



**RESPIRATORY
PROTECTION
PROGRAM**

401 Thomas Run Road
Bel Air, MD 21015-1698
443-412-2000
www.harford.edu

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Respiratory Protection Program

Purpose

Harford Community College is dedicated to providing safe and healthful facilities for all employees and students, and complying with Federal and State occupational health and safety standards. Administrators, faculty and staff share the responsibility to ensure protection against inhalation hazards through the correct use of respiratory protective devices. This program is designed to identify and designate responsibilities for implementation of the HCC Respiratory Protection Program.

Scope

Harford Community College shall establish procedures for the selection, use and care of respiratory protective devices. Respirators shall only be used to protect employees from inhalation hazards in the following circumstances: (1) when other options for hazard control (i.e., use of engineering controls or substitution of less toxic materials) are infeasible or inadequate, (2) while engineering controls are being installed or repaired, or (3) during emergencies. When respirators are to be used, all requirements contained within the HCC Respiratory Protection Program shall be followed.

The HCC Respiratory Protection Program shall be reviewed and evaluated for its effectiveness at least annually and updated as necessary to incorporate new or modified regulations and guidelines that affect proper use of respiratory protective devices. For purposes of compliance with regulations and the HCC Respiratory Protection Program, a respirator shall be defined as any device worn to: reduce or eliminate inhalation exposure to any hazardous biological, chemical or particulate material. This includes respirators used to protect employees in an emergency.

Responsibilities.

The Coordinator for Campus Operations (CCO) shall:

1. Administer the HCC Respiratory Protection Program.
2. Develop the HCC Respiratory Protection Program with annual review and revisions as necessary.
3. Distribute the Program to each affected worksite.
4. Arrange for analyses of respiratory hazards in the workplace to be performed, provide guidance and training to the campus community regarding the need, selection, use, limitations, maintenance and storage of respirator equipment.
5. Provide a fit-testing program for respirator users.
6. Maintain training, fit testing and exposure monitoring records.
7. Assist with developing and implementing controls to reduce or eliminate the need for respiratory protection.
8. Act as an information resource for problems and questions related to respiratory protection.
9. Provide or direct all required or recommended medical examinations appropriate for evaluation of respirator users.
10. Maintain medical records relating to consultations, examinations and medical surveillance as required by law.
11. Provide certification that persons required to wear respirators are physically able to do so without adverse medical consequences.
12. Periodically review the overall effectiveness of the HCC Respiratory Protection Program pertaining to provision of medical services related to the proper use of respirators.

13. Schedule initial medical examinations, follow-up medical examinations, and fit testing and training for employees required to wear respirators.
14. Maintain an inventory of spare parts, filters and new respirators as necessary to insure employee access to properly functioning equipment.

Supervisors, Laboratory Managers or Directors shall:

1. Identify respiratory hazards in the workplace to Coordinator for Campus Operations for analysis.
2. Consult toxicology information and material safety data (e.g., Material Safety Data Sheets, Standard Operating Procedures) to identify hazards to workers under their control that require respiratory protection.
3. Identify employees who may require respiratory protection equipment.
4. Provide site-specific information in the HCC Respiratory Protection Program detailing personnel, hazards and procedures.
5. Ensure respiratory protection equipment is properly used, cleaned, stored and maintained.
6. Ensure that defective respiratory protective equipment is removed from service immediately and not used until approved repairs are completed.
7. Conduct annual worksite audits of respiratory protection activities under their control.
8. Allow employees to leave the respirator use area as necessary to prevent eye or skin irritation associated with respirator use.
9. Maintain records of respirator equipment inspections, exposure hazard evaluations, training and fit testing at the unit level.

Notify the CCO of any problems with respirator use, or any changes in work processes that would impact airborne contaminant levels.

Notify the CCO of any change in an employee's medical condition, work environment or workload that might impact the safe use of respiratory protective equipment.

Respirator Wearers shall:

1. Comply with all required components of the HCC Respiratory Protection Program (medical surveillance, training and fit-testing) **BEFORE** using any respirator.
2. Use respiratory protection equipment as instructed and in accordance with all provisions of the HCC Respiratory Protection Program.
3. Properly store, clean, inspect and maintain all assigned respirator equipment.
4. Report any respirator deficiencies or malfunctions to the supervisor.
5. Use the correct type of respiratory protection for the hazard(s) involved.
6. Inform supervisors of new situations that may require a change in the use of respiratory protection equipment, or if contaminant levels are suspected to increase.
7. Inform supervisors of any change in medical condition that might affect the safe use of respiratory protective equipment.
8. Immediately follow emergency procedures and leave the respirator use area if a respirator fails to provide proper protection.

Information

Assistance will be provided by CCO to any Department requesting guidance, exposure monitoring, fit testing or training to satisfy implementation of this policy.

Respirator Use Requirements

The use of required respiratory protection equipment at HCC is strictly limited to employees who have a documented need to utilize such equipment, pass and maintain an appropriate medical evaluation, attend annual training, and complete annual fit-testing (if required). These basic requirements are described below and elsewhere in this program.

