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USDA/ARS POISONOUS PLANT RESEARCH LAB
RESPIRATOR MANAGEMENT PROGRAM

INTRODUCTION

Personal protective equipment (PPE), including equipment for the protection of head, eyes, face, body, extremities, and the respiratory system, and protective devices including guards, shields, or barriers, is provided by PPRL. This equipment is provided whenever necessary by reason of hazards of processes or environments, chemical hazards, radiological hazards, or mechanical irritants potentially present in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact.

This document shall be the PPRL Respirator Management Program, which will be made available to, and followed by, anyone required to use respiratory protection. The purpose of this program is to ensure that respiratory equipment at PPRL is properly selected and maintained, that employees are medically fit to wear respirators, that they are adequately trained on the use of respiratory equipment, and that the respirators have been fit tested to ensure proper fit. This program constitutes partial compliance with the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

No employee-owned personal protective equipment shall be used at PPRL without written authorization from the Research Leader or the PPRL Safety Team.

STANDARD OPERATING PROCEDURES

Protection Against Chemical Exposure

Whenever the potential exists for breathing harmful concentrations of hazardous chemicals, the supervisor or PPRL Safety Team shall assess the need for corrective action. Based on all available information, recommendations shall be given to minimize employee exposure. In some cases, the USU Industrial Hygienist will be consulted.

Whenever monitoring data indicate the existence of exposures in excess of established exposure values, action will be taken to minimize exposure. The preferred action shall be, in order of implementation, engineering controls, work practices, and personal protective equipment.

Employees shall use respirators following all recommendations and directions of the manufacturer and all procedures presented in annual respirator use training. Only employees authorized by the Research Leader shall use respiratory protection. All employees required to use respiratory protection equipment shall receive annual medical examinations.

Selection and Issuance of Respirators

The PPRL shall use North equipment as its primary air-purifying respirator. Respirator selection shall be based on the decision logic presented in NIOSH Respirator Decision Logic[1], the American Standard Practice of Respiratory Protection Z88.2-1969[2], or the OSHA Compliance Guide to the General Industry Standard for Respirator Protection[3]. Copies of these documents are available in the safety files (Room 127) for review by **any** (full- or part-time) PPRL or RSA employee.

It is the responsibility of the supervisor to identify all tasks which may require respiratory protection. The PPRL Safety Team will evaluate the actual need for respiratory protection. A copy of this risk assessment/job hazard analysis will be kept in the Safety Files.

Only air purifying respirator cartridges authorized by NIOSH or MSHA shall be used by PPRL. All air purifying cartridges used shall be compatible with the equipment listed in this section and protect the wearer from the chemical hazard present. Currently, cartridges are available for organic vapors, formaldehyde, pesticide, and dust (HEPA filters). Other types will be ordered when necessary.

A respirator equipped with a face piece shall not be worn if facial hair comes between the sealing periphery of the face piece and the face or if facial hair interferes with valve function. The wearer of a respirator equipped with a full face piece, helmet, hood, or suit shall be strongly encouraged to not wear contact lenses. If spectacles, goggles, a face shield or a welding helmet must be worn with a face piece, they shall be worn so as not to adversely affect the seal of the face piece to the face. Spectacle mounts for inside the face piece are available for most respirator models.

Respirators are issued to authorized users. An employee becomes an authorized user once he/she has completed an initial medical exam, training, and fit testing as documented by PPRL or USU EH&S Training Documentation Form. A yearly medical exam and annual refresher training shall maintain an employee as an authorized respirator user.

Training and Fit Testing

All persons authorized to use respirators shall receive training covering the topics listed in Table 1, below. Along with the training, fit testing (qualitative or quantitative) shall be conducted by USU Environmental Health and Safety staff or PPRL Safety Team.

Table 1. Respirator Usage Training Program

Respirator usage terminology	Fit Testing Procedures
Selection of respirators	Routine fit confirmation
Inspection methods	Annual fit testing procedures
Cartridge installation methods	Respirator manufacturer instructions
Routine care and maintenance	Fit Testing

Hands-on practice

At this time, there is no need for supplied air respirators at PPRL.

Storage and Maintenance

Respirators shall be stored in a clean, impermeable container, i.e., plastic bag or box, when not in use. Such containers shall be regularly inspected for integrity. Each authorized user shall be responsible for ensuring that their respirator is regularly cleaned and stored and maintained properly.

Any respirator with defective parts shall not be used and shall be returned to the PPRL Safety Team for necessary repairs immediately.

Inspection

Each respirator shall be inspected by the authorized user for worn or deteriorated parts daily or as frequently as needed (i.e., before donning the respirator). Such worn or deteriorated parts shall be replaced immediately. Respirators which fail to meet minimum inspection criteria shall not be used until appropriate repairs are made.

Area Surveillance

The PPRL Safety Team shall supervise a regular program of area and personal monitoring for exposure to potential chemical contaminants. The PPRL Safety Team shall maintain all monitoring records by work area and by employee for an indefinite period not to be less than 30 years, as required by 29 CFR 1910.20. Very basic monitoring using Dräger tubes can be done by the Safety Team; more precise monitoring will be done by the USU Industrial Hygienist or a qualified third party whenever the tube reading approaches the action level (one-half the PEL).

Area Inspection

The PPRL Safety Team shall inspect each work area in which respirators are used annually or more often as needed.

