RESPIRATORY PROTECTION POLICY

08/25/17 – Last Revision

1. Intent

It is the intention of the University at Albany to provide a safe, healthful environment for all work activities, research, and learning. This policy is designed to provide written procedures governing the use of respiratory protection equipment. This policy provides procedures to be followed in accordance with Occupational Safety and Health Administration (OSHA) standard 29 CFR 1910.134.

2. Scope

This program applies to all faculty, staff, and students at the University at Albany who may be performing an activity or operation within the facility that requires the use of respiratory protection.

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.

Assigned protection factor (APF) – Reflects the level of protection that a properly functioning respirator would be expected to provide to a population of properly fitted and trained users.

Atmosphere-supplying respirator – 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 – A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

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.

Fit test – 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) below).

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

Helmet – A rigid respiratory inlet covering that also provides head protection against impact and penetration.

High efficiency particulate air (HEPA) filter – 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 – 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 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.

Loose-fitting face piece – A respiratory inlet covering that is designed to form a partial seal with the face.

Negative pressure respirator (tight fitting) – A respirator in which the air pressure inside the face piece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen deficient atmosphere – An atmosphere with oxygen content below 19.5% 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 paragraph (e) of this section.

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.

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.

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

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 face piece – A respiratory inlet covering that forms a complete 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.

Non-mandatory (voluntary) use – When an employee chooses to wear a respirator, even though the use of a respirator is not required by either the University or by any regulatory standard.

4. Responsibilities

4.1 Environmental Health and Safety (EH&S)

The EH&S Office is responsible for evaluating those tasks for which respiratory protection is thought to be necessary, determining whether engineering or administrative controls are feasible to eliminate or reduce employee exposure, and for specifying the correct respiratory protective equipment for each task.

The EH&S Office shall be responsible for coordinating the medical clearance, fit testing, and training for all employees required to wear respirators, with the exception of those employees/students working in the Animal Care Facility. The Administrative Veterinarian will administer the Respiratory Protection Program for the Animal Care staff.

4.2 Supervisors

Supervisors are responsible for ensuring that the policies and procedures specified in this document are implemented and adhered to by the employees in his/her department.

It is the supervisor's responsibility to notify EH&S of any changes to processes, procedures, or equipment which may require the use of respiratory equipment.

Supervisors are responsible to ensure that all employees using respirators have been medically cleared, fit tested, and trained to do so. Supervisors are responsible to insure that all respiratory protection equipment is cleaned, maintained, and stored in accordance with the manufacturer's suggested procedures.

Supervisors shall be aware of all of the tasks which require the use of respiratory protection in their department and ensure that the employees assigned to those tasks wear the appropriate respiratory protection.

4.3 Employees

It is the responsibility of each employee to be familiar with and adhere to the contents and requirements of this program. The employee shall wear the appropriate respirator when required.

The employee is responsible to clean his/her respirator as instructed, and store it in a clean sanitary condition. The employee shall immediately report any malfunction or deficiency of his/her respirator to their supervisor.

The employee shall immediately make their supervisor aware of any medical condition which may affect their ability to safely use the respirator that they have been issued.

5. Selection of Respirators

The EH&S Office will determine what job activities require the use of a respirator. Prior to the selection of a respirator for a job activity, the EH&S Office will perform an evaluation of the potential hazard. The following criteria will be used to determine the type of respiratory protection that will be required.

- Physical state of the contaminant
- Toxicity of the contaminant
- Warning properties of the contaminant
- OSHA permissible exposure limits of the contaminant, and other occupational exposure limits
- Effectiveness of the respirator against the contaminant of concern
- Estimated severity of the contaminant in the work area
- The assigned protection factor of the respirator to be used
- The time required to complete the task
- Potential for oxygen deficiency or IDLH concentrations
- General work environment, open area or confined space, ventilation, or engineering controls
- Comfort fit and employee acceptance of the respirator
- Based upon the evaluation of the criteria, decision logic shall be applied in order to select the appropriate type of respirator for the task

6. Certification of Respirator Users

Employees who are required to wear a respirator in the performance of their duties are included in the respiratory protection program and must be certified in accordance with this section prior to the use of the respirator.

6.1 Medical Evaluation

Due to the potential health related effects of respirator usage, all employees in the respiratory protection program must undergo medical evaluation by a physician or other licensed health care professional (PLHCP) before they are fit tested and use the respirator for the first time, **and** at least annually thereafter.

The University at Albany will provide medical evaluations at no cost to the employee and at a time and place that is convenient to the employee. A Physician or other Licensed Health Care Professional (PLHCP) will review the medical evaluation and determine whether the employee is medically able to use a respirator. Any limitations on respirator use related to medical conditions will be noted at this time.

