CLEMSON UNIVERSITY

RESPIRATORY PROTECTION PROGRAM

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RESPIRATORY PROTECTION PROGRAM

Clemson University will maintain a healthy work environment in an on going effort to protect each employee and student from potentially harmful agents. It is the goal of Clemson University to insure that employees and students will at no time suffer any adverse health effects related to their work environment.

In the on going control of occupational diseases and deaths caused by inhaling air that is deficient in oxygen and/or contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective of Clemson University is to first prevent atmospheric contamination and deficiencies. Whenever feasible, control of atmospheric contamination and deficiencies shall be accomplished by implementing accepted engineering and/or administrative controls, including: enclosure, isolation, local exhaust systems, general exhaust systems and material substitutions.

It is the philosophy of Clemson University to utilize respiratory protection only when effective engineering and/or administrative controls are not feasible, or while they are being implemented. A sound and effective respiratory protection program is an essential aspect in assuring that personnel using such equipment are adequately protected.

The purpose of the Respiratory Protection Program (RPP) at Clemson University is to establish and maintain a program that will assure compliance with all applicable federal, state regulations concerning the selection, use and maintenance of respirators.

The objectives of the RPP include:

• To ensure that respiratory protective equipment is utilized only when effective administrative and/or engineering controls are not feasible; or while they are being implemented.

• To ensure that the correct type of respiratory protective equipment is selected for each application.

• To ensure that respiratory protective equipment is clean and in good working order.

• To ensure that respiratory protective equipment properly fits the user.

• To ensure that users of respiratory protective equipment are adequately trained in the care, limitations, and proper application of the device.

• To ensure that regulatory documentation is established and maintained in a logical and accessible manner.

Regulations/Requirements

Requirements/references pertaining respirator use, maintenance, selection, and associated training are found in the following publications:

• Occupational Safety and Health Standards for General Industry (29 CFR 1910.94).
• Occupational Safety and Health Standards for General Industry (29 CFR 1910.120).
• Mine Safety and Health Administration (30 CFR part 11).
• Public Health Service (42 CFR part 84).
• The United States Pharmacopoeia for medical or breathing oxygen.
• “American National Standard for Respiratory Protection” (ANSI Z88.2-1992), published by the American National Standards Institute, Inc.
• “Respiratory Protection-Respirator Use-Physical Qualifications for Personnel”, published by the American National Standards Institute, Inc.

Responsibilities

**Industrial Hygienist:**
The IH is responsible for the development, implementation, and administration of the RPP. These responsibilities include:

• Reviewing and updating the respiratory protection written program.
• Conducting exposure and health hazard evaluations of the Clemson University work environment.
• Approving respiratory protection equipment for Clemson University employees.
• Providing instruction to personnel on the proper use, maintenance and storage of respirators.
• Providing a fit testing program for respirator wearers.
• Maintaining fit testing and training records.
• Evaluating the overall effectiveness of the respirator program.

**Occupational Health Nurse:**
The Occupational Health Nurse will be responsible for:

• Developing and implementing a medical surveillance program for all personnel utilizing respiratory protection.
• Performing initial evaluations and physical examinations of the individuals using respiratory protection to determine if the individual is medically able to wear respiratory protective equipment.
• Conducting periodic evaluations (and physicals as necessary) of respirator users.

**Principal Investigators/Supervisors:**
Principal investigators or supervisors have the primary responsibility for implementation of the respiratory protection program in their area of jurisdiction. The principal investigator/supervisor will be responsible for:
• Supervising staff to ensure that the respirator protection program guidelines are followed.
• Identifying and notifying Environmental Health and Safety of tasks/procedures which may require exposure/health assessments to determine if individuals need to utilize respiratory protection.
• Identifying personnel under their supervision required to utilize respirators to the IH.

**Respirator Wearers:**
Respirator wearers will be responsible for:
• Using respirators in accordance with instructions and guidelines received during training courses.
• Storing, cleaning, maintaining, and protecting respirators from damage.
• Reporting any problems or malfunction with respiratory protective equipment to the supervisor/principal investigator.
• Informing the Occupational Health Nurse or contracted medical personnel of health changes that would effect the safe use of respirators.

**Others**
Health, safety, medical, industrial hygiene consultants shall be utilized to support the Respiratory Protection Program as needed and if funding allows. Consultants may be utilized to provide independent data collection, assist in training programs and to assist in compliance audits.

**Respirator Selection/Use**

**Industrial Hygienist**
The IH is responsible for selecting respirators used for protection against exposure/health hazards. Selection of respirators will be based on applicable regulation/guidelines and the following factors:
• Approval of the respirator by the Mine Safety and Health Administration (MSHA) and the National Institute of Occupational Safety and Health (NIOSH).

• The substance present in the work environment for which respiratory protection is needed.

• The physical state of the contaminant (gas, vapor, dust, mist, etc.).

• The Permissible Exposure Limit (PEL) and toxicity of the substance.

• The concentrations of the air contaminants likely to be encountered.

• The fit factor listed for the respirator type.

• The possibility of skin absorption or eye irritation.

• The possibility of oxygen deficiency.

• The nature of the individuals task/procedure.

**Fit Factors**

At no time will a respirator with a lower fit factor than required be selected for utilization. The maximum concentration that is allowable for a particular respirator is determined by the:

Fit Factor x PEL = Maximum Exposure Concentration Allowable

**Exclusive Respirator Usage**

All individuals who wear respiratory protective devices will be supplied with equipment for their exclusive use. An exception to this practice may be permitted for equipment utilized for emergency or rescue purposes (Self Contained Breathing Apparatus (SCBA) and Powered Air Purifying Respirators (PAPR)). Exclusive use respirators will be marked with the employees name or some other identification to prevent cross contamination.

