Reed College Respiratory Protection Program

July 2025

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1.0 Purpose and Scope

An estimated 5 million workers are required to wear respirators in 1.3 million workplaces throughout the United States. Respirators protect workers against insufficient oxygen environments, harmful dusts, fogs, smokes, mists, gasses, vapors, and sprays. These hazards may cause cancer, lung impairment, diseases, or death. Respirators protect the user in two basic ways. The first is by the removal of contaminants from the air. Respirators of this type include particulate respirators, which filter out airborne particles, and air-purifying respirators with cartridges/canisters that filter out chemicals and gasses. Other respirators protect by supplying clean respirable air from another source; for example, a self-contained breathing apparatus (SCBA), which includes its own air supply. Workers have a right to a safe workplace. The law requires employers to provide their employees with working conditions that are free of known dangers.

Reed College provides employees with a safer work environment by reducing and ultimately eliminating exposure to air-borne contaminants. This Respiratory Protection Program provides employees with one method to reduce their exposures to air-borne hazards.

The Respiratory Protection Program applies to all Reed College employees required to wear respiratory protection against airborne contaminants and employees involved in program implementation. It also includes employees who voluntarily use respirators at work, for comfort reasons.

2.0 Responsibilities of Positions

All employees in the Respiratory Protection Program need to understand the health effects of airborne hazards and related prevention measures used to protect human health.

2.1 Environmental Health and Safety (EHS)

- Administers and maintains the respiratory protection program.
- Provides appropriate NIOSH-approved respirators based on the type of hazard.
- Arranges to obtain air sampling where employees might use respirators, or if an employee requests it.
- Coordinates initial and annual training and respirator fit testing.
- Act as campus administrator for a third-party online platform providing medical evaluation questionnaires to employees. Currently, for Reed College personnel, Kaiser Permanente provides this medical evaluation.
- Maintains records of annual training and fit testing.
- Evaluates program effectiveness to ensure that:
    - The program procedures reflect current, applicable regulations and industry accepted standards;

    - Employees have an opportunity to express their views on the effectiveness of the program and to identify any problems.

2.2 Reed College Administration

- Provides commitment, leadership, and financial resources to support this program.
- Assists in the limiting airborne contaminants by supporting administrative and engineering controls.
- Provides reasonable assurance that all provisions of the program are met.

2.3 Supervisors

- Have their employees complete the medical questionnaire and evaluation, respirator fit test, and respiratory protection training before they use respirators in the workplace.
- Evaluate the program effectiveness through frequent unscheduled observations of employees' activities related to properly wearing, cleaning, maintaining, and storing their respirators.
- Report any incidents, changes in chemical exposure, or instances of non-compliance with any portion of this program to Environmental Health and Safety (EHS).
- Provide voluntary users of respirators with the form in Appendix B and make sure employees understand, sign, and return it.
- Require staff to attend annual training sessions and participate in annual fit testing.
- Provide Human Resources with the following information about each employee:
    - The type and weight of the respirator used by the employee.
    - The expected duration and frequency of respirator use.
    - The expected physical work effort.
    - Additional protective clothing and equipment worn.
    - Temperature and humidity extremes encountered.
- Facilitate or initiate engineering or administrative controls.
- Maintain a supply of appropriate cartridges for employee use.
- Provide a copy of the respiratory protection program and standard to employees or their representatives

2.4 Affected Employees

- Use engineering controls and adhere to administrative control, wherever possible.
- Participate in medical evaluations, annual training, and fit testing.
- Complete and return all necessary paperwork, such as the medical questionnaire and voluntary use form (Appendix B). Submit the online medical clearance questionnaire and participate in any additional medical consultations. Voluntary use form can be provided to EHS/your supervisor.
- Wear appropriate respiratory protective equipment when exposed to uncontrolled airborne contaminants.
- Clean, store, and maintain respiratory equipment properly.

- Immediately report any malfunction of the respirator or other concerns and questions to their supervisor.
- Provide comments to EHS on the effectiveness of or problems with the program, such as new processes or products, respirator fit, respirator and cartridge selection, proper respirator use under workplace conditions, proper respirator storage and maintenance practices.

2.5 Human Resources

- Provide employees covered by this program with a medical evaluation prior to respirator use and every five years, or more often if necessary, thereafter.
- Maintain medical evaluation records for 30 years after the employee terminates employment.

3.0 General Rules

3.1 Controls

Reed College uses effective engineering and administrative controls, where feasible. If these controls do not reduce employee exposure levels to below OSHA Permissible Exposure Limits (PEL) or other recommended limits, Reed College will provide respirators, medical evaluations, and fit testing at no cost to the employee through EHS.

