete initial respirator training and annual refresher training. In addition, complete any recommended respirator manufacturer training prior to servicing respirators and their components
- Evaluates and documents semi-annual departmental inspections of each air purifying respirator and monthly inspections of each supplied air respirator issued by the employer or maintained in its inventory
- Ensure that compressed breathing air cylinders are hydrostatically tested on schedule
- Remove from service and tagout any defective respirators or parts
- Recommends any needed maintenance and repairs of respiratory protection equipment in accordance with the manufacturer's instructions
- Maintain an inventory of respirators and associated parts and equipment in use by University employees.
- Recommend respirators when indicated in writing, inspecting to confirm that the respirator or equipment is of the type specified in the respirator plan or program
- Issue spectacle kits to employees who require corrective lenses with their respirators
- Perform tests for compressed air quality and inspect breathing air compressors periodically.

#### **Supervisors**

- Initiate and approve a written Respiratory Protection Program for each operation that involves respirator use.

- Complete the initial and annual respirator refresher training of the type attended by employees under their supervision.
- Initiate safety briefings on respiratory protection issues at the start of each new project or task that involves respiratory hazards for affected employees under their supervision
- Ensure that any use of respirators by employees under their supervision is in accordance with this program and a written Respiratory Protection Program and Worksite-Specific Respiratory Protection Plan that has been approved by the Supervisor and the Respirator Administrator, or designee
- Record any complaints related to respirator usage, act promptly to investigate the complaints, correct any hazards, and get medical assistance, when indicated. Report first aid and medical treatment in accordance with the University's safety procedures. Report every respirator related incident to the Respirator Administrator before the end of the work shift
- Ensure that their employees have the requisite training, fit testing, and medical clearances before authorizing them to wear any respirators
- Prohibit any employee with lapsed or incomplete respirator clearances to work in hazardous atmospheres. Enforce any restrictions imposed by the occupational physician on individual employees, including the need for corrective lenses
- Physically check each respirator prior to its assignment to their employees to be sure that it is of the type specified in the written plan
- Inform each affected employee of the results of exposure monitoring within one day of receiving such results and assure inclusion of all exposure reports in the University's Environmental Safety recordkeeping system
- Monitor employee compliance with the respirator program requirements.

## **Employees**

- Use respiratory protection in accordance with the instructions and training provided
- Immediately report any defects in the respiratory protection equipment and whenever there is a respirator malfunction, immediately evacuate to a safe area and report the malfunction
- Promptly report to the supervisor any symptoms of illness that may be related to respirator usage or exposure to hazardous atmospheres
- Report any health concerns related to respirator use or changes in health status to the occupational physician
- Wash their assigned reusable respirators at the end of each work shift when used and disinfect assigned respirators at least weekly
- Store respirators in accordance with instructions received
- Observe any restrictions placed on work activities by the occupational physician
- Be clean shaven in all facial areas that seal to the respirator facepiece
- Allow no headpieces, band-aids or other items beneath a respirator seal or headstrap assembly

- Inspect the respirator immediately before each use, in accordance with training provided
- Perform a user seal, negative and positive respirator fit check each time a respirator is donned in accordance with training provided.

### **PERMISSIBLE PRACTICE**

Any respirator worn by a University employee on the job shall be issued by the appropriate safety office (ESO or UDRI ES&H) under this.

Respirators shall be issued by the appropriate safety office and worn by exposed employees whenever airborne contamination levels are not otherwise reduced to within the allowable limits.

A written Respiratory Protection Program and Worksite-Specific Respiratory Protection Plan shall be prepared and approved by the Supervisor and the Respirator Administrator prior to any employee respirator use, including voluntary usage or emergency use. This plan shall identify the location and tasks, identify and quantitate the air contaminants or oxygen deficiency, specify the appropriate respirator, and specify any limitations, such as air monitoring, respirator cartridge changeout frequency, etc. A sample Worksite-Specific Respiratory Protection Plan is found on page 2-17. You may copy this Plan and fill in the blanks. The use of a computer disk will be provided upon request to the ESO for more space for compliant information. Each operation involving respirator use must have a signed and approved written plan.

Upon an employee's request, an appropriate respirator shall be issued for voluntary use when exposure to contaminant levels is at or above 50 percent of allowable limits, but within allowable limits, or when exposed to nuisance dusts, molds, pollen, etc. Reasonable efforts should be made to reduce such exposures.

Regardless of exposure level, employees who are exposed to any recognized carcinogen, mutagen or teratogen in the performance of their work assignments may request and receive an appropriate respirator for voluntary use and in addition, affected employees already assigned a respirator may request a respirator that provides a higher protection factor than the one provided by the University for that work.

