RESPIRATORY PROTECTION

14.0

This policy has been established to coordinate the use and maintenance of respiratory protective equipment. Respiratory protection may be needed for special work tasks that will help reduce an employee’s exposure to chemicals, dusts, mists, or gases. This policy applies to ALL employees of Facilities Management group at Arkansas Tech University.

This program will assist trained personnel to work safely in hazardous work environments such as welding, oxygen deficient atmospheres, toxic atmospheres, hazardous materials, or confined spaces.

**NOTE** Where possible, it shall be the intent of the University to eliminate ALL chemicals and materials in the workplace that may be considered toxic, hazardous or otherwise might require the use of a respirator. However, if and when that is not possible, this policy will be followed.

14.1 RESPIRATOR REQUIREMENTS

A.

1. Respirators shall be provided by the University at no cost when necessary to protect the health of the employee. The University shall provide respirators which are applicable and suitable for the purpose intended.

2. Negative pressure respirators and demand respirators shall not be worn when conditions prevent a good face seal. Such conditions may be the growth of beard, side burns, or a skull cap that projects under the face-piece or temple piece of glasses. Any employee, who has facial hair which intrudes into the area where the respirator seals against the face, shall not be fitted with a negative pressure or demand respirator. Additionally, any employee who is not clean-shaven shall not be allowed to wear a negative pressure or demand respirator, even though he or she has previously obtained a satisfactory fit with a particular device.

3. Medical evaluations shall be conducted by a Physician or Licensed Health Care Professional (PLHCP).

4. An employee will not be allowed to use a designated respirator until a clearance from the Physician or Licensed Health Care Professional (PLHCP) has been approved. Once approved, a copy of the evaluation shall be kept on file with the Site Safety Coordinator.
14.2 ASSIGNMENT OF RESPONSIBILITIES

A. The Supervisors shall be responsible for the following:

1. Contact REM when they suspect a respirator may be required for a job;
2. Attend training on proper selection, storage, use, and maintenance of respiratory protective equipment when employees they supervise are required to use such equipment;
3. Ensure employees are scheduled and receive medical exams, when required;
4. Ensure employees attend annual training on the proper storage, use, and care of respiratory protective equipment (to be performed during annual fit test);
5. Supply employees with respiratory equipment specified by REM;
6. Supply the necessary parts and equipment to clean and maintain the respirator;
7. Ensure employees clean and maintain respiratory protective equipment properly;
8. Ensure emergency use respiratory protective equipment is kept in supervised work areas and is inspected on a monthly basis. A log of this inspection shall be maintained.
9. Ensure that all employees comply with all elements of this policy.

B. The employees shall be responsible for the following:

1. To know, understand, and comply with this policy
2. Attend training on the storage, use and care of respiratory protective equipment (performed prior to initial use and annually during fit test)
3. Be clean-shaven in areas where facial hair may prevent a good face seal, when required to use negative pressure respiratory protective equipment
4. Store, use, and maintain respirators in accordance with instructions given
5. Report to supervisor any operations or jobs for which they suspect respiratory protective equipment may be needed.

C. The Occupational Safety Coordinator shall be responsible for the following:

1. To ensure the policy remains current in accordance with Local, State, and Federal guidelines and industry “best practices.”
2. To ensure that training on the proper use and care of the respirator is provided.
3. To verify that each affected employee has received and understood the required training through a written certification that must contain the name of each employee trained, the date(s) of training, and verify that the employee has passed the medical evaluation.
4. Maintain records of the training and medical evaluation of each employee.
5. Maintain a list of employees medically approved for use of respiratory protective equipment
6. Make periodic surveys of operations and equipment at the University to assure adequate protection of employees is being provided;
7. Test employee understanding of the policy
8. Enforce the requirements

D. The Physician or Other Licensed Health Care Professional (PLHCP) Shall:
1. Establish medical and physical criteria for users of respiratory protective equipment and opt to use the OSHA medical questionnaire or an equivalent; and
2. Provide the Site Safety Coordinator with written results verifying whether employees are medically fit to use a negative pressure respirator and/or restrictions of use.

14.3 INITIAL MEDICAL EVALUATION
Prior to respirator use, a medical evaluation must be completed to ensure an individual’s fitness to wear a respirator. The medical evaluation consists of an OSHA required questionnaire and general physical administered by an occupational health clinic. Depending on the results of the questionnaire and information from the physical, additional medical testing may be required. All initial (baseline) medical evaluations will include completion of the questionnaire, a general physical, and a pulmonary function test. Other agent specific tests may be required by OSHA (e.g. lead, beryllium). Employees who refuse the medical evaluation will not be allowed to wear a respirator.