Medical evaluations are **not** required when filtering face pieces ("dust masks") are used on a voluntary basis.

6.2 Respirator Fit Test

Annual fit testing is a process that is designed to ensure that a specific type of respirator (size, brand, style, and type) fits a specific individual adequately. Fit testing is required for all employees in the respiratory protection program as follows:

- After an employee has completed their medical evaluation and prior to being allowed to wear a respirator in the work environment
- Whenever a different respirator face piece is used
- When there are changes in the employee's physical condition that could affect the respirator's fit
- At least annually

6.3 Respirator Training

Employees shall be trained in the proper use of respirators and the University at Albany Respiratory Protection Program as part of their initial certification and at least annually thereafter. Employees who have not received this training shall not be allowed to preform those tasks for which a respirator is required. Training shall include specific procedures for using each type of respirator that is assigned. See Section 12 for more details.

7. Air purifying respirators

7.1 Air purifying respirators work by passing contaminated air through a filter or cartridge. These types of respirators are intended to eliminate nuisance or low level contaminants and cannot be used in emergency situations involving toxic levels of contaminants or low oxygen situations. Tight-fitting air purifying respirators, such as filtering face piece respirators ("dust masks"), half face respirators, and full face respirators, require the maintenance of a good seal between the face piece and the face so that air is drawn only through the filter or cartridge.

7.2 The University at Albany will not permit respirators with tight-fitting face pieces to be worn by employees who have any condition that interferes with the face-to-face piece seal or valve function of the respirator. Facial hair that lies along the sealing area of the respirator, such as beards, sideburns, moustaches, or stubble, will interfere with the respirator's seal to the face. Therefore, an employee that is required to wear a respirator during work duties must not have any facial hair where the respirator meets the face.

7.3 To assure proper protection, when using tight fitting air purifying respirators, the user will perform a respirator seal check prior to every use. This will be accomplished by performing a negative and positive seal check.

7.4 Powered Air Purifying Respirators (PAPRs) are a type of air-purifying respirator that uses a mechanical device instead of lung-power to force air through the cartridge/canister and into a tight fitting face piece, loose fitting hood, or helmet. Due to the fact that the delivered air creates no resistance, PAPRs should maintain a ***positive pressure*** at all times.

7.5 Selection of the proper filter or cartridge to protect against the contaminant present in the work place is critical to the operation of the air purifying respirator. The selection of type of respirator and cartridge will be made by the EH&S Office.

7.6 Air purifying respirators should only be worn to protect against contaminants with good warning properties. It is also important to understand the protection factors assigned to air purifying respirators. Disposable filtering face pieces and half face respirators have been assigned a protection factor of 10X the permissible exposure limit (PEL). Full face respirators are assigned a protection factor of 50X the PEL. They should only be used to protect against contaminants that the filter or cartridge is designed to protect against.

7.7 Air purifying respirators **should not** be used to protect against oxygen deficient atmospheres (less than 19.5%). They **should not** be used in IDLH atmospheres or against contaminants with poor warning properties, such as carbon monoxide.

8. Cartridge Selection

8.1 Respiratory hazards can generally be divided into two categories: particulates and vapors/gases. Particulates are filtered by mechanical means, while vapors and gases are removed by sorbents that are chemically reactive. Respirators using a combination of a mechanical filter and chemical sorbent will effectively remove both hazards.

8.2 Particulate-removing cartridges contain a filter that reduces the inhaled concentration of toxic dusts and fibers, such as lead, asbestos, fumes, mists, and biological materials. Due to the design of the cartridges, their efficiency actually increases with use as the trapped particulate acts to reduce the filter media screen size. However when breathing becomes strained, the cartridge/filters should be replaced.

Particulate-removing cartridges/filters are categorized into nine classes based on filter efficiency and resistance to oil, as shown in the table below.

Efficiency Rating	**Oil Resistance Category**		
	N Not resistant to oil	**R** Resistant to oil	**P** Oil-proof
95%	N95	R95	P95
99%	N99	R99	P99
99.97%	N100	R100	P100

There are three levels of filter efficiency ratings: 95% (called “95”), 99% (called “99”), and 99.97% (called “100”). Filters with the “100” efficiency rating are also referred to as high efficiency particulate air (HEPA) filters.

There are three filter classifications with regard to resistance to oil: N (*Not* resistant to oil), R (*Resistant* to oil), and P (oil-*proof*). If no oil particles are present, any series (N, R, or P) may be used. If oil particles are present, use *only* R or P series. If oil particles are present and the filter is to be used for more than one work shift, use *only* P series.