Medical and Physical Fitness

Employees shall receive a medical examination consisting of, at the minimum, a pulmonary function test prior to being issued a respirator. Also of great importance is the evaluation of the employee's psychological tolerance to use of the respiratory protection equipment. This aspect will be evaluated by the PPRL Safety Team or employee's supervisor.

Confined Spaces

No employee shall enter a confined space without fully complying with all aspects of the OSHA Permit Required Confined Space Standard 1910.146.

Immediately Dangerous to Life or Health Atmospheres

Except for emergency escape and rescue procedures, no employee shall enter an area in which the concentration of contaminant equals or exceeds the Immediately Dangerous to Life or Health (IDLH) atmosphere level. If rescue is required, a proper harness and retrieval system will be in place along with standby personnel outside the IDLH area. Respiratory protection will consist of a pressure-demand air supply system.

RESPIRATOR PROGRAM EVALUATION

It is the policy of the Poisonous Plant Research Lab to evaluate its Respirator Management Program at least yearly. In addition, each supervisor must evaluate his or her work area annually.

[1]US Dept. Health and Human Services, NIOSH, May 1987 DHHS Publication No. 87-108
[2]American National Standards Institute, New York, NY

[3]OSHA CPL 2-2.20A, Chapter V, Office of Health Compliance Assistance, March 30, 1984

Revision 03/27/98

OSHA proposed a change to the respirator standard (29 CFR 1910.134) that became effective April 8, 1998. A current copy of the standard can be found in the PPRL Safety Files or via the Internet at the OSHA website (the safety computer has this site bookmarked).

Several changes to the standard will impact how the PPRL program is managed. Probably the most important change is the requirement for End of Service Life Indicators (ESLI) on all respirator cartridges. Beginning this July (or later if this part of the standard is delayed in implementation), all manufacturers of such cartridges must list an ESLI on the cartridge. We are allowed to use the existing cartridges on our supply shelves, and manufacturers are allowed to continue selling such cartridges, until they are gone. Since we at PPRL do not have ESLI on any of the cartridges, the Safety Team has developed some guidelines for changing the cartridges.

1. Write the date on the cartridge when you put it on your respirator.
2. Store the respirator in the plastic bag provided; this protects both the respirator mask and the cartridges from general exposure to the environment (dust, chemical fumes or vapors, etc.).
3. Maintain a log of how often and for how long you actually use the respirator. In the last few years, the need to use a respirator has declined due to changes in the work protocol and engineering modifications to reduce chemical or dust exposures.
4. All cartridges will be changed out on at least an annual basis. Since the respirator fit tests (conducted by USU) are held each year, plan on replacing the cartridges at that time <u>whether or not you've used the respirator in the preceding year</u>.
5. A very few chemicals have warning properties low enough to indicate breakthrough on the cartridges. Until such indicators have been developed by the cartridge manufacturers, follow the above procedure.

Filtering face pieces (what we generally term dust masks) are now recognized by OSHA. **Dust masks are unable to be fit-tested and should only be used for comfort and not to protect from chemical or dust hazards.** This in turn requires that before these dust masks are worn, the employer (i.e., the research lab) must test the work area for respiratory hazards and document the results of such tests. If there is a respiratory hazard present, then a half- or full-mask respirator must be used. At PPRL, the Safety Team has monitored a number of work areas and work procedures; the reports are located in the Safety Files (Room 127). Standard Operating Procedures (SOPs) are provided for grinding poisonous plants, large scale plant extractions, grinding small amount of poisonous plants, cleaning grain bins and other possible rodent-infested areas, etc. These SOPs list the proper respirator to use as well as other protective equipment, etc.

A medical evaluation form has also been adopted by OSHA. In many cases, this form may be used in lieu of the physical exam, pulmonary function test (PFT), and chest x-ray for <u>casual</u> users. Once the form is filled out, it still needs to be reviewed by a medical doctor or similarly qualified professional and they, in turn, must certify the wearer as medically competent to wear a respirator.

People who work with certain chemicals (e.g. formaldehyde) or in certain areas (pesticide handlers) still need an annual full exam and PFT.

Even when no proven respiratory hazard exists, some people prefer to wear a respirator on a voluntary basis. OSHA has a special provision for such use. The lab is still required to document that no respiratory hazard exists and provide the training for respirator users. However, they are not obligated to provide the respirator to that person. A copy of Appendix D of 1910.134 must be provided to such users; in addition, the lab must ensure that any employee using a respirator voluntarily is medically able to do so. The employee is responsible for cleaning, storing, and maintaining the respirator so that its use does not provide a health hazard. **Note:** for employees using only dust masks, the requirements in this paragraph do not apply.

Respirator cartridges currently in use at PPRL:

Organic dust/mist/vapor cartridges will be changed annually (when the quantitative fit test is done) unless use levels change from the current level which is perhaps one to two times a year for less than 30 minutes (transferring organic solvents).

Formaldehyde and organic dust/mist/vapor cartridges will be changed annually (when the quantitative fit test is done). Current use levels are below 5 hours in environments with less than 5 ppm formaldehyde.

P100 or HEPA cartridges are used to protect from particulate matter with no oil present. As such, they are primarily used by the caretakers when grinding large amounts of poisonous plants or when cleaning out storage areas such as grain bins. These cartridges will be changed at least annually if the only use is when plant is being ground. Cartridges will be changed after each storage area cleanup.

Pesticide prefilters will be changed after each application of herbicide to the grounds to control weeds.