

## CHAPTER 7      RESPIRATORY PROTECTION

### 7.1 INTRODUCTION

Respirators are a relatively complex form of personal protective equipment. To provide effective protection, they must be carefully chosen, fitted, worn, and maintained. This section establishes a program to help ensure their effective use and to meet the requirements of applicable regulations.

### 7.2 SCOPE

This section applies to all respirator use at PPPL.

### 7.3 DEFINITIONS

7.3.1 Environment, Safety and Health Division (ES&H) Maintained Respirators - Respirators which are issued and maintained by ES&H for activities that are either non-repetitive or occur so infrequently that maintenance of respirators by users or work groups is impractical or undesirable. The majority of respirators at PPPL fall into this category. These respirators are issued by ES&H on a case-by-case basis.

Examples:

- Asbestos removal
- Beryllium machining
- Solvent handling in confined spaces
- Chemical handling for special projects
- Spray painting
- Welding / brazing involving high toxicity metals or fluxes

7.3.2 Qualitative Fit Test - A determination of the fit of a respirator facepiece to a particular employee using a test atmosphere in accordance with protocol in ANSI Standard Z88.2.

7.3.3 Respirator - Any device designed to protect the wearer from the inhalation of a hazardous atmosphere. Included are single use (disposable) and replaceable cartridge/canister respirators, self-contained breathing apparatus (SCBA), and air supplied suits and hoods.

7.3.4 Respirator Qualified Employee - One who has successfully completed a medical qualification examination, respirator training, and fit testing requirements for a particular respirator. Respirator qualification must be repeated annually for each type of respirator used.

7.3.5 Work Group Maintained Respirators - Respirators used for activities that are continuous, repeated frequently, or occur on short notice such that it is impractical for the respirators to be issued and maintained by ES&H.

Examples:

Air supplied suits for use in the tritium vault

Respirators maintained by ESU for firefighting or hazardous material response

Disposable dust respirators used routinely in a shop or lab

7.3.6 Respirator Control Officer - A supervisor or supervisor-appointed employee responsible for maintaining respirators in accordance with the standard operating procedure as required for work group maintained respirators.

## 7.4 POLICY

A primary objective of this program is to provide a means of respiratory protection when engineering controls (e.g., ventilation, process isolation) are not feasible or adequate. It does not diminish the Laboratory's responsibility to minimize employee exposure to air contaminants by accepted engineering control methods.

All respirators shall be used in accordance with current applicable regulations: OSHA - 29 CFR 1910.138, ANSI Z88.2 (Practices for Respiratory Protection). The SCBA used by the Emergency Services Unit shall additionally comply with ANSI Z88.5 (Practices for Respiratory Protection for the Fire Service).

Only respirator-qualified employees shall be permitted to wear respirators for protection against hazardous air contaminants at PPPL.

In areas where respirators are required for health protection, employees shall not be permitted to wear respirators when facial hair is present in the seal area or a seal cannot be achieved for any reason.

## 7.5 RESPONSIBILITIES

### 7.5.1 ES&H shall be responsible for:

- A. Identification, evaluation, and notification to supervisors of hazards for which respiratory protection may be necessary (in consultation with Health Physics for radiological hazards).
- B. Selection of respirators, cartridges, and related equipment for the control of specific exposures.
- C. Training employees and supervisors in the proper use of respirators available through ES&H. For other respirators, ES&H will coordinate with supervisors of such respirator wearers to ensure adequate training is provided and participate in such training as appropriate.
- D. Qualitative fit testing of respirators and employees which require such testing.
- E. Coordination with Occupational Medicine to ensure that respirator wearers are medically qualified to wear such respirators before they are trained.
- F. Issuance of respirators for non-routine operations. Respirators and cartridges shall be selected on a job-by-job basis after a review of the operation and associated hazards. ES&H shall maintain an inventory of respirators suitable for activities at PPPL in a range of sizes and brands so as to facilitate achieving a satisfactory fit by as many employees as possible.
- G. Monitoring respirator use for non-emergency operations and the level of respiratory hazard during such operations.
- H. Inspection, maintenance, cleaning, disinfection, and storage of respirators issued by ES&H.
- I. Maintenance of all records pertaining to ES&H maintained respirators, along with relevant air monitoring data. Recordkeeping requirements for respirators maintained by work groups shall be specified in the standard operating procedures established for such respirators.

- J. Approval and annual review of standard operating procedures established by supervisors for respirators they maintain.
- K. Verification of effective inspection, cleaning, and disinfection of respirators maintained by work groups.

7.5.2 Department/Project and Division Heads are responsible for ensuring implementation of this section.

7.5.3 Supervisors are responsible for:

- A. Identifying potentially hazardous conditions and consulting with ES&H to assess the need for respirators.
- B. Identifying those employees who may need to wear respirators.
- C. Ensuring that such employees achieve and maintain respirator-qualified status.
- D. Arranging for the procurement of prescription lens inserts for use in full facepiece respirators by employees who require corrective lenses. Such equipment shall be provided at no cost to employees.
- E. Enforcing the use of respirators when respiratory protection is needed.
- F. Ensuring that respirators are used in accordance with instructions and training provided by ES&H.
- G. Monitoring the work area during respirator use for the occurrence of adverse conditions and worker stress.
- H. Informing ES&H of observed or suspected respirator malfunctions.
- I. Requesting the issue of ES&H maintained respirators. The names of employees requiring respirators and the nature of the activity shall be provided to ES&H at least 48 hours in advance of the operation if possible.

- J. Expeditiously returning ES&H maintained respirators when work is completed.
- K. Establishing written standard operating procedures for respirators maintained by a work group. The procedures must, as a minimum, address the following areas:
  - 1. Issuance
  - 2. Authorized uses and limitations
  - 3. Training
  - 4. Maintenance, inspection, storage, and disinfection
  - 5. Fit testing
  - 6. Medical Qualifications
  - 7. Recordkeeping requirements
- L. Obtaining ES&H review and approval of procedures required in paragraph K, above.
- M. Acting as or appointing a respirator control officer for work group maintained respirators.

7.5.4 Employees are responsible for:

- A. Wearing and using respirators issued to them in accordance with instructions and training provided by ES&H and supervisors.
- B. Informing their supervisors or ES&H of any working conditions for which they feel a respirator is needed or wanted.
- C. Ensuring proper cleaning, inspection, and storage of respirators in their custody.
- D. Informing Occupational Medicine of any personal health problems that could be aggravated by the wearing of a respirator or could make wearing of a respirator inadvisable.

- E. Reporting any ill-fitting or malfunctioning respirators to their supervisor or ES&H.

## 7.6 SPECIAL PROCEDURES FOR DISPOSABLE DUST RESPIRATORS

Disposable dust respirators are available for procurement through the Stockroom by an appointed respirator control officer for the uses stated in an approved standard operating procedure.

**WARNING:** Disposable dust respirators provide no protection against gases or vapors and provide inadequate protection against welding fumes, asbestos, and other highly toxic dusts.

## 7.7 REFERENCES

### 7.7.1 American National Standards Institute (ANSI) Standards

- A. Z88.2 - Practices for Respiratory Protection
- B. Z88.5 - Practices for Respiratory Protection for the Fire Service
- C. Z88.6 - Respirator Use - Physical Qualifications for Personnel

### 7.7.2 Code of Federal Regulations (CFR)

- A. 29 CFR 1910.134 - OSHA Respirator Standard for General Industry
- B. 29 CFR 1926.103 - OSHA Respirator Standard for the Construction Industry

### 7.7.3 NIOSH Respirator Decision Logic - Publication No. 87-108