Documentation of Respirator Needs

Respirators are only to be used in situations where engineering controls are infeasible or inadequate or during installation of such controls. The employer will provide respirators when such equipment is necessary to protect the health of the employee.

The supervisor is required to identify the respiratory hazard(s) in the workplace and have these hazards evaluated to determine appropriate respiratory protective equipment. The Coordinator for Campus Operations is responsible for evaluating respiratory hazards and recommending appropriate levels of protection.

The supervisor shall provide information as necessary to permit evaluation of hazards in the workplace that may affect respirator use.

The supervisor must determine exposure for each employee required to utilize respiratory protection. This information shall be forwarded to CCO for documentation of hazard evaluations and determination of appropriate level(s) of respiratory protective equipment.

Medical Evaluation

Prior to respirator fit testing, workers must be medically certified capable of wearing the specified respirator without adverse health consequences. Certification of medical capability shall be provided by a physician or other licensed health care professional (PLHCP). Medical evaluations may be discontinued when the employee is no longer required to use a respirator.

Medical screening shall be conducted as follows:

1. The employee will be given a medical questionnaire to complete prior to seeing physician.
2. The medical evaluation will be conducted using the questionnaire in Appendix C of the OSHA Respiratory Protection Standard. The CCO will provide a copy of this questionnaire to all employees requiring medical evaluations.
3. Medical evaluation parameters are determined by the PLHCP. Initial evaluations shall as a minimum include pulmonary function tests (FVC and FEV1) and completion of a medical history questionnaire. The PLHCP, the Respiratory Protection Standard or other substance-specific regulations detailing frequency of medical evaluations determine subsequent medical evaluations and follow-up testing.
4. All employees will be granted the opportunity to speak with a physician about their medical evaluation, if they so request.
5. If any of the inhalation hazard or work condition information contained in the form changes, the supervisor shall submit a Respirator User Hazard Assessment Form Update CCO for review, action and transmittal.

6. When an employee's medical certification is due for renewal, and inhalation hazards or work conditions have not changed, the supervisor shall check the appropriate block in the Respirator User Hazard Assessment Form Update and forward it directly to the CCO at least 45 days prior to the expiration date. The supervisor is responsible for scheduling examinations for re-evaluation.
7. Employees, their supervisors and the Coordinator for Campus Operations will be provided a written pass/fail certification from the PLHCP stating parameters under which the individual is medically able to wear a respirator. Respirator approval certifications from the PLHCP will indicate an expiration date for the medical clearance.
8. After an employee has received clearance and begun to wear his or her respirator, additional medical evaluations will be required under the following circumstances:
 - a. Employee reports signs and/or symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, chest pains or wheezing. The employee or supervisor should contact the safety officer immediately if this occurs.
 - b. The PLHCP determines the employee needs to be reevaluated. The supervisor will be contacted by the CCO to arrange scheduling.
 - c. Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation. The supervisor will be contacted by the CCO if this occurs, or
 - d. A change occurs in workplace conditions that may result in an increased physiological burden on the employee. The supervisor is responsible for notification.
9. The PLHCP shall assure confidentiality of all examinations and questionnaires and shall maintain records of all medical testing, medical history questionnaires and certifications of respirator use eligibility.
10. If any employee is required for medical reasons to wear a positive pressure air-purifying respirator they will be provided with such a device by the supervisor or removed from the HCC Respiratory Protection Program.

Training

Employees required to wear respiratory protection equipment shall be trained in the care, use, limitations and selection of the equipment. Training will vary depending on the type of respirator issued and the nature of the inhalation hazard. At a minimum, all employees shall receive training prior to first use of a respirator and annually thereafter. Training shall be conducted or coordinated by the Coordinator for Campus Operations and will include all required components as stipulated in OSHA regulation 29 CFR 1910.134.

Supervisors shall maintain records of training. Supervisors are responsible for insuring employees are currently trained and shall insure that respirators are not issued to nor used by any employee who has not received training within the previous 12 months.

Fit-Testing

The safe and effective use of respiratory protection equipment, especially negative pressure respirators, requires that the respirator be properly fitted to the employee. Poorly fitting respirators fail to provide the expected degree of protection. Additionally, no single model or size of respirator is capable of fitting all people. Several models may be needed to determine which provides an acceptable fit.

Prior to being issued a re-useable, tight-fitting respirator, the employee must successfully pass a fit-test for that specific brand, model and size of respirator. Fit-testing is conducted by the CCO.

An employee cannot be fit-tested nor wear a face-sealing respirator if there is any facial hair present between the skin and facemask-sealing surface. More than slight beard stubble at the sealing surface is considered excessive facial hair. Any other condition that interferes with the sealing surface of the face piece or interferes with the valve function shall be identified during fit testing and corrected.

Any employee who experiences difficulty breathing or exhibits severe psychological reaction during any phase of fit testing shall be referred to the PLHCP to re-evaluate whether the employee is capable of wearing a respirator.

Fit testing shall be repeated at least annually or more frequently if any change occurs which may alter respirator fit. Such changes may include:

1. Weight change of 20 pounds or more,
2. Significant facial scarring in areas of the face seal,
3. Significant dental changes (e.g., multiple extractions or new dentures),
4. Reconstructive or cosmetic surgery in the head/face, or
5. Any condition suspected to affect the face-respirator seal.