The University of Dayton Emergency Response Plans required for chemical spills or releases, fire response, pathogen exposures, etc. shall include a Respiratory Protection Program and Worksite-Specific Respiratory Protection Plan whenever there is a reasonable potential for a respiratory hazard. If an emergency plan calls for complete employee evacuation and no University employee is assigned response activities, a plan is not required as a component.

At no time, however briefly, shall a University employee be exposed to contaminant levels that are more than three times the allowable 8-hour time-weighted average limits without respiratory protection.

No employee may work alone while wearing a respirator. Each respirator wearer shall have at least one employee assigned responsibility to perform periodic status checks throughout the duration of respirator use. When SCBAs are worn, at least one standby person, located outside of the hazardous atmosphere and equipped with an SCBA, shall be in constant attendance, ready to provide immediate assistance and to call for emergency help, if needed.

### **Respiratory Protection Program and Worksite-Specific Respiratory Protection Plan**

Each operation that involves respirator use shall have a written Respiratory Protection Program and Worksite-Specific Respiratory Protection Plan that is approved and signed by the Supervisor and Respirator Administrator.

This plan, which may be a part of a job hazard analysis, site safety plan, confined space entry permit or other document, shall contain an identification of the atmospheric hazard(s) and the respective measured or expected concentration(s) at each location or operation, the respective allowable concentration limits, the type of respirator(s) approved, monitoring requirements, emergency response procedures, and limitations, such as the frequency of respirator cartridge change-out. This information shall be kept in the Environmental Safety Office with a copy available in the work area with respirators in use.

This document shall be updated annually and more frequently if conditions change. This document shall be available at the job location and shall be maintained for 30 years as an exposure record. An example is presented in Worksite-Specific Respiratory Protection Plan on page 2-17.

### **RECOGNITION AND EVALUATION OF AIRBORNE CONTAMINANTS**

A hazard assessment shall be initially performed in each workplace by the Supervisor or Industrial Hygiene department. Where the presence or potential presence of airborne contaminants is recognized or suspected, the Environmental Safety department or other appointed evaluator shall perform evaluations to determine if allowable limits are exceeded or potentially exceeded. The results of the hazard assessment shall be communicated to the affected supervisors and employees. A written record of this assessment, including identification of the work area, the name of the assessor and the date of the assessment, shall be maintained for a period of 30 years if atmospheric hazards were identified. This assessment will be maintain in the Environmental Safety Office.

For workplaces in which the hazard assessment produces no findings of potential exposures, Supervisors shall monitor the workplace and request a hazard assessment whenever materials or processes change.

Whenever the hazard assessment identifies potential exposures to hazardous atmospheres, an annual reassessment shall be performed, unless a more frequent assessment is required by OSHA. In addition, the Supervisor is responsible for requesting a reassessment by the Environmental Safety Office or the UDRI Safety Office if appropriate whenever materials or processes change.

### **EVALUATION OF AIRBORNE CONTAMINANT CONTROLS**

When hazardous atmospheres are recognized, elimination of the hazardous material or feasible engineering and work practice controls shall be instituted to reduce contaminant levels to within allowable limits. If such measures are not completely successful or if the condition is temporary, personal protective equipment, including respiratory protection, shall be selected and worn.

The Environmental Safety Office or other appointed evaluator shall reassess the workplace when controls are instituted to measure their effectiveness in reducing employee exposure to hazardous atmospheres.

### **SELECTION AND ISSUANCE OF RESPIRATORS**

Selection of the appropriate respirator shall be documented in the written Respiratory Protection Program and Worksite-Specific Respiratory Protection Plan.

If the atmosphere is uncharacterized, it must be assumed to be IDLH and a positive pressure SCBA or combination supplied-air respirator with SCBA must be worn. Respirator selection shall comply with OSHA requirements for specific substances, such as asbestos, lead, etc. At a minimum, the assigned protection factor of the selectee's respirator shall equal or exceed the hazard ratio.

All respirators used by University of Dayton employees shall be approved by NIOSH. No components shall be substituted, unless they are listed in the approval by NIOSH. Any change or modification to a respirator may void the respirator approval and may adversely affect its performance.

Any restrictions or limitations recommended for a particular respirator by the respirator manufacturer shall be observed.