**Employee Training**

EHS will train or arrange training for individuals who wear respiratory protection to control exposure to hazardous agents. An exception to this practice may be permitted for equipment utilized for emergency or rescue purposes (SCBA). Courses related to emergency use equipment may be conducted by outside consultants or by qualified in-house personnel. Any individual who wears a respirator shall receive initial and periodic training in the proper use, care, and limitations of the selected respirator. This training shall include the following:

• The nature of the respiratory hazard - what specific chemical substances are present, what areas, operations, or conditions involve potentially hazardous exposures and what effects may result if respirators are not used.

• An explanation of why engineering controls are not immediately possible and a discussion of what efforts are being made to eliminate, and/or control the potentially hazardous agent.
- An explanation of why the specific type of respirator has been selected and the associated fit factors.
- A discussion and demonstration on how to properly use the respirator.
- Instruction on the proper techniques/importance of cleaning, disinfecting, inspecting, maintaining, and storing the selected respirator.
- A discussion of the capabilities, limitations and correct applications of the selected respirator.

**Respirator Fit Testing**

*Industrial Hygienist*

Any individual who wears a respirator shall be assured of having a proper fitting respirator. Proper fitting shall be assured through quantitative and qualitative fit testing performed by the IH or a qualified individual; Environmental Health and Safety will either perform the testing, or arrange for testing through a qualified contractor. An approval to wear a respirator will not be issued by EHS until a satisfactory qualitative or quantitative fit test has been performed. Fit testing will be performed at least annually for individuals utilizing respiratory protection.

*Conditions of Fit Testing*

The following conditions must be met before respiratory fit testing can be undertaken:

- Individuals must be medically certified to wear a respirator by the Occupational Health Nurse or by certified and approved outside medical personnel.
- Respirators that require a face-respirator seal shall not be worn when conditions prevent an effective seal. Conditions that may affect the respirator-face seal include: eye/safety glasses, missing dentures, and facial hair.
- If any of these conditions are not met, respirator fit testing cannot be performed. An approval to wear a respirator will not be issued by EHS until the conditions of fit testing are met.

**Respirator Inspection/Repair/Storage**

*Inspection*

All respirators shall be inspected routinely before and after each use and during cleaning procedures to ensure that it is in proper working condition. Respirators designed for emergency use shall be inspected at least monthly. Principal investigators/supervisors are responsible for monthly inspections of emergency use respirators. Inspections of emergency use respirators shall be recorded and maintained as a permanent record of regulatory compliance. An exception to this practice may be allowed for departments who perform inspections on a more frequent basis and who establish and maintain a method of documenting these inspections.
**Repair**

No repairs shall be made to air purifying respirators. If air purifying respirators are damaged or missing parts they should be discarded and a new respirator will be issued.

Repairs to SCBA or PAPR should only be performed by a trained individual and according to applicable manufacturer directions.

**Storage**

All respirators shall be stored according to the following guidelines:

- Respirators must be protected from dust, sunlight, heat, extreme cold, excessive moisture, and damaging chemicals. Most air purifying respirators can be stored in a clean plastic bag until they are used.
- Emergency use respirators shall be stored in a cabinet or case located in a non-contaminated but readily accessible area.

**Exposure/Health Assessment**

**Exposure Assessment**

The IH will perform initial and periodic exposure monitoring in all areas requiring the use of respiratory protection. The frequency of periodic monitoring will be based upon applicable state and federal regulations and the judgment of the IH.

**Health Assessment**

When using air-purifying respirators, breathing can become difficult because a filter or cartridge device impedes the flow of air. The Occupational Health Nurse or an approved/certified outside medical consultant will make a determination if the employee is medically able to use a respiratory protective device. The initial determination will consist of a questionnaire evaluation followed by a health exam (if needed). This assessment must be performed prior to fit testing and assigning a respirator to an employee. The evaluation (and follow-up exam) will be repeated periodically for all respirator wearers. Supervisors/principal investigators will be advised of employees/students with medical limitations regarding the use of respirators.

**Program Evaluation**

Periodic evaluations will be made by the IH to assure continued effectiveness of the program. Such evaluation will determine whether or not all requirements of the program are being adhered to properly. Periodic feedback will be solicited from respirator users and their supervisor and/or primary investigator.

Frequent random inspections will be conducted by the IH to assure that: the proper respiratory protective equipment is being used, the equipment is being used correctly, users are certified to wear respirators, users are getting a good face-seal fit and that the equipment is being cleaned and stored properly.
Every September the IH will audit the respiratory protection program. This audit will include a complete review the RPP manual and any necessary changes will be made promptly. The internal audit will include a review of all investigations and reports issued during the preceding year related to the RPP. Any inconsistencies or inaccuracies concerning these investigations and reports will be noted.

Respiratory Protection Program Records

Data and Records
OSHA regulations require that records pertaining to fit testing and respiratory training be retained in a format that allows easy and logical access. All original Industrial Hygiene data pertaining to fit testing and respirator training will be kept on file by the IH.

Duplicate computer files of fit testing/training records are maintained for efficient report writing and organizing.

Records Retention
Regulatory compliance data such as personal fit testing and respirator training will be retained as required by OSHA; as of this writing, records are to be kept 30 year past the date of an employee’s last day of employment at Clemson University.