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UNIVERSITY OF VIRGINIA

Respiratory Protection Program

Administered by



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Responsibilities

The Administration shall:

- x Support the requirements of this program
- x Ensure funding is available for the administration, implementation, operation and maintenance of this program

The Environmental Health & Safety Office (EHSO) shall:

- x Assign the duties of the Respiratory Protection Program Coordinator to an EHSO staff member

The Respiratory Protection Program Coordinator shall:

- x Administer this program in accordance with the Virginia Occupational Safety and Health (VOSH) 1910.134 standard
- x Develop training and instructional programs
- x Provide training and fit testing for all users of respirators
- x

- x Ensure respirators maintained for emergency use and self contained breathing apparatuses (SCBAs) are inspected on a schedule as required in Section VI of this program
- x Attend training in accordance with Section IX of this program

Employees shall:

- x Use respirators in a manner that complies with their instruction and training
- x Clean, disinfect, inspect and properly store their respirators
- x Report respirator malfunctions to their supervisor
- x Report to their supervisor, the occurrence of physiological changes that may affect the fit of their respirator or their ability to safely wear a respirator
- x Inspect respirators on a schedule as required in Section VI of this program
- x Attend training in accordance with Section IX of this program

I. Introduction

The purpose of this Respiratory Protection Program is to protect the health of employees who are exposed in the course of their work to airborne contaminants and are required to wear respirators. Implementation of this program is in accordance with the requirements of the Virginia Occupational Safety and Health (VOSH) program administered by the Virginia Department of Labor and Industry under standard 1910.134.

Respirators shall be used by employees only as a last line of defense in a contaminated atmosphere. The use of respirators shall be limited to the following conditions:

- x For routine operations while engineering controls are being instituted or evaluated.
- x When engineering controls are not technically feasible or cannot by themselves control a contaminant below an acceptable level.

The use of any and all types of respirators (N95's, Half-Face, Full-Face) at Old Dominion University is subject to review and approval by EHS prior to use.

No employee/student should wear a respirator unless they have been through EHS's Respiratory Protection Program. The OSHA Respiratory Protection Standard regulates any use of respiratory protection.

II. Respirator Selection

The Respiratory Protection Program Coordinator shall select the respirators to be worn by all employees covered under this program. Respirators shall be selected based on the respiratory hazard to which the employee is exposed and workplace and user factors that affect respirator performance and reliability. The factors that shall be taken into account when selecting a respirator include:

- x The nature of the hazard (i.e. oxygen deficiency, contaminants and their concentrations)
- x Physical properties of the hazard
- x Chemical properties of the hazard
- x Adverse health effects caused by the hazard
- x Physiological effects on the wearer
- x Results of workplace sampling
- x Exposure limits (i.e. PEL and TLV)
- x Warning properties of the hazard
- x Nature of the hazardous operation
- x Location of the hazardous area
- x Time period of respirator wear
- x Employee's health

- x Respirator characteristics, capabilities and limitations
- x Protection factors

Respirators shall be NIOSH-certified and shall be used in accordance with the conditions of the certification. A variety of respirator models and sizes shall be made available to employees so that a satisfactory fit and wearer acceptance can be achieved.

The Respiratory Protection Program Coordinator shall identify and evaluate respiratory hazards in the workplace. The evaluation shall include a reasonable estimate of employee exposures to respiratory hazards, including those likely to be encountered in reasonably foreseeable emergency situations, and an identification of the contaminant's physical state and chemical form. For employee exposures that cannot be identified or reasonably estimated, the atmosphere shall be considered immediately dangerous to life and health (IDLH).

Respirators for IDLH Atmospheres

The most protective and reliable respirators shall be used for IDLH atmospheres. Such respirators include either a full facepiece pressure demand self-contained breathing apparatus (SCBA) certified for a minimum service life of thirty minutes, or a combination full facepiece pressure demand supplied-air respirator with an auxiliary self-contained air supply. Respirators that are to be used exclusively for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

Respirators for Non-IDLH Atmospheres

Respirators shall be provided to adequately reduce the exposure of the respirator wearer under all conditions of use, including reasonably foreseeable emergencies. Additionally, the respirators shall ensure compliance with all other statutory and regulatory requirements. The respirators selected shall protect employees against the physical state and chemical form of contaminants in the workplace.

For atmospheres containing gases or vapors, either an atmosphere-supplying respirator or an air-purifying respirator with a canister/cartridge filter equipped with a NIOSH-certified end-of service life indicator (ESLI) shall be used. The Respiratory Protection Program Coordinator shall implement a canister/cartridge change schedule when no ESLI is available or when the ESLI is not appropriate for the conditions encountered in the workplace.

