1. Purpose

The purpose of this program is to ensure that Kennesaw State University (KSU) employees are protected from exposure to respiratory hazards, in accordance with the requirements of the US Department of Labor (DOL), the Occupational Safety and Health Administration (OSHA), and the Respiratory Protection Standard, 29 CFR 1910.134.

2. Scope

This program applies to all KSU's work operations where employees may be exposed to hazards that require respiratory protection. This program also applies to voluntarily use of a respirator.

3. Definitions

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

Atmosphere-supplying respirator – A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, which 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.

Assigned protection factor (APF) – The level of respiratory protection that a respirator or class of respirators is expected to provide when used appropriately.

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

Filtering facepiece (dust mask) – A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

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

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.

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

4. Program Administration

The Respiratory Protection Program is administered by the Environmental Health and Safety (EHS) Department. EHS is responsible for administering all requirements of the program and has full authority to make necessary decisions to ensure success of the program. These responsibilities include:

- Conducting a hazard assessment for operation, process, or work areas where airborne contaminants are present.
- Selecting the appropriate respiratory protection to be used.
- Developing and conducting training for supervisors and employees.
- Conducting fit testing.
- Coordinating the medical surveillance program.
- Developing, evaluating, and updating this program.
- Maintaining records required by the program.

5. Scope and Responsibility

A. Environmental Health and Safety

The EHS Department's responsibility is to serve as the Program Administrator.

B. Supervisor/Principle Investigators

A supervisor is responsible for:

- Ensuring that the respiratory protection program is implemented in their areas.
- Ensuring the program is understood and followed by the employees under their charge.
- Participating in the hazard assessments of operations and processes in their departments.
- Coordinating with EHS to address respiratory hazards and fulfill the requirements of this Program.
- Enforcing the proper use of respiratory protection when necessary.
- Ensuring employees under their supervision (including new hires) have received appropriate training, fit testing, and required medical evaluation.
- Ensuring that respirators are properly cleaned, maintained, stored, and disposed of as outlined in this program.

C. Employee

Employees are responsible for:

- Wearing their respirators when and where they are required.

- Caring for and maintaining their respirators.
- Participating in training and keeping appointments regarding compliance with medical requirements.
- Informing their supervisor (or program administrator) if experiencing problems when wearing their respirator or if the respirator malfunctions.

6. Program Elements

A. Exposure Assessment

The EHS Department may conduct an exposure assessment to determine an employee's exposure to airborne contaminants. The assessment involves a job hazard analysis, data review, and industrial hygiene sampling, among others.

In evaluating the risk of a respiratory hazard, EHS will consider a variety of criteria, including established permissible exposure limits (PEL) or time weighted averages (TLV), or other equivalent standards for individual contaminants. Other criteria may include risk of respiratory exposure to biological agents (bacteria, viruses, and molds).

Certain high-risk activities, such as disturbing friable asbestos containing material, may require use of the appropriate level of respiratory protection, as a matter of protocol.

If, upon the assessment, it is determined that the employee exposure is at or greater than permissible limits, EHS will recommend appropriate engineering and administrative controls to reduce the exposure. If the engineering controls are not effective, feasible or while such controls are pending implementation, use of appropriate respiratory protection will be required.

B. Mandatory Medical Evaluations

Using a respirator may place a physiological burden on the person wearing the respirator. The physiological burden will vary with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee.

Accordingly, any KSU employee whose job requires the use of a respirator, based on the exposure assessment, must have an initial medical evaluation to determine the employee's ability to use a respirator before the employee is allowed to wear the respirator.

Medical evaluation will be performed by a physician or other licensed health care professional (PLHCP) identified by the University using a medical questionnaire.

A follow-up medical examination will be provided for an employee who gives a positive response to any of questions 1 through 8 of the medical questionnaire or whose initial medical examination demonstrates the need for a follow-up medical examination.

The medical questionnaire and examination will be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee.

Medical re-evaluation may be required when:

- The report details medical signs or symptoms that may affect their ability to use a respirator, such as a heart condition, lung disease, or claustrophobia.
- A physician or licensed healthcare professional, the employee's supervisor, or EHS personnel determines the need for employee to be reevaluated.
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for the employee to be reevaluated.
- A change occurs in workplace conditions that increases the burden on the employee while using the respirator.

C. Fit Testing

A respirator must fit properly to provide the required protection. If a tight seal is not maintained between the facepiece and the employee's face, contaminated air will be drawn into the facepiece and be breathed by the employee. Fit testing is done to ensure that the respirator's facepiece fits the employee's face.

Any KSU employee required to wear a tight-fitting respirator will have an Initial respirator fit test after completing a medical evaluation and obtaining medical clearance.

Annual fit testing is required for employees using respirators.