Supervisors shall maintain records of current fit-tests to assure testing currency and procurement of appropriate respiratory protection equipment. Supervisors are responsible for insuring employees have been fit-tested within the past 12 months, and shall insure that respirators are not issued to nor used by any employee who has not met this requirement.

Selection of Respirators

The basic purpose of any respirator is to protect the user from specific inhalation hazards. Respirators provide protection by removing contaminants from the air before inhalation or by supplying an independent source of respirable air.

The National Institute of Occupational Safety and Health (NIOSH) establish protection factors for different levels of respiratory protection. The protection factor indicates the maximum inhalation hazard's concentration for which the respirator is certified when properly used. For example:

- If a worker is exposed to benzene at a concentration of 10 parts per million (ppm) averaged over the 8-hour work day, and the maximum acceptable exposure limit is 0.5 ppm, a respirator with a protection factor of at least 20 (10ppm/0.5 ppm) would be necessary to satisfy requirements. An air-purifying half-mask respirator (protection factor = 10) would not be adequate.
- If a worker has an 8-hour lead dust exposure of 0.20 milligrams per cubic meter (mg/m³), and the maximum acceptable exposure limit is 0.05 mg/m³, a respirator with a protection factor of at least 4 (0.20 mg/0.05 mg) would be necessary to satisfy requirements. An air-purifying half-mask respirator (protection factor = 10) would be acceptable.

The following table indicates the various types of respirators available, and the maximum NIOSH protection factor assigned to each:

| Respirator Type | Protection Factor |
|---|-------------------|
| Filtering Face piece Respirators | 10 |
| Air-Purifying Half-Mask Respirators | 10 |
| Loose-Fitting Air-Purifying Respirator | 25 |
| Air-Purifying Full-Face Respirator | 50 |
| Tight-Fitting Powered Air-Purifying Respirators | 100 |
| Air Line Respirators | 1000 |
| Self-Contained Breathing Apparatus (SCBA) | >1000 |

HCC will follow the NIOSH Guide to Industrial Respiratory Protection for selection of respirator equipment. Additional information concerning types and descriptions of these respirators (including their limitations) is available from Occupational health and safety.

All respirators used by HCC personnel shall be approved by NIOSH for the inhalation hazard presented to the employee. Selection of respiratory protection equipment shall be based upon:

1. The nature of the respiratory hazard,
2. The extent or concentration of the hazard,
3. Work requirements and conditions,
4. Characteristics and limitations of available respirators, and
5. Minimal equipment requirements established by regulation or policy.

Air-purifying respirators shall not be used if:

1. Atmospheres are oxygen-deficient (i.e., < 19.5% oxygen),

Selection criteria will be documented with the Respirator User Hazard Assessment Form. It is often necessary to perform exposure monitoring to evaluate the need for and type of respiratory protection appropriate for the task(s). The Occupational Health/Safety Specialist is responsible for final determination of employees' respiratory protection needs. The PLHCP will not provide a respiratory protection medical certification for any employee unless the supervisor has submitted a Respirator User Hazard Assessment Form that is complete and filed in the employee's records.

Supervisors are required to have respirator selection criteria reassessed whenever circumstances change that may compel use of different levels of respiratory protection (e.g., introduction of new inhalation hazards, work practice modifications resulting in increased chemical exposures, etc.), or if the work environment places increased physical demands upon the employee. The supervisor will document these changes on the Respirator User Hazard Assessment Update Form.

The following factors shall be taken into account by CCO when selecting the proper respirator:

1. Characteristics of the Hazardous Operation or Process,
2. Nature of contaminant,
3. Concentration of contaminant,
4. Respirator Enclosure Design,
5. Location of Hazardous Area,
6. Physical Conditions in Work Environment,
7. Vision, and
8. Communications.

Voluntary Use of Respirators and Disposable Dust Masks

The HCC Respiratory Protection Program also covers employees who voluntarily use respiratory protective equipment. "Voluntary Use" means that the employee wishes to use a respirator on the job even though the employer or regulation does not require it.

Filtering face piece respirators (e.g., disposable dust masks) are often used to provide relief from nuisance levels of dusts and mists. They cannot be used for protection against fumes, vapors, gases, asbestos, and sandblasting or paint sprays. If the employees elect to voluntarily use disposable respirators, and if there are no identified inhalation hazards, disposable masks may be provided without medical certification or fit testing. Employees using these disposable masks must be provided the information contained in Appendix

III. Supervisors and employees issuing disposable masks are responsible for providing a copy of this appendix to affected employees. Supervisors are encouraged to document provision of this fact sheet. **STUDENTS ARE NOT ALLOWED AT ANYTIME TO WEAR ANY TYPE OF RESPIRATOR.**

If the supervisor permits voluntary use of any other type of respiratory protective device, the following apply:

1. The employee must receive medical clearance to use the respirator,
2. The employee must receive training to understand that failure to properly clean, store and maintain the respirator may present a health hazard to the user. This training is required initially and may be satisfied by the supervisor providing the employee a copy of the Voluntary Use of Respirator Fact Sheet contained in this Program as Appendix V, and
3. Respirator fit-tests are not required.

