

University of Oklahoma

GENERAL RESPIRATORY PROTECTION POLICY

1.0 GENERAL

The OSHA General Industry Standard for respiratory protection, 29 CFR 1910.134 and the Oklahoma State Statute Title 40, as administered by the State Commissioner of Labor require that a respiratory protection program be established by the University. The general guidelines in this program are designed to help reduce employee exposures to occupational dusts, fumes, mists, fogs, smokes, sprays, gases, and vapors.

Where feasible, exposure to these contaminants will be eliminated by engineering controls (example, general and local ventilation, enclosure or isolation, and substitution of a less hazardous process or material). When effective engineering controls are not feasible, use of personal respiratory protective equipment shall be required to achieve this goal.

2.0 SUPERVISORY RESPONSIBILITIES

The supervisors at each work site shall be responsible for insuring that all personnel under their control are completely knowledgeable of the respiratory protection requirements for the environmental hazards in areas in which they work. They shall also be responsible for insuring that employees whom they supervise comply with all facets of this respiratory program, including respirator inspection and maintenance. This hazard communication shall be effected through training and inspection. Appropriate surveillance of work area conditions and the degree of employee stress shall be maintained to insure and evaluate continued effectiveness of the program.

Respiratory protection is no better than the respirator in use, even though it is worn conscientiously. Frequent random inspections shall be conducted by supervisors to insure that respirators and cartridges are properly selected, used, cleaned, and maintained.

2.1 Training

Each supervisor shall provide adequate training and instructions on the proper use and limitations of all respirator equipment provided to employees, including where, when, and under what conditions the respirator can be and cannot be worn safely and effectively.

All training regarding respiratory protection shall be documented by completion of a Supervisor's Report of Training (to be mailed to the Department of Risk Management and Safety Services Office, NEL, Room 112). REMINDER: Any employee exposure to a hazardous substance must be documented by completion of an OU Employee's

Report of On-the-Job Injury/Illness form. An exposure may be skin contact, inhalation, or ingestion that might result in an adverse health effect. A worker in a hazardous environment equipped with adequate protective equipment, as defined by the chemical(s) Material Safety Data Sheets(s) (MSDS), is not presumed to be "exposed" unless actual "contact" is identified. Any worker in a hazardous environment who is not equipped with adequate protective equipment, as defined by MSDS information, is presumed to be "exposed," and subsequently this "exposure" must be reported.

## 2.2 Medical Clearance for Respirator Use

No University employee shall wear a respirator of any type, whether routinely occasionally, rarely, or even only under emergency circumstances, unless that employee has received medical clearance for respirator use.

Medical clearance for respirator use by University employees shall be granted or refused by medical staff evaluation at the Goddard Health Center (GHC).

Supervisors of employees who need medical clearance for respirator use shall complete a "*Request for Medical Clearance for Respirator Use*" (available from DRMSS) and submit the completed questionnaire to RMSS for approval. Approved questionnaires shall be returned by RMSS to generating supervisors, who shall arrange for the affected employee to take the approved form to GHC for medical examination. At GHC the employee will complete the (Mandatory) OSHA 1910.134 Respirator Medical Evaluation Questionnaire and provide the completed questionnaire to the physician or other licensed health care professional.

After appropriate medical evaluation, GHC staff will return the form to the supervisor indicating either approval of respirator use, limited approval with specific restrictions, or disapproval of respirator use. (Note: The medical reason for disapproval shall not be identified on the report to the supervisor or RMSS, and shall only be provided to the examined employee.)

Supervisors shall insure that all medical clearances are renewed prior to the expiration date printed on the clearance, such that no employee wears a respirator without a *current* medical clearance on file.

## 2.3 Respirator Selection

A departmental representative (usually the work supervisor) shall determine what specific working environments require use of respiratory equipment and shall also insure that proper

respiratory equipment is provided to meet the needs of each specific application.

Respirators are selected and approved by the department on the basis of hazards to which the worker is exposed. Supervisors may consult with the respirator manufacturer or distributor, the manufacturer or distributor of the chemical(s) being protected against, the chemical(s) Material Safety Data Sheet (MSDS), or with the OU-Risk Management & Safety Services (RMSS) staff to insure proper respirator and/or cartridge selection.

Only respirators that are NIOSH-certified by the National Institute of Occupational Safety and Health (NIOSH) shall be used.