Loose-fitting respirators do not depend on a tight seal with the face to provide protection. Therefore, they do not need to be fit tested.

The fit testing will also be required when an:

- Employee switches to a different respirator facepiece (size, style, model, or make).
- Employee's supervisor or EHS personnel makes visual observations of changes in the employee's physical condition that could affect respirator fit.
- Employee notifies the supervisor, EHS, or physician that the fit of the respirator is unacceptable; employee will be retested with a different respirator facepiece.

All fit testing is administered by EHS. Contact EHS to schedule fit testing for any employee who has completed a medical evaluation for respirator use. All records of fit tests will be kept and retained by EHS.

D. Respirator Training

Employees must be trained prior to the use of a respirator and when determined to be necessary by the Program Administrator.

The EHS Department will provide the training which will entail:

- Respiratory hazards to which employees are potentially exposed during routine and emergency situations, and

- Proper use of respirators, including putting on and removing them, any limitations on their use, and proper care and maintenance.
- Elements of KSU's Respiratory Protection Program - policies, procedures, regulations, and standards.

Refresher training will be required annually and when any of the following situations occur:

- Changes in the workplace or the type of respirator render previous training obsolete.
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill.
- Any other situation arises in which retraining appears necessary to ensure safe respirator use.

E. Voluntary Use of Respirators

KSU employees should only wear a respirator when the use of a respirator is required, based of respiratory hazard assessment conducted by EHS.

If EHS has determined there is no airborne hazard that would require the use of a respirator, but the employee decides to wear a respirator, such use will be considered voluntary use of respirator.

Certain requirements apply to voluntary use of respirators:

- Employee must be medically able to use that respirator.
- Only voluntary use of a filtering facepiece (N95) respirator is allowed. Such use is not subject to the medical evaluation, fit testing, and formal training.
- EHS will provide the employees voluntarily using respirator with a copy of "*Information for Employees Using Respirators When Not Required Under the Standard,*" which can be found in (Appendix A) of this Program.
- Employees who choose to use half or full-face piece APRs and ASRs, when not required by working conditions, will be required to adhere to all elements of this program, including medical evaluation, fit testing, and training.
- The respirator must be properly used, cleaned, stored, and maintained so that its use does not present a health hazard to the employee.

F. Recordkeeping.

EHS will establish and retain records regarding hazard assessments, medical evaluations, fit testing, training, and the Respirator Protection Program.

G. Program Evaluation

EHS will conduct evaluations of the workplace as necessary to ensure that the provisions of this program are being effectively implemented and that the program continues to be effective. Program evaluation shall be performed at least annually.

As part of the evaluation, EHS must consult employees required to use respirators to assess their views on program effectiveness and to identify any problems. Any problems identified during this assessment shall be corrected.

7. Types and Selection of Respirators

A. Types of Respirators

1. Air-Purifying Respirators

APRs are respirators that use filters or sorbents to remove harmful substances from the air. They range from simple disposable masks (N95) to sophisticated devices. They do not supply oxygen and must not be used in oxygen-deficient atmospheres or in other atmospheres that are IDLH.

Powered air purifying respirators (PAPRs) are a type of APR that uses a motor and blower to pull air through the filter to provide a continuous flow of clean air to the user. PAPRs are available as tight-fitting facepiece (half-face and full-face), hoods, helmets, and a loose fitting facepiece.

2. Atmosphere-Supplying Respirators

ASRs are respirators that are designed to provide breathable air from a clean air source other than the surrounding contaminated work atmosphere. They include SARs and SCBA units.

B. Selecting a Respirator

Selection of the respirator must be based on respiratory hazards to which the employee is exposed, while considering workplace and user factors that can affect the performance and reliability of the respirator. The selected respirator must be adequate to protect the health of the employee under routine and reasonably foreseeable emergency situations and ensure compliance with the applicable regulatory requirements.

Different types of respirators offer different levels of protection. The measure of a respirator's protection capability is called the assigned protection factor (APF).

The employee must always wear the same model and size of respirator that they were fitted for during the fit testing. Only respirators approved by the National Institute for Occupational Safety and Health (NIOSH) should be used.

Only atmosphere-supplying respirators, such as an airline respirator or SCBA can be used in IDLH atmospheres.

All selections of respirators must be made in consultation with EHS Department. The following table presents a simplified version of characteristics and factors considered when selecting a respirator.

Non-IDLH Environments	
Hazard Characteristics	**Respirators**
Gas and vapor contaminants	• APR with Chemical-cartridge or canister respirator. • Positive-pressure SAR.
Particulate contaminants	• Any APR with a specific particulate filter. • PAPR equipped with high-efficiency filters. • Positive-pressure SAR.
Gaseous and particulate contaminants	• Combination APR - have both particulate filters and the appropriate gas/vapor filters. • Positive pressure supplied respirator.
IDLH Environments	
Oxygen deficiency Gas, vapor contaminants and other highly toxic air contaminants	• Full-facepiece, pressure-demand SCBA certified for a minimum service life of 30 minutes. • A combination full-facepiece, pressure-demand SAR with an auxiliary self-contained air supply.
Contaminated atmospheres - for escape	• Positive-pressure SCBA. Gas mask. Combination positive-pressure SAR with escape SCBA.