If employees are **required** to wear any respirator, including filtering face piece models, they must comply with all portions of the Respiratory Protection Program including medical evaluations and annual training.

Training

All employees who will use a respirator will be required to complete the training program before initial use, and before their annual renewal date. Employees must pass a written examination and practical exercise demonstrating the proper donning and doffing of their respirator.

Each respirator wearer shall be given initial training covering the following topics:

1. HCC Respiratory Protection Program
2. Identifying Hazardous atmospheres
3. How Respirators Work
4. Engineering Controls vs. Respirator Use,
5. Medical Evaluation,
6. Respirator Selection
7. Proper Use and Limitations of Respirators,
8. Fit Testing,
9. Donning and using respirators
10. Fit Checks, and
11. Maintenance, Cleaning and Storage.

Retraining will be required before the annual refresher due date if:

1. There are changes in the work area that impact respirator use (rendering previous training obsolete),
2. The employee no longer has the skill and understanding to follow and use the respirator per previous training and terms of the HCC Respiratory Protection Program, or
3. Any other situations arise that cause the supervisor or program administrator to recommend the employee be retrained.

Supervisors are not required to attend refresher training unless their duties require use of respiratory protection.

Fit-testing

A fit test shall be used to determine the ability of each individual respirator wearer to obtain a satisfactory fit with any NIOSH-certified air-purifying respirator. Qualitative fit tests will be performed. Fit-testing methods shall conform to the minimum requirements as detailed in the OSHA Respiratory Protection Standard (29 CFR 1910.134). Personnel must successfully pass the fit test before being issued a respirator, and at least annually thereafter.

Qualitative Fit Tests:

The worker is exposed to an atmosphere containing an irritating aerosol and then asked to perform several exercises to challenge the respirator fit. The wearer reports any noticeable irritation caused by mask leaks.

Supervisors are responsible for insuring employees are fit-tested at least once per year. If any condition or circumstance is observed by the supervisor that is suspected to impact the fit of an employee's respirator, the supervisor shall insure respirators are not worn unless fit testing is repeated.

Copies of fit-test reports will be forwarded to supervisors. Supervisors are to ensure that employees are provided the specific brand, model and size of respirator indicated in the fit-test report. Respirators shall not be used unless successful fit testing has been demonstrated.

Respirator Cleaning, Storage, Inspection and Maintenance

The following information is intended as a guide for appropriate cleaning, storage, inspection and maintenance practices. Each worksite must prepare written site-specific procedures as part of this HCC Respiratory Protection Program.

Cleaning and Disinfecting

Respirators should be regularly cleaned and disinfected. Respirators issued for the exclusive use of one worker may be cleaned as often as necessary. Cleaning frequencies, facilities and materials used for cleaning/disinfecting must be determined by the supervisor. Manufacturer recommendations should be followed when cleaning respirators.

Storage

When not in use, the respirator and cartridges should be kept in a sealed container and stored in a clean, dry, moderate temperature and non-contaminated environment. It is especially important to keep gas and vapor cartridges in a sealed container so they do not passively adsorb gases and vapors from the storage area and thereby reduce the filter service life. Particulate filters should also be protected from dusts and dirt.

Inspection Procedures and Schedules

Each respirator shall be inspected routinely before and after use. A respirator shall be inspected by the user immediately prior to each use to ensure that it is in proper working condition. After cleaning, each respirator shall be inspected to determine if it is properly functioning or if it needs repairs or replacement of parts.

Manufacturers' recommendations shall be followed for equipment inspection, but should include at a minimum:

- Inspection Checklist For Filtering Face piece Respirators:
 - Holes in filter
 - Elasticity of straps
 - Deterioration of straps and metal nose clip
- Inspection Checklist For Air-Purifying Respirators:
 - Face piece:
 - Dirt
 - Cracks, tears, or holes
 - Distortion of face piece
 - Cracked, scratched, or loose fitting lenses
 - Head straps:
 - Breaks or tears
 - Loss of elasticity
 - Broken buckles or attachments
 - Inhalation and Exhalation Valves:
 - Dust particles, dirt, or detergent residue on valve and valve seat
 - Cracks, tears, or distortion in valve material
 - Missing or defective valve covers
 - Filter Elements:
 - Proper filter for the hazard
 - Approval designation
 - Missing or worn gaskets
 - Worn threads on filter and face piece
 - Cracks or dents in filter housing
 - Deterioration of canister harness
 - Service life indicator, or end of service date

Maintenance of Respirators

Respirators are to be properly maintained at all times to ensure that they function properly and adequately protect the employee. Maintenance involves a thorough visual inspection for cleanliness and defects. No components are to be replaced or repairs made beyond those recommended by the manufacturer.

Replacement Parts: Replacement filters and extra respirators will be stored in the Occupational Safety and Health Office.