3.2 Medical Evaluations

In addition to pre-employment medical evaluations, an employee or their supervisor may request a new medical evaluation through Human Resources when changes in pulmonary function, oral health, weight, or other pertinent concerns may affect the employee's ability to safely use a respirator.

Medical personnel will evaluate any employee required to use respiratory protection, including filtering face pieces, to ensure adequate respiratory capacity to wear the designated equipment.

Medical evaluations are conducted via an online questionnaire provided by Reed College's Occupational Healthcare provider. EHS can assist employees accessing the online platform, submitting questionnaire responses, and scheduling follow-up evaluations if necessary.

3.3 Personal Considerations and Respirator Limitations

Respirator fit: OSHA allows nothing to interfere with the respirator-to-skin seal or valve function, e.g. facial hair or jewelry.

Dentures, braces, tooth-loss, and weight fluctuation: Because the effectiveness of air-purifying respirators depends on achieving an airtight seal on the employee's face, new dentures,

tooth-loss, or other changes in oral health can affect the fit of an employee's respirator. Significant weight loss or gain can also affect the proper fit of an employee's respirator. A new fit-test is recommended in these cases.

Prescription glasses: Employees must use prescription glasses-inserts with full-facepiece respirators. Consult the Reed College Personal Protective Equipment Program for details.

Use with other personal protective equipment (PPE): Other types of PPE worn with a respirator, such as safety glasses, goggles, earmuffs, a face-shield, a welding helmet, or a hard-hat, may not interfere with face piece seal. The respirator head straps or harness must lie next to the head, with the other protective headgear over them.

Low temperatures can cause fogging of the lenses in full-face mask units and exhalation valves to freeze. Anti-fogging compounds (liquids or wipes) may be effective if temperatures are above freezing. An insert for full-facepiece respirators, which covers the nose and mouth and directs the exhaled air away from the face piece, can prevent fogging in low temperatures.

Hot weather may cause sweat to interfere with a tight seal and cause dermatitis in some individuals. Limit tasks requiring respirator use to the cooler part of the day.

Contact lenses: While OSHA no longer prohibits the wearing of contact lenses while wearing full-face respirators in many situations, wearing contact lenses is still not advised.

3.4 Voluntary Use

Employees may use respirators, for comfort, on a voluntary basis, if they meet the following conditions:

- The employee has a medical evaluation (except for N95 use) and is certified to be medically fit to use the respirator. (The voluntary user must follow the same medical evaluation and surveillance procedures as other respirator users.)
- The employee must receive, sign, and return to their supervisor a copy of Appendix B: "Voluntary Use Form: Information for employees using respirators when not required under the standard."
- The employee must demonstrate proper storage and maintenance of the respirator to prevent the use of the respirator from becoming a hazard.

4.0 Respirator and Cartridge Selection

Reed College bases respirator choice on the type of air contaminants to which the employee is exposed. Because employees may wear only air-purifying respirators, they may not enter areas that are oxygen deficient, are at or above the Immediately Dangerous to Life and Health (IDLH) value, have contaminants with poor warning properties, at or above the maximum use

concentration (MUC), or where respirator cartridges have break-through times of less than 30 minutes. See Appendix C for the cartridge change-out schedule.

Employees must change out canisters and cartridges before the end of their service life. Information specific to job, contaminant, exposure, and change schedules are in Appendix C.

5.0 Employee Training

Employees required to wear a respirator will receive training to properly use and maintain their respirators. Training will include the following subjects:

- Written procedures
- Medical requirements
- Respirator and cartridge selection
- Limitations of respirators
- Fit testing procedures
- Cleaning, inspection, and maintenance
- Cartridge change-out schedules
- Proper storage methods

In addition, employees must follow the instructions of this respirator program in the daily use, care, and safekeeping of their respirator.

6.0 References

- Occupational Safety and Health Administration (OSHA). 29 CFR (Code of Federal Regulations) 1910.134. Respiratory Protection, April 8, 1998.
- Oregon Occupational Safety and Health Administration (OR-OSHA). Oregon Administrative Rule (OAR). 437 Division 2/I: 1910.134, Respiratory Protection Standard, effective November 19, 2004.
- National Institute of Occupational Safety and Health (NIOSH). Respirator Selection Logic (RSL), DHHS (NIOSH) Pub. No. 2005-100, 2005.

Appendix 1: 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.

Canister or cartridge – a container with a filter, sorbent, catalyst, or combination of these items that removes specific contaminants from the air passing through the container.