For atmospheres containing particulate matter, either an air-purifying respirator equipped with a high efficiency particulate air (HEPA) filter certified under 30 CFR part 11, or equipped with any N, R or P series particulate filter certified under 42 CFR part 84 shall be used. Only HEPA-filtered respirators or N100, R100 or P100 filtered respirators shall be used for workplace conditions in which submicron-sized particulate hazards are present or where another OSHA

silicosis, chronic bronchitis, and emphysema. (29 CFR 1910.134(d)(1)(ii))

The medical evaluation shall be conducted by a licensed health care professional (PLHCP) through the University's contracted occupational health care provider, NowCare or provided access/login to 3M's Online Medical Evaluation website and shall be offered at no cost to the employee. A medical exam shall be provided to employees who give a positive response to questions 1 through 8 in Section 2, Part A of the questionnaire and to employees who are identified by the PLHCP as requiring a medical exam. The medical exam shall include any tests, consultations or diagnostic procedures that the PLHCP deems necessary to make a final determination on the employee's ability to wear a respirator. Employees shall be given the opportunity to discuss the questionnaire and exam results with the PLHCP.

The Respiratory Protection Program Coordinator shall administer the medical questionnaire in a confidential manner on campus during the employee's normal work hours and in a manner that ensures the employee understands its content. The Respiratory Protection Program Coordinator shall forward the questionnaires of this program to the PLHCP for review. A copy of this program and 29CFR1910.134(e) shall also be forwarded to the PLHCP.

IV. Fit Testing

Before an employee is required to wear a respirator with a negative or positive pressure tight-fitting facepiece, the employee shall be fit tested with the same make, model, style, and size of respirator that will be used in the workplace. Employees shall be fit tested at least annually thereafter or more frequently if they are assigned a different respirator or if they experience a physical condition that could affect respirator fit.

The fit test shall be administered by the Respiratory Protection Program Coordinator using the OSHA-accepted protocols for the Portacount quantitative fit tester or a qualitative fit test using Saccharin, Bitrex or Irritant smoke. Minimum fit factors that must be achieved by the employee for a tight-fitting half facepiece and for a tight-fitting full facepiece are 250 and 750 respectively.

When the Portacount is used for fit testing PAPRs and atmosphere-supplying respirators with tight-fitting facepieces, the facepiece shall be under negative pressure and either a facepiece with a permanent sampling probe or a sampling probe adapter shall be used.

V. Use of Resps

Voluntary Respirator Use

Where respirator use is not required either by the University or by a VOSH standard, employees shall be permitted to wear respirators in situations where they wish to do so, provided that the Respiratory Protection Program Coordinator can determine that such use will not in itself create a hazard. Employees who voluntarily use respirators with tight-fitting facepieces shall do so in accordance with all provisions of this program.

- x Employees who voluntarily use N95 respirators will need to be medically cleared and trained prior to using a N95 and will be provide the Voluntary Use form (**Appendix C**) from EHS.
- x Employees who voluntarily use dust masks shall be provided with the Voluntary Use form (**Appendix C**) by EHS shall attend a training program.

Employees shall be provided with respiratory protective equipment, training and medical evaluations at no cost to them. The employees department/shop will be responsible for all costs.

Procedures for IDLH Atmospheres

For non-confined space IDLH atmospheres, the following precautions shall be taken:

- x The Respiratory Protection Program Coordinator shall be immediately notified of any entries into an IDLH atmosphere;
- x One employee or, when needed, more than one employee shall be located outside the IDLH atmosphere. The employee(s) shall be equipped with pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied air respirator with auxiliary SCBA and appropriate retrieval equipment for removing the employee(s) who enter the hazardous atmosphere;
- x Visual or voice communication shall be maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere;
- x The employee(s) located outside the IDLH atmosphere shall be trained and equipped to provide emergency rescue;
- x The Public Safety Dispatcher shall be notified prior to the conduct of an emergency rescue;

NOTE: See the University's Confined Space Entry Program for procedures to follow for IDLH atmospheres in confined spaces

Procedures for Interior Structural Firefighting

University employees are prohibited from fighting structural fires.

