



# Respiratory Protection Plan

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## **PURPOSE**

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The purpose of this Respiratory Protection Program (RPP) is to:

- o Protect Florida Tech employees and students from identified inhalation exposure & respiratory hazards (e.g. harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors).
- o Establish Florida Tech's written compliance as required by OSHA's Respiratory Protection Standard (29 CFR 1910.134).

The Florida Tech Respirator Plan contains guidelines for administering an effective Respiratory Protection Program and provides the information, training, and equipment necessary for proper selection, use, and maintenance of respirators. The plan is updated annually to address the changing needs of the university along with federal regulatory revisions.

Engineering controls, such as ventilation devices and substitution of less toxic materials, are the first line of defense at Florida Tech; however, engineering controls may not be always feasible for some operations or may not always completely control the hazards. In these situations, respirators and other protective equipment must be used.

## **SCOPE AND APPLICATION**

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This document serves as a standard operating procedure (SOP) for all personnel who are required to wear a respirator during work & school assignments. Personnel required to participate in the respiratory protection program do so at no cost to themselves. The expense associated with required training, medical evaluations, and respiratory protection equipment will be absorbed by the employing department.

## DEFINITIONS

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**Air-purifying respirator** means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-Purifying element.

**Assigned protection factor (APF)** means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.

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

**Employee exposure** means 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)** means 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** means a respirator intended to be used only for emergency exit.

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

**Filtering facepiece (dust mask)** means 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 factor** means a quantitative estimate of the fit of a 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** means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)

**Helmet** means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

**High efficiency particulate air (HEPA) filter** means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

**Hood** means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

**Immediately Dangerous to Life or Health (IDLH)** An atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

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

**Maximum use concentration (MUC)** means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC based on relevant available information and informed professional judgment.

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

**Oxygen deficient atmosphere** means an atmosphere with an oxygen content below 19.5% by volume.

**Physician or other licensed health care professional (PLHCP)** means 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 paragraph (e) of this section.

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

**Powered air-purifying respirator (PAPR)** means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

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

**Qualitative fit test (QLFT)** means 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)** means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

**Respiratory inlet covering** means 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)** means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

**Service life** means 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** means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

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

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

## **RESPONSIBILITIES**

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### **University Leadership (Deans and Department Chairs)**

Florida Tech has the overall responsibility for providing a place of employment free of recognized hazards and unsafe conditions as well as complying with federal, state, and local regulations. Departments shall provide such equipment and supplies as are necessary to comply with such standards. Deans and Department Chairpersons have overall responsibility for implementation of the Respiratory Protection Program within their departments. They shall also bear the cost of respiratory protective equipment and maintenance.

### **Supervisors (Including PI's)**

Supervisors are responsible for ensuring that the respiratory protection program is implemented in their areas and for enforcing respirator use. In addition to being knowledgeable about the program requirements for their own protection, supervisors must also ensure that the program is understood and followed by the employees under their charge. They also must ensure individuals requiring respirator protection are enrolled in the Respiratory Protection Program and that they participate in the ongoing requirements. It is the department's responsibility to purchase the necessary respirator for their staff member. They may choose to designate an individual to coordinate with EH&S for the initial, annual, and periodic requirements (e.g. fit tests/medical evaluations). Duties of the supervisor include:

- Ensuring that employees under their supervision (including new hires) have received appropriate training, fit testing, and initial/annual medical evaluation;
- Ensuring the availability of appropriate respirators and related accessories;
- Being aware of tasks requiring the use of respiratory protection;
- Enforcing the proper use of respiratory protection when necessary;
- Ensuring that respirators are properly cleaned, maintained, and stored;
- Ensuring that respirators fit well and do not cause discomfort;
- Continually monitor work areas and operations to identify respiratory hazards;
- Coordinating with the EH&S on how to address respiratory and relate hazards.

### **Environmental Health & Safety Office (EH&S)**

The Respiratory Protection Program is administered through EH&S, who has authority to make the technical and administrative decisions necessary for program implementation. The Environmental, Health, & Safety Director is the Program Administrator at Florida Tech. EH&S will:

- Monitor the overall workplace to determine potential employee exposure;
- Provide consultation and monitoring upon request to assist Supervisors in determining respirator requirements;
- Consult with supervisors to select the best type of respirator for their purpose;
- Perform respirator fit tests as required (or coordinating such fit tests);
- Assist in training employees required to wear respirators;
- Conduct respirator audits to determine program effectiveness and regulatory compliance.