Respirator Cartridge Change-Out Schedule

Air-purifying respirators function by removing contaminants from air before inhalation. Contaminants are removed by filtration (e.g., for asbestos, glass fiber), adsorption (e.g., for benzene, carbon tetrachloride), or by chemical reaction (e.g., for ammonia). Filters or cartridges designed for contaminant removal have limited effective service lives. The supervisor of each worksite utilizing air-purifying respirators and the CCO must develop a change schedule and provide details in Appendix I of this HCC Respiratory Protection Program which specify when cartridges are to be replaced and what information was relied upon to make this judgment. The service life of a cartridge depends upon many factors, including environmental conditions, breathing rate, cartridge filtering capacity, and the amount of contaminants in the air. A safety factor should be applied to the service life estimate to assure that the change schedule is a conservative estimate.

Determination of service life can be accomplished through one of several methods:

1. **Experimental Tests:**
Utilizing knowledge of the inhalation hazards (material identification and exposure concentrations) and work conditions (breathing or airflow rate) presented to the employee, physically test the cartridge's ability to resist chemical penetration. The actual breakthrough time with a safety factor adjustment would be used to indicate the change-out schedule.
2. **Manufacturer's Recommendation:**
Contact the respirator/cartridge manufacturer and provide details of the inhalation hazards (material identification and exposure concentrations) and work conditions (humidity and work rate). The manufacturer calculates or provides testing data indicating the expected breakthrough time. A safety factor adjustment would be made to this time to indicate the change-out schedule.
3. **End-of-Service-Life-Indicator (ESLI):**
Some respirator systems are equipped with an ESLI. Cartridges must be changed immediately when indicated.
4. **Breathing Resistance:**
Employees wearing air-purifying respirators for protection against particulates (e.g., asbestos, wood dust, lead) must change filters if any breathing difficulties (i.e., resistance) are experienced while wearing their masks.

Evaluation of Respirator Program Effectiveness

Periodic review of the effectiveness of the respirator program is essential. The Coordinator for Campus Operations will arrange for periodic surveys to determine the effectiveness of the respirator program. This will include worksite inspections, interviews with respirator wearers, air-monitoring, and review of records. Acceptance of respirators by users is especially important. Users will be consulted periodically about their acceptance of wearing respirators. This includes comfort, resistance to breathing, fatigue, interference with vision, interference with communications, restriction of movement, interference with job performance, and confidence in the effectiveness of the respirator to provide adequate protection.

The above information can serve as an indication of the degree of protection provided by respirators and the effectiveness of the respirator program. Action shall be taken to correct any deficiencies noted with the program. The findings of the respirator program evaluation will be reported to the Director of Environmental Services, and the report shall list plans to correct faults in the program and target dates for the implementation of the plans.

Worksite Audits

Supervisors are required to annually evaluate the use of respiratory protection for areas/employees under their control. The purpose of the audit is to identify deficiencies and issues that require correction or action. At a minimum, the following should be evaluated:

1. Are new materials being used that require hazard assessment?
2. Are all workers using respirators currently trained, fit-tested and medically monitored?
3. Are respirators being properly used, stored, maintained and cleaned?
4. Is the written HCC Respiratory Protection Program current and complete?
5. Have all workers who are voluntarily using respirators (including disposable models) received a copy of the Voluntary Use of Respirator Fact Sheet?
6. Are cartridges/filters changed according to the change-out schedule contained in the HCC Respiratory Protection Program?
7. Are workers routinely inspecting respirators?

Any problems or deficiencies identified during the audit must be expeditiously corrected. The Coordinator for Campus Operations will assist supervisors with appropriate guidance when requested.

Appendix I

Site-Specific Respiratory Protection Information

The use of respirators at Harford Community College is approved for:

1. Painting and finishing operations, including mixing and disposal. Maintenance and Ceramics Departments.
2. Usage of chemicals in the Chemistry and Biology Departments.
3. Mixing/adding of chemicals for water pH.

The emergency use of respirators at Harford Community College is approved for:

1. Cleanup of a spill, which is small and does not require extraordinary measures.
2. The rescue of a person who has been overcome by a hazardous atmosphere because that person was not wearing a respirator or their respirator was damaged; excluding confined spaces.
3. Entry into an area to stop a leak, shut down machinery, or other operation where failure to perform this task could lead to even greater risk and damage to persons and property; excluding confined spaces.

At present, no employees of Harford Community College perform work in oxygen-deficient atmospheres. Therefore no supplied-air respirators or self-contained breathing apparatus are used. No employee may use such devices until this program has been updated to include the applicable sections of 20CFR 1910.134; and proper training, inspection, and maintenance procedures have been completed.

Personnel Using Respirators

The supervisor is responsible for maintaining information for each employee using respiratory protection. This information must be current and accurate. Additional pages may be used if necessary. Outdated pages may be removed.

Name: Job Title:

Types of respirator authorized (check applicable type):

- Filtering face piece half-face APR full-face APR full-face PAPR
- supply-line self-contained breathing apparatus

Date of last training: Date of last fit-test:

Medical clearance expiration date:

Brand/model/size of respirators issued:

Type of filters/pre-filters issued (if so equipped):

Tasks Requiring Use of Respiratory Protection

Employees from this worksite are involved in activities that require the use of respiratory protection. These activities have been evaluated to determine personal exposures to verify adequacy of specified level(s) of respiratory protection. Workers may not utilize respirators with protection factors less than those listed below for the specified task.