(REFER TO APPENDIX H-1: MEDICAL QUESTIONNAIRE)

A. The following information will be provided to the Physician or Other Licensed Health Care Professional (PLHCP) before the PLHCP makes a recommendation concerning an employee’s ability to wear a respirator:
1. Type and weight of the respirator
2. The duration and expected frequency of use
3. The expected physical work effort
4. Additional protective clothing and equipment to be worn; and
5. Likely temperature and humidity extremes that may be encountered.
6. A copy of the written respiratory protection program.
14.4 DESIGNATION OF PROGRAM ADMINISTRATOR

A. The Occupational Safety Coordinator has been designated as the one responsible for administering the elements of the respiratory protection policy at Arkansas Tech University. Responsibilities of the program administrator are:
   1. Evaluating the hazard in the workplace and identify job that may require employees to wear respiratory protection.
   2. Selection of appropriate respiratory protection equipment.
   3. Establish a training program for respirator users and ensure that the affected employees are properly trained.
   4. Monitor respirator use and workplace conditions to ensure that respirators are used in accordance with designated training and certification.
   5. Ensure that annual fit testing is completed.
   6. Ensure that respiratory protection equipment is properly cleaned, inspected, maintained and stored.
   7. Administer the medical surveillance program.
   8. Maintain records required by this policy.

14.5 SELECTION OF RESPIRATORY EQUIPMENT

A. 1. Determine areas on the ATU campus where hazardous substances are or may be present.
   2. Develop a list of hazardous substances that are or are likely to be used in that area, include those hazardous substances that may occur during foreseeable emergencies.
   3. With some degree of certainty determine the amount of chemical contamination employee could possibly be exposed.
   4. Determine the amount of oxygen normally present in the area.
   5. Based on the above information select an appropriate respirator.

   *(REFER TO APPENDIX H-2: ATMOSPHERIC HAZARD ASSESSMENT)*

14.6 RESPIRATOR TRAINING

A. The Occupational Safety Coordinator will ensure that proper training is provided to authorized respirator users and their supervisors prior to any respirator being used.
Training will include the following topics:

1. The elements of the ATU Respiratory Protection Policy.
2. Respiratory hazards encountered at ATU and their possible effects on the employee’s health.
3. Proper selection, fit testing techniques, limitations, proper donning, fit checks, inspection, cleaning, maintenance and emergency use procedures of respirators.
4. Medical signs and symptoms limiting effective use of respirators.

Training will be given annually to all employees required and authorized to use respirators. Training will also require employees to demonstrate knowledge of the following:

1. Why respirators are necessary to wear and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
2. What the limitations and capabilities of the respirator are;
3. How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
4. How to inspect, put on and remove, use, and check the seals of the respirator;
5. What the procedures are for the maintenance and storage of the respirator; and
6. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

Additional training will be required when there are changes in the workplace or when there are indications that the employee’s use and/or knowledge of respirator knowledge are considered inadequate.

14.7 TYPES OF RESPIRATORS TO BE USED

A. Only respiratory protective equipment which has been approved by the National Institute of Occupational Safety and Health (NIOSH) and the Occupational Safety Coordinator will be used by employees at Arkansas Tech University.

If the supervising department or Occupational Safety Coordinator can demonstrate that under all foreseeable conditions the oxygen content can be maintained within 16.0-19.5%, then any atmosphere supplying respirator may be used. Examples of respirators include:

1. Air Purifying: Filter respirators that remove hazardous particulates from the air. (See Figure 1)
2. Air Purifying: Chemical cartridge respirators that remove gases and vapors from the air. (See Figure 2)
3. Air Supplying: Natural producing filter supplies breathable air from a safe source. (See Figure 3)
4. Self-Contained Breathing Apparatus (SCBA): specific use respirators in specific areas for a minimum service life of thirty minutes (See Figure 4)
5. N-95 dust mask (See Figure 5)
B. Examples of respirators: These are by no means all available respirators. They are merely a representation of a select few that employees may see used on campus.

**FIGURE 1:** FILTER RESPIRATORS (Half mask)

**FIGURE 2:** CHEMICAL FILTER (Half mask)

**FIGURE 3:** NATURAL PRODUCING SAFE AIR SOURCE

**FIGURE 4:** SELF CONTAINED APPARATUS (with tank)
FIGURE 5:
N-95 DUST MASK

(Most common form of respirators that require no specialized training)

14.8 FILTERS OR CARTRIDGES FOR BEST PROTECTION

A.  
1. Dust – dust respirators or purple cartridges  
2. Solvents – black cartridge  
3. Formaldehyde – black cartridge  
4. Ammonia – green cartridge  
5. Acid Gas (Sulfuric Acid) - yellow cartridge  
6. Welding Fumes – dust, mist, fume mask or purple cartridge

14.9 LIFE OF CARTRIDGES USED WITH RESPIRATORS

A.  
1. Employees wearing respirators to protect them from dusts and other particulates should change cartridge (or Masks) when they first begin to experience difficulty breathing (i.e. more resistance) while wearing their masks or when they become dirty.
2. Chemical filter cartridges will no longer function properly when they become saturated. Once the cartridge becomes saturated, chemicals will begin to leak through the cartridge into the respirator and ultimately into the wearer’s lungs.