The selection of the proper respiratory protective equipment for any given situation involving potentially harmful air contamination depends on a number of factors including:

1. The nature of the hazardous operation or process;
2. The type of air contaminant, including its physical and chemical properties, physiological effects on the body, and its concentration in the atmosphere;
3. The period of time for which the respiratory protective equipment must be worn;
4. The location of the hazard area with respect to a source of uncontaminated respirable air;
5. The state of health of personnel involved; and
6. The functional and physical characteristics of the protective equipment.

### 3.0 RESPIRATOR TYPES

#### 3.1 Air Purifying Respirators

These are among the most commonly used respirators. This class of respiratory protective equipment includes: gas masks, chemical cartridge respirators, particulate filter respirators, and combination respirators. They usually require the selection of proper cartridges and/or filters.

#### 3.2 Atmosphere (Air) Supplied Respirators

Included in this class of respiratory protective equipment are: hose masks, air line respirators, abrasive blasting respirators, air supplied hoods, and air supplied suits. These are issued on an as needed basis and personnel are trained and fit-tested at the time of issuance.

### 3.3 Self-Contained Breathing Devices

Also referred to as self-contained breathing apparatus (SCBA), these provide complete respiratory protection against toxic gases and an oxygen deficiency.

### 4.0 EMPLOYEE RESPONSIBILITIES

The employees shall have the responsibility of being aware of the respiratory protection requirements for their work areas (as explained during the training program). Employees shall also be responsible for wearing the appropriate respiratory equipment according to proper instructions and for maintaining the equipment in a clean and operable condition.

#### 4.1 Air Purifying Respirators

The first essential in regard to respiratory protective equipment is to make sure that the mask or respirator fits properly. To insure this, the employee shall:

1. Check to insure that the rubber exhalation flap is secured firmly to the plastic exhalation valve seat.

2. Check to insure that the air-purifying elements are attached firmly.

3. Check the position of the plastic adapters on the rubber facepiece.

4. The respirator is worn so that the narrow, upper portion of the rubber facepiece covers the nose and the wide lower portion of the rubber facepiece is under the chin.

5. Place the bottom loop of elastic strapping around the head just below the ears.

6. Place the top loop of the elastic strapping around the head above the ears.

7. Check the seal of the facepiece on the face. Wrap the fingers of one hand around the rubber exhalation valve cover to tightly close the openings, exhale rapidly and forcefully several times. If air leaks from around the mask you do not have a good seal.

While you follow these seven steps, make certain to repeat any step that you do not feel completely satisfied with. Ask your supervisor any questions you may have. Follow the directions provided by the respirator manufacturer.

#### 4.1.1 Air Purifying Respirator Cartridges

1. Be sure that you have the proper cartridge and/or filters for use in your specific job. A single respirator may accommodate up to as many as 20 different filter and cartridge combinations and each cartridge and filter are for protecting you against a specific kind of air contaminant. IT IS EXTREMELY IMPORTANT THAT YOU HAVE THE PROPER CARTRIDGES AND/OR FILTERS TO PROTECT YOU AGAINST THE AIR CONTAMINANTS IN THE AREA WHERE YOU ARE WORKING. Ask your supervisor any questions you may have regarding the proper cartridge and/or filters for your respirator.

2. If the cartridge and/or filter of your respirator appear to be used up, you may obtain new cartridges and/or filters from your supervisor any time. A good rule of thumb is to replace the cartridge and/or filters when an odor is determined by taste or smell or when the cartridges and/or filters become clogged with dust particles or paint and restrict normal breathing.

#### 4.1.2 Pressure Fit Tests

The pressure fit tests shall be performed by the employee each time the air purifying type respirator is used. The tests shall be performed after the straps are adjusted and the respirator is in place.

1. Negative Pressure Fit Test: The negative pressure fit test shall be performed by placing the palms of the hands lightly over the inlet surface of the cartridge and inhaling gently so that the facepiece collapses slightly. Hold the breath for ten (10) seconds. If the facepiece remains collapsed, the fit is tight enough.

Positive Pressure Fit Test: The positive pressure fit test shall be performed by closing off the exhalation valve with the hand and exhaling slightly. A small ballooning of the facepiece should be evident which should be maintained for ten (10) seconds. This test, in conjunction with the negative pressure fit test, indicates a proper fit.

#### 4.1.3 Qualitative (Odor) Fit Test

The qualitative (odor) fit test is conducted using isoamyl acetate (banana oil), and will be conducted during the initial fit test of any employee with a new air purifying cartridge respirator.