8. Use, Maintenance, and Care of Respirator

To ensure continuing protection from respiratory protective devices, it is necessary to ensure proper use, maintenance, care, and filter change-out schedule.

A. General Use

Respirators should be used under conditions specified by this program, in accordance with the training provided, on the selected model(s), and in accordance with the manufacturer's instructions.

- Employees should not use a respirator in a manner for which it is not certified by NIOSH or by its manufacturer.
- Employees shall conduct positive and negative pressure user seal checks each time they wear a respirator.
- Respirators with tight-fitting facepieces should not be worn by employees who have:
    - Facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function.
    - Any condition that interferes with the face-to-facepiece seal or valve function.
- If an employee wears corrective glasses or goggles or other personal protective equipment, such equipment should be worn in a manner that does not interfere with the seal of the facepiece to the face of the user.

B. Inspection of Respirators

Employees should inspect respirators for basic function before each use and during the cleaning and disinfecting process. The inspection involves checking the respirator's ability to work properly, including checking:

- Tightness of any connections.
- Condition of the various parts, such as the facepiece, head straps, valves, tubes, hoses, and any cartridges, canisters, or filters.
- Pliability and signs of deterioration of elastomeric parts.

If your respirator fails an inspection or is defective, you should immediately inform your supervisor and/or EHS. Do Not use a defective respirator.

C. Cleaning and Disinfecting

Respirators must be cleaned as often as necessary to prevent them from becoming unsanitary. In general, cleaning and disinfecting consists of taking the respirator apart, washing it, disinfecting it, thoroughly rinsing it, and putting it back together when it is dry.

1. Filtering Facepiece (N95)

Filtering facepiece respirators cannot be cleaned or disinfected. However, it is important that they are inspected for cleanliness and damage before each use.

2. Other Respirators

Other respirators should be cleaned and disinfected using the ***Respirator Cleaning Procedures*** outlined in *Appendix B* of this program, or procedures recommended by the respirator manufacturer, provided that such procedures have equal or better effectiveness.

D. Filters, Cartridge, and Canister Change

For respirators that use filters to clean the air, the filters must be replaced whenever they are damaged, soiled, or cause noticeably increased breathing resistance. Gas cartridges or canisters must be replaced before they reach their limit to ensure the user's protection.

EHS is responsible for establishing a schedule for replacing cartridges or canisters (change-out schedule) and for providing this information to affected employees.

E. Storage of Respirator

Respirators should be stored properly to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. Never leave your respirator hanging on a machine, lying on your workbench, or tossed into your toolbox or a drawer. Always store your respirator in a way that prevents deforming the facepiece or exhalation valve.

F. Repair of Respirator

Repairs must be made according to the respirator manufacturer's instructions and must use only NIOSH-approved parts that are designed for the respirator. Repairs or adjustments must be made only by appropriately trained person.

G. Discarding of Respirators

Respirators that fail an inspection or are otherwise not fit for use and cannot be repaired must be discarded. The respirator is marked as “unsafe,” and the elastomeric headband is removed. Additionally, a red tag should be attached to the respirator that reads “Unsafe for use – discard.”

References

1) U.S. Department of Labor, Occupational Safety and Health Administration, Respiratory Protection Standard, 29 CFR 1910.134.
2) U.S. Department of Labor, Occupational Safety and Health Administration, Respiratory Protection Standard, Fit Testing Procedures, 29 CFR 1910.134 App A.
3) U.S. Department of Labor, Occupational Safety and Health Administration, Respiratory Protection Standard, OSHA Respirator Medical Evaluation Questionnaire, 29 CFR 1910.134 App C.
4) U.S. Department of Labor, Occupational Safety and Health Administration, Information for Employees Using Respirators When not Required Under Standard, 29 CFR 1910.134 App D.

Appendix A:

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, of 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:

- Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.
- Choose respirators certified for use to protect against the contaminant of concern. NIOSH 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.
- 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.
- Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Appendix B:

Respirator Cleaning Procedures

These procedures are provided for employee use when cleaning respirators. They are general in nature, and the employee as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by the employee, provided such procedures are as effective as those listed here. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in here, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure- demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
B. Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
C. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.
D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
    1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,
    2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,
    3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
E. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
F. Components should be hand-dried with a clean lint-free cloth or air-dried.
G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.
H. Test the respirator to ensure that all components work properly.