

UCCS Respiratory Protection Program

Environmental Health and Safety



Table of Contents

Purpose.....	2
Responsibilities.....	2
Respirator Selection.....	3
Hazard Assessment.....	3
Respirator Selection.....	3
Voluntary Use of Respirators.....	4
Emergency Use of Respiratory Protection	4
Medical Evaluation.....	4
Fit Testing.....	5
Training	5
Inspection, Maintenance, and Storage	6
Inspection	6
Maintenance.....	6
Storage.....	7
Change Log.....	7

Purpose

This document is the written respiratory protection program for the University of Colorado Colorado Springs (UCCS). This program is intended to provide requirements and guidance to protect students, employees, and visitors from respiratory hazards on campus. The respiratory hazards may include harmful particulates, smoke, vapors, or an oxygen deficient atmosphere. Whenever possible, engineering controls should be utilized to provide protection. While these engineering controls are being installed or when engineering controls are not possible, administrative controls should be implemented. If neither of those controls are possible, respiratory protection can be used as the last option to provide protection. All respiratory protection and users of respirators must follow the requirements of this program to ensure all equipment is used properly and safely on campus.

Responsibilities

1. The UCCS Environmental Health and Safety (EHS) department will:

- Serve as the Respirator Program Administrator.
- Assist in determining if respiratory protection is required through the use of a hazard assessment.
- Provide measurement, estimation, and review of information on the potential concentration of airborne contaminant(s) in the work area.
- Determine the appropriate respiratory protection.
- Ensure medical evaluations, fit testing and respirator training are being completed.
- Maintain records and documents that pertain to the Respiratory Protection Program.
- Audit the program procedures to ensure they reflect current applicable industry accepted standards and the program as implemented reflects the written procedures.

2. The department/supervisor will:

- Identify tasks and employees who may require respiratory protection.
- Arrange for medical evaluations as appropriate.
- Ensure workers receive the proper respirators, employee fit testing, and training.
- Allow workers to leave the hazardous atmosphere whenever there is concern or potential failure.
- Fund all respiratory protection
- Ensure all engineering controls are maintained and operational

3. The wearer will:

- Use all respiratory protection in accordance with manufacturer guidelines and the guidelines described in this program.
- Inform their supervisor if a respirator is damaged or lost.
- Inform their supervisor if the respiratory protection is not working properly.
- Report to their supervisor any illness or change in physical condition that interfere with the safe use of a respirator.
- Immediately leave the contaminated area if the wearer detects contaminant, if a cartridge is compromised or if a respirator malfunction occurs.
- Perform a wearer seal check to ensure that an adequate seal is achieved each time the respirator is put on if wearing a tight-fitting respirator.
- Clean and maintain all respiratory protection.
- Store the respirator according to the guidelines described in this program.

Respirator Selection

The program administrator, with the help of the department, will select the proper respiratory protection and controls to be used for a select task. First, a hazard assessment must be completed to understand the need for protection. Then the program administrator will review all other aspects of the task and provide recommendations.

Hazard Assessment

The hazard assessment will include:

1. Identifying a list of hazardous substances used in the work area and for the particular task.
2. Reviewing the Safety Data Sheets (SDS) combined with application of contaminant and exposure level measurements (or knowledge) to understand the need for respiratory protection.
3. Reviewing work processes to determine where potential exposures to these hazardous substances may occur. This review shall be conducted by surveying the workplace, reviewing process records, and talking with employees, affiliates, and supervisors.
4. Performing exposure monitoring, if necessary, to quantify potential hazardous exposure.
5. Documenting of the hazard assessment.

Once the hazard assessment is complete, it can be determined if engineering and/or administrative controls can be put in place. For example, this could be installing mechanical ventilation such as a hood or reducing time of exposure. If none of these options are viable, the Program Administrator will continue with the respirator selection.