Appendix I

| Task (process and hazard) | Approved Respirator (include filter/prefilter if needed) |
|---|--|
| All Tasks | Half face mask air purifying respirator with protection factor of 10. |
| Spill Control and clean up (various organic and inorganic chemicals) | MP cartridge with P100 filter |
| Usage of various organic and inorganic chemicals including formaldehyde | MP cartridge with P100 filter |
| Making of clay, and glazes (silica, OV) | N95 prefilter, MP cartridge with P100 filter |
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Appendix II Cartridge Change-Out Schedule

The supervisor of each worksite where air-purifying respirators are used shall provide information below indicating cartridge change-out schedules. These schedules must be specific to contaminant, respirator, and task and estimated worst-case environmental conditions.

| | | |
|--|---|--|
| <p>Ceramics: N95 pre-filter</p> <ul style="list-style-type: none"> • Replace whenever they are damaged, soiled, contaminated with water, or when they become difficult to breathe through. <p>Chemical Cartridge</p> <ul style="list-style-type: none"> • Replace at the first trace of characteristic contaminant odor or taste, or every six months. | <p>Chemistry and Biology Chemical cartridge</p> <ul style="list-style-type: none"> • Replace at the first trace of characteristic contaminant odor or taste, or every six months. <p>Replace at any sign of damage.</p> | <p>Maintenance: N95 pre-filter</p> <ul style="list-style-type: none"> • Replace whenever they are damaged, soiled, contaminated with water, or when they become difficult to breathe through. <p>Chemical Cartridge</p> <ul style="list-style-type: none"> • Replace at the first trace of characteristic contaminant odor or taste, or every six months. <p>Replace at any sign of damage.</p> |
|--|---|--|

Appendix III Cleaning, Storage and Maintenance Procedures

This worksite-specific Respiratory Protection Program must be customized to indicate specific procedures utilized to clean, store and maintain respirators. Guidance regarding this information is contained elsewhere in this program.

Cleaning Procedures

Specific information regarding respirator cleaning schedules, procedures, materials and locations must be detailed below. Use additional pages as necessary.

Generic Single User Cleaning Procedures

- Prepare 2 buckets of fresh warm water
- Do not use boiling or hot water (<110°)
- Disassemble respirator, removing cartridges and/or filters and any external accessories such as eye lens inserts. Do not remove the valves because they are easy to lose.
- Bucket 1. Clean respirator and associated parts (excluding filters and/or cartridges) with alcohol free wipes, or by immersing in a warm water cleaning solution. Do not brush eye lenses. Use a neutral detergent cleaning solution that does not contain lanolin or oils.
- Bucket 2. Rinse in fresh warm water. Running water is better than immersion if available. Thorough rinsing is important to keep detergents or disinfectant from drying on the respirator.
- Replace cleaning solution and rinse water after approximately 20 respirators have been cleaned, or as needed.
- Allow the respirator to air dry in a non-contaminated environment. Do not dry with heaters or in sunlight. Respirators can be reassembled before or after drying.
- Prior to re-use, conduct checks as recommended by the manufacturer's manual to assure that the respirator is ready to be used. It is very important to check that the inhalation and exhalation valves are in place prior to use.

If Sanitization is required or desired:

- Clean respirator as described above. The final air-drying step is not necessary.
- Prepare 2 buckets of fresh warm water; follow sequence off use as described below.
- Do not use boiling or hot water.
- Bucket 1. Disinfect respirator by immersing in a disinfectant water solution. A quaternary ammonia disinfectant (one packet per 2 gallons or per manufacturer's recommendation), or hypo chlorite (1oz [30 milliliters] household bleach in 2 gal water) solution, or an aqueous solution of iodine (0.8 milliliters of tincture of iodine to one liter of water at 110°F) can be used
- Bucket 2. Rinse in fresh, warm water. Thorough rinsing is important to keep detergents from drying on the respirator.
- Allow the respirator to air dry in a non-contaminated environment.
- Prior to re-use, conduct checks as recommended by the manufacturer's manual to assure that the respirator is ready to use. It is very important to check that the inhalation and exhalation valves are in place prior to use.

Storage Procedures

Respirators must be stored in a clean, dry area, and according to the manufacturer's recommendations. Specific information regarding acceptable practices for storage of respiratory protective equipment, approved respirator storage locations, and storage locations of spare parts must be detailed below. Use additional pages as necessary.

The respirators must be stored in the re-sealable bag provided with the respirator or in a sealed container. Respirators should be kept in an area away from contamination. Extra respirators can be obtained through the Coordinator for Campus Operations.

Maintenance Procedures

Respirators are to be properly maintained at all times to ensure that they function properly and adequately protect the employee. Maintenance involves a thorough visual inspection for cleanliness and defects. Worn or deteriorated parts will be replaced prior to use. Specific information regarding respirator maintenance (authorized maintenance, replacement part locations, etc. must be detailed below.)