3. The amount of time that a respirator cartridge can be used depends on exposure.

4. Employees wearing respirators that utilize cartridges that filter the air must change the cartridges accordingly. Below is an example of when to change a cartridge out:

<table>
<thead>
<tr>
<th>WORK AREA</th>
<th>RESPIRATOR REQUIRED / ALLOWED</th>
<th>CATRIDGE CHANGE SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spray Booth</td>
<td>Half-mask respirator with organic vapor cartridges and dust pre-filters</td>
<td>6 hours of use</td>
</tr>
<tr>
<td>Welding / Grinding</td>
<td>Dust, Mist, Fume respirator</td>
<td>8 hours of use</td>
</tr>
<tr>
<td>Wood shop</td>
<td>Dust respirator</td>
<td>When resistance to breathing becomes noticeably harder</td>
</tr>
</tbody>
</table>

14.10 VOLUNTARY RESPIRATOR USE

A. Employees may wear respirators in other areas even though their use is not required. These respirators should be approved for the type of contaminants for which protection is desired. The employee shall notify their Supervisor or the Occupational Safety Coordinator prior to use of a respirator in these instances to ensure the employee has been trained and/or qualified to use the respirator.

An example would be if an employee wants to wear an N-95 (dust mask) while sweeping out a room. No additional training is needed for dust masks.

Employees must also complete an “Information for Employees Using Respirators When Not Required under This Policy” form.

*(REFER TO APPENDIX H-3: INFORMATION FOR EMPLOYEES)*
14.11 FIT TESTING

A. The fit testing procedure provides verification and written documentation that a specific manufacture, model, and size of tight fitting respirator is capable of maintaining a minimum level of protection in accordance with regulatory requirements. Two categories of fit testing are OSHA-accepted methods, Quantitative fit testing (QNFT) and Qualitative Fit Testing (QLFT). The first method establishes an actual numerical value with the use of specialized equipment; the second is dependent on individual subjectivity to yield a minimum acceptable level.

It is important that the respiratory protection equipment be properly fitted to the individual employee. The Occupational Safety Coordinator will ensure that fit testing is conducted before employees are allowed to wear respirators.

(REFER TO APPENDIX H-4: FIT TESTING RECORD)

B. General requirements for FIT testing:

1. Fit testing shall be conducted on an annual basis for any tight fitting face piece respirator (including an N95 or filtering face piece) where an exposure exists above an OSHA-Permissible Exposure Limit (PEL). It is also required where known or suspect exposure to etiological agents may occur.

2. Fit testing requires the individual to be clean shaven where facial hair has the potential to prevent an adequate seal with the sealing surface of the respirator. An additional fit test must be performed whenever the employee, Supervisor, or Occupational Safety Coordinator makes visual observations of changes to the employee’s physical conditions that could affect respirator fit.

3. The employee should also be free of other conditions such as sideburns, partial beards, mustaches that come between the face and the sealing edges of the respirator; temple pieces of glasses that are between the face and the respirator; facial scars; deep skin creases or other facial abnormality; lack of teeth or dentures, etc. that can hinder the proper fit of the respirator.

4. Successful completion of a fit test is defined as an OSHA-accepted QNFT protocol as equal to or greater than 100 for tight-fitting half masks, or equal to or greater than 500 for tight-fitting full face pieces.
14.12 RESPIRATOR USE
It is mandatory that respirators be used correctly so that proper protection can be ensured. Fit checks shall be done each time the respirator is put on or adjusted.

A. How to perform a negative pressure check:
1. Place the palm of the hand over the filter cartridge inlet to close off the passage of air.
2. Inhale so the face piece slightly collapses.
3. Hold your breath for approximately 10 seconds.
4. If the face piece remains slightly collapsed and no air leakage is detected, the respirator is fitted correctly.
5. If air leakage is detected, the respirator will need to be re-adjusted and another fit check conducted.

B. How to perform a positive pressure check:
1. Close off the exhalation valve of the respirator by covering it with the palm of the hand to close off the passage of exhausted air.
2. Gently exhale into the face piece.
3. If slight positive pressure can be built up inside the face piece without any outward leakage, the fit is correct.
4. If air leakage is detected, the respirator will need to be re-adjusted and another fit check conducted.