Respirator Selection

All respirators must be certified by the National Institute for Occupational Safety and Health (NIOSH) and shall be used in accordance with the terms of that certification. The type of respirator depends on the hazards and the level of protection needed. Some other general considerations for choosing a respirator include:

1. Reviewing that oxygen levels are acceptable to use filtering respiratory protection (filtering facepiece, PAPRs, etc.).
 - a. If oxygen levels are not sufficient, different control methods must be used or air supplying respirators must be provided.
2. The nature of the respiratory hazard including:
 - a. actual concentration of the contaminant
 - b. established Permissible Exposure Limits (PELs), Threshold Limit Values (TLVs), or other published guidelines
 - c. warning properties of the contaminant
3. The location of the hazardous area in relation to the nearest area having respirable air
4. The length of time for which respiratory protection must be provided
5. The activities of workers in the hazardous area
 - a. light, medium, or heavy work rate
 - b. intermittent or continuous work
6. The physical characteristics, functional capabilities, and limitations of the various respirators
7. Vision correction
 - a. When a half-mask respirator wearer uses eyewear, it shall be fitted to provide good vision and shall be worn in such a manner as not to interfere with the seal of the respirator. If a full-face respirator is used and corrective lenses are required, the

respirator manufacturer's spectacle kit shall be used.

Air purifying respirators are the most commonly used respiratory protection at UCCS. This type of respirator removes specific contaminants from the air by passing the air through a filter, cartridge, or canister. Classes of these respirators include disposable dust masks, half-face and full-face mask respirators, and powered air purifying respirators (PAPR).

The other type of respirator that can be used are air supplying respirators. These respirators require a separate source for breathing air and are the only respirators acceptable for use when toxic or oxygen deficient atmospheres may be present or if the identity of the contaminant is unknown. There currently are no atmosphere supplying respirators in use at UCCS. If the need arises, a hazard assessment must be performed by EHS.

See UCCS Use of Respirators Excel file for documentation of known respirator usage on campus.

Voluntary Use of Respirators

Respirators are allowed to be voluntarily used on campus as long as this program is followed, and the respirator poses no safety risk to the employee. It is considered voluntary use if the exposure does not exceed OSHA or other published action levels and the employees are not required per their job description to wear it for the task. When voluntarily using a filtering respirator, employees must complete the medical evaluation and training.

Emergency Use of Respiratory Protection

In the event that respiratory protection is required for immediate emergency use, consult EHS and the Emergency Operations Plan for options and appropriate response. Program requirements still are in effect even during an emergency response.

Medical Evaluation

Once the proper respirator has been selected, the employee must complete a medical evaluation prior to using the respirator. An occupational physician or other licensed occupational health care professional (PLOHCP) shall determine if the employee has any medical conditions that preclude the use of or require limitations on respiratory protection. The PLOHCP will determine the frequency of medical evaluation necessary for each individual employee.

The program administrator shall advise the PLOHCP of the following conditions to aid in determining the medical evaluation required:

- a. Type of respirator to be used by the employee
- b. Duration and frequency of respirator use, typical work activities and environmental conditions (e.g. temperature and humidity extremes)
- c. Hazards for which the respirator will be worn including potential exposure to reduced oxygen environments; and
- d. Additional protective clothing and equipment to be worn.
- e. Any other information requested by the PLOHCP

The employee must be medically approved for each type of respirator separately. Written records of medical evaluations shall be secured and maintained as medical records by the PLOHCP. EHS will maintain only the results of the medical evaluations.

Fit Testing

Once the employee is medically cleared to wear a respirator, he or she must be fit tested to ensure the respirator is providing full protection. There is not one style or size of respirator that will properly fit everyone which is why fit testing is so important. Fit testing can be accomplished by one of two methods: quantitative or qualitative. Quantitative testing is completed using equipment that can numerically measure the amount of air leakage in or out of the respirator. UCCS does not currently have the equipment to perform quantitative testing but can utilize a 3rd party to perform this type of fit test if necessary. Qualitative testing is accomplished by aerosolizing an easily detectable substance such as isoamyl acetate (banana oil) or irritant smoke and then testing if the employee can sense the substance with the respirator on. Both types of testing require the employee to perform a variety of tasks such as reciting the alphabet and/or moving their head with the respirator on.

UCCS follows OSHA 1910.134 Appendix A Fit Testing Procedures (Mandatory) for all qualitative fit testing. You must be clean shaven to wear a respirator and to perform the fit test. Fit testing needs to be completed independently for each type of respirator and records must be kept for each one. Fit testing must be completed initially, and whenever there is a change to the employees' facial appearance (significant weight loss/gain, surgery, glasses, etc.), the hazard(s), and/or to the respiratory protection itself. Wearer seal checks must be performed every time the respirator is donned. This check can be accomplished either through a negative pressure test by blocking the inlets or a positive pressure test by blocking the exhalation valve.