The replacement cartridges will be stored in the department where respirators are worn. Those who have been trained and fit tested are authorized to replace the cartridges and clean the respirators.

Appendix IV

The supervisor shall add any relevant records and documents pertaining to the worksite's Respiratory Protection Program. Such records and documents may include but are not limited to:

Results of air monitoring

Respirator manufacturer's literature

Guidance document

Fit-test certifications

Appendix V Voluntary Use of Respirator Fact Sheet

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.

Appendix A: Respirator Fit Test Record

Employee Name: _____ Date: _____

Initials: _____

Job description: _____

Type of qualitative fit test used: _____

Respirator Type: _____

Manufacturer: _____

Model: _____

NIOSH Approval Number: _____ Size: _____

Limitations: Beard: _____ Facial Scar or Distortion: _____

Denture: _____ Glasses: _____ None: _____

Comments:

Fit Checks:

Negative Pressure Pass _____ Fail _____ Not Done _____

Positive Pressure Pass _____ Fail _____ Not Done _____

Qualitative Fit Test

Isoamyl Acetate Pass _____ Fail _____ Not Done _____

Test Conducted By: _____ Date: _____

Employee Signature: _____ Date: _____

Appendix B: Respirator Training Record

_____ Employee Name (printed)

I certify that I have been trained in the use of the following:

This training included the inspection procedures, fitting, maintenance and limitations of the above respirator(s). I understand how the respirator operates and provides protection. I further certify that I have heard the explanation of the unit(s) as described above and I understand the instructions relevant to use, cleaning, disinfecting and the limitations of the unit(s).

Employee Signature

Instructor Signature

Date

Appendix C: Glossary

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.

Assigned protection factor (APF) the expected level of workplace protection provided by a properly functioning respirator worn by properly fitted and trained individuals. It describes the ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator.

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

Emergency situation 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 substantial release of an airborne contaminant.

Employee exposure an 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) 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 a respirator intended to be used only for emergency exit.

Filtering face piece (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.

Filter or air-purifying element a component used in respirators to remove solid or liquid aerosols from the inspired air.

Fit factor 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 tests the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. See also "Qualitative fit test (QLFT)" and "Quantitative fit test (QNFT)."

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

Immediately dangerous to life or health (IDLH) atmosphere 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.

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

Negative pressure respirator (tight fitting) a 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.

Physician or other licensed health care professional (PLHCP) 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 WAC 296-62-07150, "Medical evaluation." In Washington State, physicians (MD or DO), physicians' assistants (PA) or nurse practitioners (ARNP) qualify to be designated as a PLHCP.

Powered air-purifying respirator (PAPR) an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator a positive pressure atmosphere-supplying respirator that admits breathing air to the face piece when the positive pressure is reduced inside the face piece by inhalation.

Qualitative fit test (QLFT) a pass/fail fit test to assess the adequacy of respiratory fit that relies on the individual's response to the test agent.

Quantitative fit test (QNFT) an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory inlet covering the 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 face piece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

Self-contained breathing apparatus (SCBA) an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

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

Supplied-air respirator (SAR) or airline respirator an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Tight-fitting face piece a respiratory inlet covering that forms a complete seal with the face.

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

Medical Questionnaire

Your employer must allow you to answer this questionnaire during normal working hours, or at a time or place that is convenient to you. To maintain your confidentiality your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: _____
2. Your name: _____
3. Your age (to nearest year): _____
4. Sex (circle one): Male/ Female
5. Your height: ____ ft. ____ in.
6. Your weight: _____ lbs.
7. Your job title: _____
8. A phone number where you can be reached by the health care professional who will review this questionnaire (include area code): _____
9. The best time to phone you at this number: _____
10. Has your employer told you how to contact the health professional who will review this questionnaire (circle one): Yes/ No
11. Check the type of respirator you will use (you can check more than one category):
___ N, R, or P disposable respirator (filter mask, non-cartridge type only).

___ Other type (for example, half-or full-face piece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you worn a respirator (circle one): yes/no
If yes what type: _____

Part A. Section 2 (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes / No
2. Have you ever had any of the following conditions?
 - a. Seizures (fits): Yes / No
 - b. Diabetes (sugar disease): Yes / No

- c. Allergic reactions that interfere with your breathing: Yes / No
 - d. Claustrophobia (fear of closed-in places): Yes / No
 - e. Trouble smelling odors: Yes / No
3. Have you ever had any of the following pulmonary or lung problems?
- a. Asbestosis: Yes / No
 - b. Asthma: Yes / No
 - c. Chronic bronchitis: Yes / No
 - d. Emphysema: Yes / No
 - e. Pneumonia: Yes / No
 - f. Tuberculosis: Yes / No
 - g. Silicosis: Yes / No
 - h. Pneumothorax (collapsed lung): Yes / No
 - i. Lung cancer: Yes / No
 - j. Broken ribs Yes / No
 - k. Any chest injuries or surgeries: Yes / No
 - l. Any other lung problem that you've been told about: Yes / No
4. Do you currently have any of the following symptoms of pulmonary or lung illness?
- a. Shortness of breath: Yes / No
 - b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes / No
 - c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes / No
 - d. Have to stop for breath when walking at your own pace on level ground: Yes / No
 - e. Shortness of breath when washing or dressing yourself: Yes / No
 - f. Shortness of breath that interferes with your job: Yes / No
 - g. Coughing that produces phlegm (thick sputum): Yes / No
 - h. Coughing that wakes you early in the morning: Yes / No
 - i. Coughing that occurs mostly when you are lying down: Yes / No
 - j. Coughing up blood in the last month: Yes / No
 - k. Wheezing: Yes / No
 - l. Wheezing that interferes with your job: Yes / No
 - m. Chest pain when you breathe deeply: Yes / No
 - n. Any other symptoms that you think may be related to lung problems: Yes / No
5. Have you *ever had* any of the following cardiovascular or heart problems?
- a. Heart attack: Yes / No
 - b. Stroke: Yes / No
 - c. Angina: Yes / No