14.13 RESPIRATOR MALFUNCTION
If a respirator malfunctions at any time and for any reason, the wearer shall immediately notify his/her supervisor and shall go to a designated safe area outside of the specific contaminated area to either repair or replace his/her respirator. The supervisor must ensure that the respirator is functioning before it is returned to service.

14.14 INSPECTION PROCEDURE
A. Inspection requirements are as follows:
1. All respirators must be thoroughly inspected routinely and before and after each use.
2. Respirators that are routinely used (emergency respirators) must be inspected after each use or on a monthly basis.
3. An inspection record, that includes date of inspection and a record of any negative finding, must be kept for all emergency respirators.
4. Respirators found to be faulty will be taken out of service (Red Tagged) and repaired as soon as possible and re-certified.

(REFER TO APPENDIX H-5: RESPIRATOR INSPECTION CHECKLIST)

14.15 CLEANING AND MAINTENANCE

It is the employee’s responsibility to clean their respiratory equipment. Each employee will be issued a respirator for their use only. Respirators shall not be shared.

A. Cleaning and maintenance requirements are as follows:
   1. Respirators used for emergency use are to be cleaned and disinfected on a monthly basis and/or after each use. Documentation of cleaning will be kept in Occupational Safety Coordinator’s office.
   2. Respirators issued for the exclusive use of one worker shall be cleaned after each day’s use or more often if needed by the person to whom the respirator is assigned.
   3. Respirators will be cleaned in the Occupational Safety Coordinator’s office or in the Director of Custodial Services’ office.
   4. The Occupational Safety Coordinator will ensure that adequate cleaning supplies are available.
   5. Respirators will be cleaned in accordance with the guidelines contained in Appendix M of the Respiratory Protection policy.
   6. Dust masks and single use respirators should be disposed of after becoming visible soiled.

(REFER TO APPENDIX H-6: RESPIRATOR CLEANING PROCEDURES)

14.16 AIR QUALITY

A. For supplied-air respirators, only Grade- D breathing air can be used in the cylinders. The Occupational Safety Coordinator will ensure that any air used is certified to meet specifications of Grade -D breathing air.

B. Compressed air, compressed oxygen, liquid air, and liquid oxygen use for respiration shall meet the following specifications:
1. The United States Pharmacopoeia requirements for medical or breathing oxygen;

C.
Cylinders used to supply breathing air to respirators shall meet the following requirements:
1. Are tested and maintained according to the Shipping Container Specification Regulations of the Department of Transportation (49 CFR 173 and 49 CFR 178)
2. Have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air
3. The moisture content in the cylinder does not exceed a dew point of -50 degree F at 1 atmosphere pressure.

A copy of the air certification will be maintained in the Occupational Safety Coordinator’s office.

14.17  REPAIRS AND MAINTENANCE
A.
In the event that a respirator or equipment is in need of repair, the following steps should be used:
1. returned the respirator or equipment to the Occupational Safety Coordinator’s office as soon as possible
2. Worn deteriorated or malfunctioning parts must be replaced before the respirator is returned to service.
3. Only manufacturer recommended parts can be used when repairing a respirator.
4. Repairs to the regulators or alarms of atmosphere- supplying respirators will be performed only by the manufacturer’s representative.

14.18  RESPIRATOR STORAGE
A.
Respirators must be stored in a way that will assure protection from dust, sunlight, heat, cold, moisture and being damaged.

Follow these steps to ensure proper storage:
1. Cleaned and completely dried respirators must be kept in individual, re-sealable plastic bags.
2. Respirators should be stored so the face piece and exhalation valve is in the normal position.
3. Respirators will be stored in the Occupational Safety Coordinator’s office or the employee’s Supervisor office.
4. Respirators will not be left lying our or hanging in the work area, on a workbench, table, in a tool cabinet or among heavy tools which can cause damage to the working parts or which can distort the face piece.

14.19 IDENTIFICATION OF FILTERS, CARTRIDGES, CANISTERS

Employees and Department Supervisors shall ensure that all filters, cartridges, and canisters used be labeled and color coded with the NIOSH approval label and the label is not removed and remains legible.

14.20 PROGRAM EVALUATION

The Occupational Safety Coordinator and/or the Director of Facilities Management will conduct a periodic evaluation of the workplace to ensure that the provisions of the program are being properly implemented.

The evaluations will include consultations with affected employees and their supervisors, visual inspection of equipment and usage, hazards in the workplace (including air monitoring if deemed appropriate) and a review of the written policy.