### **Employees (Respirator Users)**

Employees are responsible for the following:

- Notifying their supervisor if they have concerns or questions regarding respirator use;
- Notifying their supervisor if they exhibit signs or symptoms of workplace exposure;
- Wearing the appropriate respiratory protective device when deemed necessary;
- Maintaining a facial surface consistent with a proper fit of the respiratory protective device;
- Performing routine care and preventive maintenance of their selected respirator;
- Guarding against damage to the respirator;
- Making their respirator available for inspections and during fit testing;
- Participating in medical evaluations prior to respirator use and annually or as needed;
- Inspecting their respirator prior to each use;
- Immediately leaving the contaminated area if a respirator malfunction occurs and reporting the malfunction to their supervisor;
- Complying with departmental standard operating procedures and other requirements specified in this plan.

## HAZARD ASSESSMENT & RESPIRATOR SELECTION

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### Initial Assessment & Selection

EH&S will conduct a Hazard Assessments where airborne contaminants may be present in routine operations or during an emergency. This assessment will determine what type of respirators are to be utilized. Additionally, selection will also be in accordance with the OSHA standards.

Assessments shall be conducted by surveying the workplace, reviewing process records, and talking with employees and supervisors. The assessment may include exposure monitoring to quantify potential exposures. Supervisors, employees, and EH&S personnel must all be involved in the assessment process for an effective assessment to be conducted.

Although not exclusive, below are examples of respirator use and their associated work activities:

Work Activity	Type of Respirator
Chemical Hazards	Full face Air-purifying Respirator (APR) Half-face Air-purifying Respirator (APR) <b>SEE SPECIAL NOTE #1</b>
Biological Hazards	N95 disposable or N99 disposable Powered Air-purifying Respirator (PAPR)
Other Particulates (e.g. Dust)	N95 disposable or N99 disposable Dust Mask (note: not considered respirator)
Asbestos	Full face Air-purifying Respirator (APR) Half-face Air-purifying Respirator (APR) Powered Air-purifying Respirator (PAPR)
Pesticide Application	Powered Air-purifying Respirator (PAPR) Half Face Air-purifying Respirator (APR)
Emergency Response	Full face Air-purifying Respirator (APR) Half-face Air-purifying Respirator (APR) <b>SEE SPECIAL NOTE #2</b>

#### ❖ SPECIAL NOTE #1

Various chemical hazardous require specific cartridges to mitigate exposure; therefore, the respirator must be used with the appropriate cartridge. User can utilize the below references for guidance.

<https://www.cdc.gov/niosh/npg/nengapdx.html>

[https://www.osha.gov/dts/shib/respiratory\\_protection\\_bulletin\\_2011.html](https://www.osha.gov/dts/shib/respiratory_protection_bulletin_2011.html)

#### ❖ SPECIAL NOTE #2

Florida Tech personnel will not respond to emergencies that involve oxygen-deficient environments. The university will utilize either an approved hazardous response vendor or the local fire department.

### **Hazard Assessment Updates**

Assessments must be revised when there is potential for exposure due to work process changes. If, at any point, an employee feels respiratory protection is needed, they are to contact their supervisor or EH&S. This will initiate the assessment process. If it is determined that respiratory protection is necessary, all other elements of this program will be in effect for those tasks and this program will be updated accordingly.

### **Approved Respirators**

All respirators, filters, cartridges, and canisters must be certified by the National Institute for Occupational Safety and Health (NIOSH) and shall be used in accordance with the terms of that certification. The label must not be removed or defaced.

### **Voluntarily Respirator Use**

There may be instances when employees desire to wear respirators when not required. As a general policy, the EH&S Office will review each of these requests on a case-by-case basis. If the use of respiratory protection in a specific case will not jeopardize the health or safety of the requestor, the department may provide or allow employees to provide their own respirators for voluntary use. Employees choosing to wear a respirator must comply with all aspects denoted in this plan. In addition, the voluntary user must sign an acknowledgement form stating that he/she has received a copy of Appendix D of the OSHA Respiratory Standard, "Information for Employees Using Respirators When Not Required Under the Standard".