The Respirator Technician or other facility-appointed person shall inspect each respirator or component prior to issuance and shall assure that the respirator assembly is complete, sanitary and in good working order upon issuance. Atmosphere-supplying respirators shall be returned to the Respirator Technician or other facility-appointed person at least monthly for periodic inspection and air purifying respirators shall be returned for periodic inspection at least semi-annually. A log shall be maintained of these periodic inspections.

The Supervisor is responsible to ensure that each respirator user under the Supervisor's supervision is currently approved for respirator use, including medical, fit testing and training certifications. Employees with expired certifications shall not be permitted to work in hazardous atmospheres or to voluntarily wear a respirator until their lapsed requirements are updated.

Each respirator must be inspected by its wearer immediately prior to each use, according to instructions provided in the respirator training. Any defects shall be reported to the Supervisor before entry into a hazardous atmosphere. A user seal check shall be performed by the wearer immediately prior to entering the hazardous atmosphere.

Contact lenses shall be permitted if the employee's ophthalmologist or optometrist authorizes their use by the employee in hazardous atmospheres with negative pressure and positive pressure respirators in a written communication to the appropriate safety and health office.

Employees who are issued a respirator are responsible for its maintenance, daily inspection and storage while the unit is in their control.

### **FIT TESTING**

Each respirator wearer shall be fit tested at least annually, using protocols approved by the Respirator Administrator. More frequent testing shall be performed if required by OSHA regulations for specific substances or if the wearer's facial contours change, such as by weight gain or loss, facial surgery, etc.

On the occasion of each fit test, employees may choose their respirator from an array of at least five facepieces from different manufacturers and sizes approved by the Respirator Administrator.

Fit test certifications shall be prepared and signed by the person performing the fit test and must name the tested employee; the make, model and size of respirator fit tested; and the result of the fit test. A copy shall be provided to the Supervisor.

University - required fit tests, including reasonable employee time and travel costs, shall be paid for by the contract or department involved.

## MEDICAL APPROVAL FOR RESPIRATOR USE

Each respirator wearer shall be approved for respirator use by the University designated physician or licensed health care professional (PLHCP) at least annually by filling out a medical evaluation questionnaire. The occupational physician shall be provided a copy of the employee's duties, respirator types to be worn, and air contaminants, as well as any applicable OSHA standards governing the medical evaluation, such as the Respiratory Protection standard and applicable substance-specific standards.

The PLHCP's approval shall be a written certification that lists the respirator types approved for use by the individual (i.e., negative pressure air purifying, powered air purifying, pressure demand SCBA) and any restrictions on the employee's use of respiratory protection, including the need for corrective lenses. The PLHCP's certification shall not disclose any confidential medical information, but shall clearly list or describe any restrictions to be observed. A copy shall be provided to the Supervisor.

If further medical evaluations are indicated from the review of the medical questionnaire, they shall be performed by a licensed physician selected by the Environmental Safety Office and the cost of the respirator medical evaluation shall be paid by the appropriate contract or department, including reasonable time and travel expenses of the employee. Payment for special medical diagnostic procedures needed to assess the ability of an employee to safely wear a respirator shall be approved in advance by the appropriate safety office. No medical treatment costs shall be paid under this program.

Medical records created under this program shall be handled in accordance with OSHA requirements for confidentiality, employee access and retention.

## TRAINING

Each respirator wearer, supervisor of a respirator wearer, respirator technician and Administrator must be trained. This training shall be updated at least annually.

Upon successful completion of respirator training, the instructor shall sign a certification that names the employee trained, the type(s) of respirator and the training date. A copy shall be provided to the supervisor. A record shall be maintained of the training topics covered.

University-approved respirator training shall be paid for by the appropriate contract or department including the employee's reasonable time and travel to participate in such training.

## DEFINITIONS

**Air purifying respirator (APR)** — a type of respirator that removes specific contaminants from air by use of filters, cartridges or canisters by passing ambient air through the air-purifying element. APRs do not supply oxygen.

**Allowable limit** — the maximum concentration of a substance in air that is permitted by regulation or voluntary standards to protect employee health. These concentrations may be expressed in terms of an 8-hour time-weighted average, a 15-minute short term average or as an instantaneous upper ceiling limit. An example is the OSHA permissible exposure limits (PEL).

**Assigned protection factor** — the level of respiratory protection expected to be provided by a given class of respirators to a properly fitted and trained user. This factor is assigned by OSHA in substance specific standards and by ANSI in the voluntary national standard, Z88.2.

**Atmosphere-supplying respirator** — a type of respirator that supplies the user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

**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.

**Demand respirator** — an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

**Dust mask** — see Filtering facepiece.

**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.

**Employee exposure** — exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

**End-of-service-life indicator (ESLI)** — a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

**Escape-only respirator** — a respirator intended to be used only for emergency exit.

**ESO** – Environmental Safety Office

**Filter or air purifying element** — a component used in respirators to remove solid or liquid aerosols from the inspired air.