Emergency situation – any occurrence such as, equipment failure, rupture of containers, or failure of control equipment that can result in an uncontrolled significant release of an airborne contaminant.

End-of-service-life indicator (ESLI) – a system that warns the respirator user of the approach to the end of adequate respiratory protection; e.g. that the sorbent is approaching saturation or is no longer effective.

Filtering facepiece (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.

High efficiency particulate air (HEPA) filter – a filter that is at least 99.97% efficient in removing mono-dispersed particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

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.

Maximum use concentration (MUC) – the maximum air concentration against which an air purifying respirator provides adequate protection: calculated as Protection Factor multiplied by Permissible Exposure Limit (PF x PEL = MUC) or cartridge limit, whichever is less.

Negative pressure respirator (tight fitting) – 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, a level that requires supplied air.

Protection Factor (PF) – the amount of protection offered by various types of respirators; e.g., a full face has a rating of 50, a half mask a rating of 10, and a filtering face piece a rating of 5.

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.

Self-contained breathing apparatus (SCBA) – an atmosphere-supplying respirator: the user carries the breathing air.

Service life – the period of time that a respirator, filter, sorbent, or other respiratory equipment provides adequate protection to the wearer.

TWA (Time Weighted Average) – the average concentration of a chemical in air over the total exposure time.

User seal check (fit check) – an action conducted by the respirator user to determine if the respirator is properly seated to the face.

Appendix 2: Voluntary Use Statement Form

Information for Employees Using Respirators When Not Required Under the Standard (OSHA Mandatory)

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 exposure to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If the College 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:

- Read and follow all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the limitations of the respirator.
- Read the current Reed College Respiratory Protection Program.
- 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.
- Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect you. For example, a respirator designed to filter dust particles will not protect you against gasses, vapors, or the very small solid particles of fumes or smoke.
- Keep track of your respirator so that you do not mistakenly use someone else's respirator.
- Sign and date below. (Give one copy to your supervisor. Keep one copy for your records.)

I have read and understood this "*Information for Employees Using Respirators When Not Required under the Standard*" and the current Reed College Respiratory Protection Program.

_____ _____

Employee Signature **Date**

Appendix 3: Exposure and Cartridge Information

Task and Contaminant	Other PPE Worn	Respirator/ Cartridge Type	Duration/ Frequency Of Task	Temp/ Humidity Extremes	Cartridge Change Schedule
Welding: Art Sculpture Studio	Welding helmet, Leather apron, gloves	Not needed	2 hours; twice per year	Outside	N/A
Waste solvent bulking Acetone, Hexane, Ethyl Acetate, Toluene	Tyvek overalls Rubber apron, Goggles, gloves, Rubber boots	Full-face, OV/AG/HEPA	2 hr per year	Outside	Single use
Solvent Repackaging Organic Solvents: Acetone	Tyvek overalls Rubber apron, Goggles, gloves, Rubber boots	Not needed	45 min; three times a year	Outside	N/A
Spray painting with oil or latex-based paint	Tyvek overalls Goggles, gloves,	Not needed	30 min-2 hr; every 2 months	Ambient	N/a
Brush or roller painting with oil based paint	Tyvek overalls Goggles, gloves,	½ mask, OV/AG/HEPA	30 min; 2 times a month	Ambient	Each month
Adjusting pool chemicals Chlorine, Hydrogen Chloride, Muriatic Acid	Rubber apron, Rubber gloves, Rubber boots	Full Face, OV/AG/HEPA	2 min; every 3 to 4 weeks	Ambient	Yearly
Particulate Radionuclides (Reactor Facility)	Tyvek overalls, Goggles, gloves, Rubber boots	Evacuate until level drops; none needed		Ambient	N/A
Graffiti-Removal Wipeout, Soysolv	Goggles, gloves,	½ mask, OV/AG/HEPA	Periodic	Ambient	Single use
Mixing or applying pesticides	Follow product label directions	½ mask, OV/AG/HEPA	Periodic	Outside	
Preventative maintenance on chemical fume hoods		Not needed	Periodic		N/A
Welding: Physical Plant – west warehouse	Welding helmet, Leather apron, gloves	None needed	15 min; every 2 -3 months	Outside	N/A
Welding: Physics Shop in fume hood	Welding helmet, Leather apron, gloves	Not needed	Periodic	Ambient	N/A
Pouring, mixing, or sweeping silica-bearing dusts	Goggles, gloves	½ mask, P100	Periodic	Ambient	Yearly
Pipe insulation maintenance	Goggles, gloves	½ mask, P100	Periodic	Ambient	Yearly