## MEDICAL EVALUATION

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Using a respirator may place a psychological and physiological burden on employees, which varies with the type of respirator worn, the job, and workplace conditions in which the respirator is used, and the medical status of the employee. Each employee assigned a respirator is to receive a medical evaluation before being fit-tested or required to use the respirator in the workplace. Employees are not permitted to wear respirators until a physician or licensed health care professional (PLHCP) has determined that they are medically able to do so.

Any employee refusing the medical evaluation will not be allowed to work in an area/task requiring respirator use. All examinations and questionnaires are to remain confidential between the employee and the PLHCP.

### **Medical Evaluation Procedure**

- The employee completes a Medical Evaluation Questionnaire provided by EH&S.
- The employee brings the completed questionnaire to Holzer Health Center (Florida Tech).
- Employees will be granted the opportunity to speak with a PLHCP about their evaluation; and they will be granted follow-up medical exams as required by the standard, and/or as deemed necessary by the PLHCP.
- The PLHCP will complete the Medical Clearance Form.
- The employee returns the medical Clearance Form to EH&S.

After an employee has received clearance and starts to wear their respirator, additional medical evaluations will be provided under the following circumstances:

- Employee reports signs and/or symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing;
- A physician informs EH&S that the employee needs to be reevaluated;
- Observations made during fit-testing and/or program evaluation, indicates a need for reevaluation;
- A change occurs in workplace conditions impacting the employee's potential to exposure.

## **FIT TESTING**

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Fit testing is required for employees wearing respirators. Employees are to be fit tested prior to initial use of the respirator, or whenever a different respirator face-piece (size, style, model, or make) is used, and at least annually thereafter. An additional fit test is conducted whenever the employee, supervisor, or EH&S makes visual observations of changes in the employee's physical condition that could affect respirator fit (e.g. facial scarring, dental changes, cosmetic surgery). The employee may select a different respirator if they do not think the respirator fit is acceptable, even after passing the fit test (although, a fit test will also be required for the newly chosen respirator).

EH&S will perform fit tests either through Qualitative or Quantitative methods.

## **GENERAL USE PROCEDURES**

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Respirators shall not be used in a manner for which it is not certified by NIOSH or by its manufacturer or for an exposure or work activity that is not approved by EH&S.

All employees not wearing disposable N95 respirators shall conduct user seal checks each time that they wear their respirator. Employees shall use either the positive or negative pressure check. Employees are to leave the work area to maintain their respirator for the following reasons:

- to clean their respirator if the respirator is impeding their ability to work;
- to wash their face and respirator face piece to prevent any eye or skin irritation;
- change filters, cartridges, or canisters
- replace parts;
- to inspect respirator if it stops functioning as intended;
- or if they detect vapor, gas breakthrough, leakage in the face piece, any other damage to the respirator, or its components.

## **RESPIRATOR MALFUNCTION**

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For any malfunction of an APR (e.g., such as contaminant breakthrough, facepiece leakage, or improperly working valve), the user should go to a designated safe area to maintain, repair, or replace the respirator and inform their supervisor. The supervisor must ensure that the employee receives the needed parts to repair the respirator or is provided with a new respirator.

## MAINTENANCE AND INSPECTION

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Respirators shall always be properly maintained to ensure that they function properly and adequately protect the employee. Maintenance involves a thorough visual inspection for cleanliness and defects.

### Inspections

Respirator inspection must be conducted before every use. The following checklist is recommended when inspecting respirators:

- ✓ **Facepiece**  
cracks, tears, or holes facemask distortion cracked or loose lenses/face shield
- ✓ **Valves**  
residue or dirt cracks or tears in valve material
- ✓ **Air Supply Systems**  
breathing air quality/grade condition of supply hoses connections
- ✓ **Head Strap**  
breaks or tears broken buckles
- ✓ **Filters/Cartridges**  
approval designation gaskets cracks or dents in housing proper cartridge for hazard

### Repairs/Replacement Parts

Worn or deteriorated parts shall be replaced prior to use. No components will be replaced, or repairs made beyond those recommended by the manufacturer. Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator. Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed.