**Filtering facepiece (Dust mask)** — a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire face piece composed of the filtering medium.

**Fit factor** — a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

**Fit test** — use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

**Hazardous atmospheres** — an atmosphere that contains a contaminant(s) in excess of the allowable limit or contains less than 19.5 percent oxygen.

**Hazard ratio** — a number calculated by dividing the actual air contaminant concentration by the allowable limit.

**Immediately dangerous to life and health (IDLH)** — an atmosphere that poses an immediate threat to life would cause irreversible adverse health effect, or would impair an individual's ability to escape from a dangerous atmosphere.

**Loose-fitting facepiece** — a respiratory inlet covering that is designed to form a partial seal with the face.

**National Institute for Occupational Safety and Health (NIOSH)** — a Federal institute responsible for conducting research and making recommendations for the prevention of work-related illnesses and injuries. It tests and issues approvals for respirators.

**Negative pressure respirator** (tight fitting) — a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

**Occupational Safety and Health Administration** (OSHA) — the Federal or state agency with authority to issue and enforce workplace health and safety regulations.

**Oxygen deficient atmosphere** — an atmosphere with an oxygen content below 19.5 percent by volume.

**Physician or other licensed health care professional** (PLHCP) — an individual whose legally permitted scope of practice (i.e., license, registration or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the health care services required by this respirator program.

**Positive pressure respirator** — a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

**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.

**Pressure demand respirator** — a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

**Protection factor** — a ratio calculated by dividing the air contaminant concentration outside a respirator by the concentration inside the respirator. This is measured in a quantitative fit test.

**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.

**Quantitative fit test** (QNFT) — an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

**Respiratory inlet covering** — that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source or both. It may be a facepiece, helmet, hood, suit or a mouthpiece respirator with nose clamp.

**Self contained breathing apparatus** (SCBA) — an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

**Service life** — the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

**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.

**Tight-fitting facepiece** — a respiratory inlet covering that forms a seal with the face.

**User seal check** — an action conducted by the respirator user to determine if the respirator is properly seated to the face.

## REFERENCES

- Federal OSHA standards:

- 29 CFR 1910.134, Respiratory Protection for General Industry
- 29 CFR 1910 Subpart Z, Health Standards
- 29 CFR 1926 Construction
- 29 CFR 1915 Shipyards
- 29 CFR 1916 Marine terminals
- 29 CFR 1917 Longshoring
- 29 CFR 1928 Agriculture
  
- Department of Labor; Mine Safety and Health Administration  
42 CFR 84, Respiratory Protective Devices
  
- American Conference of Governmental Industrial Hygienists,  
Threshold Limit Values current edition.
  
- American National Standards Institute, Standard for  
Respiratory Protection, ANSI Z88.2-1992.

# Worksite-Specific Respiratory Plan

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**Task description:**

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**Atmospheric hazards:**

- Oxygen levels: \_\_\_\_\_ Is this oxygen level deficient?
- Monitoring (List the monitoring frequency and method for each atmospheric hazard):

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**Controls to be implemented to reduce employee exposure to atmospheric hazards:**

- Respirators to be worn (List type, cartridge type if APR, concentration and limits for use):

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**Authorized employees (list with employee number):**

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**Emergency response:**

- Signs and symptoms of overexposure

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- Evacuation procedures

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- First aid and emergency medical procedures

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- Reporting procedures

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**Supervisor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Respirator Administrator Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

# **APPENDIX B**

## **FIT TESTING PROCEDURES**

### **29 CFR 1910.134 APPENDIX A**

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# **APPENDIX C**

## **USER SEAL CHECK PROCEDURES**

**29 CFR 1910.134 APPENDIX B-1**

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# **APPENDIX D**

## **RESPIRATOR CLEANING PROCEDURES**

**29 CFR 1910.134 APPENDIX B-2**

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# **APPENDIX A**

## **RESPIATORY PROTECTION**

### **TITLE 29, CODE OF FEDERAL REGULATIONS, (CFR), PART 1910.134**

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# **APPENDIX E**

## **OSHA RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE**

**29 CFR 1910.134 APPENDIX C**

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# **APPENDIX F**

## **INFORMATION FOR EMPLOYEES USING RESPIRATORS WHEN NOT REQUIRED UNDER STANDARD**

**29 CFR 1910.134 APPENDIX D**

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