Air Purifying Respirators: The respirator fitted with an organic vapor cartridge instead of the usual dust cartridge, is put on, adjusted, and the pressure fit tests conducted in an area separate from where the qualitative (odor) fit test will be performed to preclude exposure to the banana oil odor.

The ampule is crushed and passed around the respirator's sealing surfaces (junction with the face) and in front of the cartridge's inlet. The employee shall talk and perform head movements (up, down, and turning) during the test to assure a fit during normal facial activity. No odor will be detected by the respirator's wearer if the device is properly fitted and the cartridge is not out-of-date (overloaded). If odor is detected, the employee shall readjust the respirator and the test repeated. If after readjustment, a proper fit cannot be obtained, a different size or style should be tried until a proper fit is obtained.

#### 4.1.4 Air Purifying Respirator Inspection and Maintenance

The respirator must be inspected prior to each use, cleaned, and properly maintained to provide employee protection. It is the employee's responsibility to perform these tasks. Prior to use, headbands shall be checked to see that they are in good condition. They shall be inspected for breaks or tears in the material and assurance must be made that all clips, fasteners, and adjusters are in place and working properly.

The facepiece shall be checked for dirt, cracks, tears, or holes. The shape of the facepiece shall be inspected for possible distortion that may occur from improper storage and assurance made that the rubber is flexible, not stiff.

Inhalation and exhalation valves shall be inspected for cracks, tears, distortion, dirt, or build-up of material between valve and valve seat.

Cartridge holders shall be checked to make sure gaskets are in place and that there are no cracks or damage to the threads.

Cartridges shall be inspected to assure they are clean. Never try to clean a cartridge by washing it. Cartridges shall be inspected for dents, scratches, or other damage, particularly the metal sealing bead around the bottom. Cartridges shall be replaced if excessive breathing resistance is encountered upon inhalation.

Cartridge/Canister type respiratory protective equipment shall be cleaned by following these steps:

1. Remove any filters, cartridges, or canisters.
2. Wash facepiece and breathing tube (if applicable) in cleaner (disinfectant solution containing a bactericidal solution mix with water of 120 to 140 degrees Fahrenheit). Vigorous mechanical action shall not be used. Use a hand brush to facilitate removal of excess materials.
3. Thoroughly rinse in clean warm running water. Inadequate rinsing may produce dermatitis.
4. Air-dry in a clean area.

5. Clean other respirator parts as recommended by the manufacturer. Check facepiece for deterioration. All rubber or elastomer parts shall be inspected for pliability and deterioration. Stretching and manipulating action will keep parts pliable and flexible and prevent them from taking a set during storage.

6. Inspect intake and exhaust valves for deformities. Check head straps for completeness of hardware and elasticity. Replace with new parts as needed.

7. Check for gasket at canister/cartridge site. If absent, install new gaskets.

8. Place in plastic bag and seal for storage.

9. Store in a convenient, clean, cool, sanitary area--protected against dust, sunlight, heat, extreme cold, excessive moisture or damaging chemicals.

10. Where practicable, respirators should be assigned to individual workers for their exclusive use.

Respirators shall be regularly cleaned and disinfected. Those issued for the exclusive use of one worker should be cleaned after each day's use, or more often if necessary. A respirator used by more than one worker shall be thoroughly cleaned and disinfected after each use. Once or twice a week (where respirators are used on a daily basis) the respirators should be disassembled and thoroughly washed.

If disposable respirators are used, they shall be turned in to the supervisor who shall dispose of it properly. Maintenance records, except routine cleaning, shall be kept. Minor repairs shall be performed by a properly trained person or the manufacturer.

#### 4.2 Other Respirators

Departments utilizing other types of respirators (other than air-purifying cartridge respirators) shall develop written guidelines for fit-testing, inspection, use, cleaning and maintenance for such equipment in accordance with manufacturer's recommendations and accepted safety practices. A copy of all supplemental written instructions shall be forwarded to DRMSS.

#### 4.3 Respirators for Emergency Use

Respirators for emergency use such as self-contained devices (SCBAs) shall be thoroughly inspected at least once a month and after each use.

5.0            PROGRAM ASSISTANCE

Departments requiring assistance with program development, MSDS interpretation, respirator selection, training, or other respirator-related concerns may contact the OU-Risk Management & Safety Services staff at (405) 325-2981.