Training

The respirator wearers shall be given initial training by a qualified person to ensure the proper use of respirators. It is also recommended workplace supervisors be trained to ensure proper use of respirators in their respective areas as to also help identify tasks that may require respiratory protection. The minimum training shall include an explanation of the following elements:

- a) Wearer responsibilities
- b) The nature, extent, and effects of respiratory hazards in the workplace and why a specific type of respirator has been selected for a specific respiratory hazard;
- c) The need to inform their workplace supervisor and PLOHCP of changes that may impair their ability to wear a respirator
- d) The capabilities, and limitations of the respirator selected
- e) Instructions for inspecting, donning and doffing the respirator. This includes the wearer seal check
- f) Importance of proper respirator fit and use
- g) How to maintain, clean, and store the respirator
- h) Regulations concerning respirator use
- i) Hands-on training to allow actual handling of the respirator

Retraining shall occur on an as needed basis and training records will be kept in EHS.

Inspection, Maintenance, and Storage

Inspection

Prior to use, the respirator should be inspected to ensure that it is in good operating condition. For respirators that are stored for emergency or rescue use, a monthly inspection should be performed and documented. When inspecting respirators, it is important to check for the following:

Disposable Respirators

- Integrity of the filter - check for holes or tears
- Elastic straps - check for loss of elasticity, tears, etc.
- Metal nose clip - check for breakage

Air Purifying Respirators

- Rubber facepiece
 - excessive dirt
 - cracks, tears, or holes
 - distortion from improper storage
 - cracked, scratched or loose-fitting lens
 - broken or missing mounting clips
 - worn threads in filter holder
 - missing or worn gaskets in filter holder
- Head straps
 - breaks
 - loss of elasticity
 - broken or malfunctioning buckles or attachments
- Inhalation and exhalation valve
 - detergent residue, dust particles, dirt
 - cracks, tears, or distortion
 - missing or defective valve cover
- Chemical canisters and/or particulate filters
 - proper filter or canister for the hazard
 - approval designation
 - worn threads on filter housing
 - cracks or dents in filter housing
 - service life indicator, expiration date (if applicable) or if not present, then adherence to an established change schedule for filters, cartridges and canisters

Maintenance

If any defects or deficiencies are found, maintenance can only be performed by trained personnel. The respirator should either be sent back to manufacturer for repair or a new one purchased.

Proper cleaning of a respirator reduces the potential for contamination and dermatitis. It is important to frequently clean and disinfect personal respirators as well as shared respirators. Acceptable cleansing agents include soap and water and alcohol-free towelettes. When using soap and water, be sure to remove the cartridges first.

Cartridges expire and need to be changed out on a designated schedule. Each cartridge comes with an expiration on the original packaging and should not be used if it is expired. It is best practice to write the expiration on the side of the cartridges or note it in a file. Other ways to recognize if the cartridge has gone bad before the expiration date:

1. Harder to breathe through
2. Breakthrough of the cartridge
3. Formalized schedule for changeout based on measured routine usage.

Storage

Respirators need to be stored properly to prolong their life and to maintain their effectiveness. Proper storage includes:

- Protecting respirators from dust, sunlight, heat, extreme cold, excessive moisture, and chemicals
 - A cool, dry, inside environment is recommended
- Storing respirators with the facepiece and exhalation valve resting in a normal position
- Do not hang respirators by straps for long periods of time as they will be distorted.
- Routinely used respirators may be placed in sealed, nonporous plastic bags
- Cartridges in use can be stored on the respirator as long as the respirator is stored in a seal, nonporous plastic bag.
 - If respirator is stored out to the open environment, the cartridges must be removed and stored in a sealed, nonporous plastic bags or they will go bad faster.
- Disposable respirators such as filtering facepieces should be disposed after each work shift or when they become damaged, distorted, or discolored.
- Unused disposable respirators should be stored in a manner that prevents them from being crushed, misshapen, torn or exposed to moisture.

Change Log

Date	Name	Change Made
12/4/2019	K. Hixson	Initial program developed
2/27/2020	K. Hixson	Minor edits following pilot program