VI. Maintenance and Care of Respirators

Cleaning and Disinfecting

Employees will be provided with respirators that are clean, sanitary and in good working order. Employees shall either follow the procedures in **Appendix B** for cleaning and disinfecting respirators or follow the procedures recommended by the respirator manufacturer, provided such

procedures are of equivalent effectiveness. Respirators shall be cleaned and disinfected at the following intervals:

- x Respirators issued for the exclusive use of an employee shall be cleaned and disinfected by the employee as often as necessary to be maintained in a sanitary condition;
- x Respirators issued to more than one employee shall be cleaned and disinfected by the employee before being worn by another employee;
- x Respirators maintained for emergency use and respirators used for fit testing shall be cleaned and disinfected by the employee after each use.

Storage

Employees shall store their respirators in a manner that will prevent damage, contamination, and exposure to sunlight, extreme temperatures, excessive moisture, and other factors that may affect the effectiveness of the respirator. (t)-2(e)-10(ac)-10

Repairs

Respirators that fail an inspection or are otherwise found to be defective shall be removed from service and either discarded or repaired. Repairing of respirators by employees is limited to

- x Procedures for maintenance and storage of the respirator;
- x Recognizing medical signs and symptoms that may limit or prevent the effective use of respirators; and
- x Overview of the general requirements of this section.

Dust Mask Training

Employees who voluntarily use dust masks in the workplace shall attend special training that is specifically designed to provide them with information for the safe use of dust masks. Additionally, they shall be provided with the Voluntary use Form.

Refresher Training

Employees shall attend refresher training annually, or more frequently if they show inadequacies in their knowledge or ability to properly use respirators, or if any other situation arises in which retraining appears necessary.

X. Program Evaluation

The Respiratory Protection Program Coordinator shall conduct evaluations of the workplace to ensure that this program is being properly implemented and employees are properly using respirators. The evaluations shall be conducted as necessary to ensure that this program is being effectively implemented. The Respiratory Protection Program Coordinator shall regularly consult with employees who wear respirators to assess their views on the overall effectiveness of the program and to identify any problems. Factors that shall be assessed include:

- x Appropriate respirator selection for the hazards to which the employee is exposed;
- x Proper respirator use under the workplace conditions the employee encounters; and
- x Proper respirator maintenance.

XI. Recordkeeping

The Respiratory Protection Program Coordinator shall maintain written information regarding employee medical evaluations, fit testing, and this program. The records shall be made available in a reasonable time, place and manner upon request from an employee or an employee's designated representative or from the Assistant Secretary.

Medical Evaluations

Medical evaluation records shall be kept for each employee subject to medical evaluations under Section III of this program. The records shall include the result of the medical questionnaire and, if applicable, a copy of the PLHCP's written opinion and recommendations, including the results of relevant medical examinations and tests. The records shall be preserved and maintained for at least the duration of employment plus thirty years.

Fit Testing

Fit test records shall be maintained to show that fit testing was conducted and that the employee achieved a passing fit factor.

XII. Definitions

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.

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.

Emergency situation means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee means any person hired by the University or the University's Research Foundation as full- or part-time personnel, including administrators, faculty, staff, students and work study students.

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 particular 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.

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 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 and health (IDLH) means 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.

Interior structural firefighting means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage.

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

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 Section III of this program.

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 an individual's response to the test agent.

Quantitative fit test means (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.

Supervisor means an employee who oversees the work of another employee (e.g. Principal Investigator, lab manager, superintendent).

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.

References

FR 63:1152-1300 Respiratory Protection; Final Rule

29 CFR 1910.134 OSHA Respirator Standard

29 CFR 1910.1020 OSHA Access to Employee Exposure and Medical Records

ANSI Z88.2-1992 ANSI Standard for Respiratory Protection

NIOSH Guide to the Selection and Use of Particulate Respirators Certified Under 42 CFR 84

N95 Reuse and Decontamination Procedures

N95 FILTER FACEPIECE RESPIRATOR REUSE RECOMMENDATIONS

There is no way to determine the maximum number of safe reuses of an N95 respirator as a general number to be applied in all cases. The recommendations below are designed to provide practical advice so that N95 respirators are discarded before they become a significant risk for contact transmission if their functionality is reduced.

For instructions on N95 reuse/decom:

- x Refer to the manufacturer's instructions.
- x Research FDA / CDC / NIOSH recommendations

Appendix C

Old Dominion University Respiratory Protection Program

“Voluntary” Use of Respirators

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.
5. Ensure you have been Medically Cleared and Trained through EH&S prior to Respirator use. Departments are responsible for the cost of Medical Clearance and respirator.

Employee Information

Employee Name (Print)	Department/ Shop
Employee Signature	