### Defective Respirators

Respirators that are defective or have defective parts shall be taken out of service. If, during an inspection, an employee discovers a defect in a respirator, they shall bring the defect to the attention of their supervisor. Supervisors will decide whether to:

- Temporarily take the respirator out of service until it can be repaired.
- Perform a simple fix on the spot such as replacing a head strap.
- Dispose of the respirator due to an irreparable problem or defect.

When a respirator is taken out of service, the respirator will be tagged out of service, and the employee will be given a replacement of the same make, model, and size.

## **Cleaning**

Respirators are to be regularly cleaned and disinfected. Respirators issued for the exclusive use of a single employee is the preferred procedure and is recommended by EH&S. Atmosphere supplying, and emergency use respirators are to be cleaned and disinfected after each use. The following procedure is recommended:

- Disassemble respirator, removing any filters, canisters, or cartridges;
- Wash the facepiece and associated parts in a mild detergent with warm water. Do not use organic solvents;
- Rinse completely in clean warm water;
- Wipe the respirator with disinfectant wipes (70% Isopropyl Alcohol) to kill germs;
- Air dry in a clean area;
- Reassemble the respirator and replace any defective parts;
- Place in a clean, dry plastic bag or other air tight container.

## **Storage**

Respirators must be stored so they are protected against damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, damaging chemicals, and/or in accordance with the manufacturer's recommendations. The facepiece and exhalation valve must be stored in a manner that will prevent deformation. Each respirator should be positioned so that it retains its natural configuration.

Respirators intended for emergency use must be kept accessible to the work area, but not in an area that might itself be involved in the emergency because such an area may become contaminated or inaccessible.

## TRAINING

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EH&S will provide training to respirator users and their supervisors. The training will include the type, model, and size of respirator for which each employee has been assigned and fit tested.

### **Frequency**

Workers (including supervisors) must be trained prior to using a respirator in the workplace. Various topics will be covered in the training. These include:

- ✓ The Florida Tech Respiratory Protection Program/Plan
- ✓ The OSHA Respiratory Protection Standard
- ✓ Selection, Use, and Maintenance
- ✓ Limitations of Respirators
- ✓ Donning and Doffing
- ✓ Fit Testing

Employees will be retrained annually at minimum and as needed (e.g., if they need to use a different respirator). Employees must demonstrate their understanding of the topics covered in the training through hands-on exercises (e.g. correctly donning and doffing the respirator). All trainings will be appropriately documented.

## PROGRAM EVALUATION

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The Respiratory Program (Plan) will be reviewed annually by EHS and periodic evaluations will be conducted to ensure that the provisions of this program are being implemented. The evaluations will include regular consultations with employees and their supervisors (who use respirators), site inspections, air monitoring, and a review of records.

Problems identified will be noted and changes made, if necessary. Whenever changes are made, the Plan will be updated, and applicable users notified.

## RECORD KEEPING & RETENTION

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A written copy of Florida Tech Respirator Protection Plan and the OSHA Standard is kept in the EH&S Office to be made available to all employees who wish to review it. Additionally, a copy of both documents will be made online for review. Employees can also request an electronic copy.

EH&S will maintain the copies of training and fit test records. EH&S will also maintain copies of the Medical Clearance Records for all employees covered under the respirator program.

The completed Medical Evaluation Questionnaires and documented findings are confidential and will remain with the appropriate medical professional. Records will be retained and available in accordance with 29CFR1910.1020.

Records for each employee shall be preserved and maintained for at least the duration of employment, plus 30-years.

## REFERENCES

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### Internal References:

1. Appendix D: Respiratory Voluntary Use Form
2. Florida Tech's Medical Evaluation Questionnaire
3. Florida Tech's Medical Clearance Form

### External References:

1. [OSHA's Respiratory Protection Standard \(29CFR1910.134\)](#)
2. [OSHA Respiratory Protection Standards Guide](#)
3. [Respiratory Protection Frequently Asked Questions](#)
4. [National Institute for Occupational Health and Safety \(NIOSH\) 42CFR84](#)
5. [Respiratory Protection Standard for M. Tuberculosis \(29CFR1910.139\)](#)
6. [Immediately Dangerous to Life or Health \(IDLH\) Values](#)