P100 filters are designated with the magenta color code.

8.3 Gas- and vapor-removing cartridges are designed to protect the wearer from specific chemical hazards. Certain vapors require specially treated carbon, so it is important to select a cartridge that is approved by the National Institute for Occupational Safety and Health (NIOSH) for the specific vapors present.

Some vapor and gas cartridges have an added filter component for particulates. These are available as combination cartridges.

Manufacturers are required to color code cartridges in a uniform manner in an attempt to standardize the selection process. The most common cartridges, along with their respective color codes, are shown in the table below.

Atmospheric Contaminant	Cartridge Color
Acid gases	**White**
Organic vapors	**Black**
Acid gases and organic vapors	**Yellow**
Ammonia gas	**Green**
Organic vapors, ammonia, methylamine, formaldehyde and acid gases (chlorine, hydrogen chloride, sulfur dioxide, hydrogen sulfide [escape], hydrogen fluoride and chlorine dioxide)	**Olive**
Particulates – Dusts, Mists, and fumes	**Magenta (P100)**
Particulates (dusts, fumes, mists, fogs, or smoke) in combination with any of the above gases or vapors	Canister color for contaminant, as designated above, in combination with magenta HEPA filter

Employees are permitted to mark the initial use date on the label if it can be done without obscuring the information on the label.

9. Service Life of Respirator Cartridges

9.1 Each cartridge or canister has a finite capacity for removing contaminants. Once the included sorbent has reached a point of saturation, the “cleaning” element will allow contaminants to pass through and enter the face piece. To insure that chemical cartridges are replaced before the service life ends, cartridges equipped with End-of-Service-Life Indicators (ESLI) should be used whenever possible**.** When ESLI technology does not exist cartridges should be replaced before each use or according to a schedule established by the EH&S Office.

10. Supplied Air and SCBA

10.1 Supplied air respirators are used to supply fresh clean Grade D breathing air directly to a worker. They usually consist of the following components: a face piece, hood, or helmet, a pressure reducing regulator, and a length of supply hose. The supply hose attaches to a source of clean breathing air. The source of clean breathing air can be either large cylinders containing Grade D breathing air or a Compressor with filters to insure supply of Grade D breathing air.

Supplied air respirators are used when the level of respiratory contaminant exceeds the filtering capability of air purifying respirators.

10.2 SCBA or Self-contained Breathing Apparatus is the highest level respiratory protection available. A SCBA consists of cylinder of at least 30 minutes of Grade D breathing air, a pressure reducing regulator, mask mounted regulator, and tight fitting face piece.

SCBA's are approved for escape from or entry into IDLH (immediately dangerous to life or health) atmospheres. They must have a minimum of 30 minutes cylinders filled with Grade D breathing air.

10.3 **IMPORTANT NOTICE:** written prior approval from the office of environmental health and safety is required before supplied air or SCBA can be used by University at Albany employees.

11. Cleaning & Inspection of Respirators

11.1 Respirators shall be stored in a clean and sanitary location, which is convenient to the area in which their use is required. Since employees are assigned their own personal respirators, they are responsible for cleaning/disinfecting them after each use.

The proper procedure for cleaning/disinfecting a respirator is to remove the cartridges or filters and wash the respirator in warm water with a mild detergent. Rinse the respirator in clean warm water then either hand dry with a lint free cloth or air dry in an area where the respirator will not be contaminated.

11.2 Respirators must be stored in a manner that protects them from contamination, dust, sunlight extreme temperatures, extreme moisture, damaging chemicals, and other destructive forces at all times while not in use. Storage bags are recommended for cleaned respirator storage.

11.3 To ensure that respiratory equipment remains in reliable, functional condition, inspections must be completed prior to each use. The user should check for excessive dirt, cracks, tears, or holes. The head straps should be checked for tears, loss of elasticity, or broken buckles. The inhalation and exhalation valves should be checked to make sure that they are not missing, torn, or defective.

12. Training

12.1 Employees shall be trained in the proper use of respirators and the University at Albany's respiratory protection program as part of their initial certification **and** at least annually thereafter while they are in the program.

12.2 Training will include at a minimum the following components:

- Why the respirator is required
- The type of respirator being used and limitations
- Procedures for inspecting, wearing, and seal checking a respirator
- Procedures for cleaning, maintenance, and storage of respirators

13. Program evaluation

The EH&S Office will conduct periodic evaluations, as necessary, to ensure that employees are following the provisions of this program. The evaluations will be used to determine the effectiveness of training programs and to ensure that respiratory protection is being utilized correctly.