- d. Heart Failure: Yes / No
 - e. Swelling in your legs or feet (not caused by walking): Yes / No
 - f. Heart arrhythmia (heart beating irregularly): Yes / No
 - g. High blood pressure: Yes / No
 - h. Any other heart problem that you have been told about: Yes / No
6. Have you *ever had* any of the following cardiovascular or heart symptoms?
- a. Frequent pain or tightness in your chest: Yes / No
 - b. Pain or tightness in your chest during physical activity: Yes / No
 - c. Pain or tightness in your chest that interferes with your job: Yes / No
 - d. In the past two years, have you noticed your heart skipping or missing a beat: Yes / No
 - e. Heartburn or indigestion that is not related to eating: Yes / No
 - f. Any other symptoms that you think may be related to heart or circulation problems: Yes / No
7. Do you currently take medication for any of the following problems?
- a. Breathing or lung problems: Yes / No
 - b. Heart trouble: Yes / No
 - c. Blood pressure: Yes / No
 - d. Seizures (fits): Yes / No
8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9):
- a. Eye irritation: Yes / No
 - b. Skin allergies or rashes: Yes / No
 - c. Anxiety: Yes / No
 - d. General weakness or fatigue: Yes / No
 - e. Any other problem that interferes with your use of a respirator:
Yes / No
9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes / No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-face piece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever lost vision in either eye (temporarily or permanently): Yes / No
11. Do you currently have any of the following vision problems?
- a. Wear contact lenses: Yes / No
 - b. Wear glasses: Yes / No
 - c. Color blind: Yes / No

- d. Any other eye or vision problem: Yes / No
12. Have you ever had an injury to your ears, including a broken ear drum:
Yes / No
13. Do you currently have any of the following hearing problems?
- a. Difficulty hearing: Yes / No
 - b. Wear a hearing aid: Yes / No
 - c. Any other hearing or ear problem: Yes / No
14. Have you ever had a back injury: Yes / No
15. Do you currently have any of the following musculoskeletal problems?
- a. Weakness in any of your arms, hands, legs, feet: Yes / No
 - b. Back pain: Yes / No
 - c. Difficulty fully moving your arms and legs: Yes / No
 - d. Pain or stiffness when you lean forward or backward at the waist:
Yes / No
 - e. Difficulty fully moving your head up or down: Yes / No
 - f. Difficulty fully moving your head side to side: Yes / No
 - g. Difficulty bending at your knees: Yes / No
 - h. Difficulty squatting to the ground: Yes / No
 - i. Climbing a flight of stairs or a ladder carrying more than 25lbs:
Yes / No
 - j. Any other muscle or skeletal problem that interferes with using a respirator: Yes / No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes / No
If “yes,” do you have feelings of dizziness shortness of breath, pounding in your chest ,or other symptoms when you’re working under these conditions: Yes / No
2. At work or home, have you ever been exposed hazardous solvents, hazardous airborne chemicals (e.g. gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes / No
No
If “yes,” name the chemicals if you know them:

3. Have you ever worked with any of the materials, or under any of the conditions listed below:
 - a. Asbestos: Yes / No
 - b. Silica (e.g. in sandblasting): Yes/ No
 - c. Tungsten/cobalt (e.g. grinding or welding this material): Yes / No
 - d. Beryllium: Yes / No

- e. Aluminum: Yes / No
- f. Coal (for example, mining): Yes / No
- g. Iron: Yes / No
- h. Tin: Yes/ No
- i. Dusty Environments: Yes / No
- j. Any other hazardous exposures: Yes / No

If “yes,” describe these exposures: _____

4. List any second jobs or side businesses you have: _____

5. List your previous occupations: _____

6. List your current and previous hobbies: _____

7. Have you been in the military services? Yes / No

If “yes,” were you exposed to biological or chemical agents (either in training or combat):
Yes/ No

8. Have you ever worked on a HAZMAT team? Yes / No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes / No

If “yes,” name the medications if you know them: _____

10. Will you be using any of the following items with your respirator(s)?

- a. HEPA filters: Yes / No
- b. Canisters (for example, gas masks): Yes / No
- c. Cartridges: Yes / No

11. How often are you expected to use the respirator(s) (circle “yes” or “no” for all answers that apply to you)?:

- a. Escape only (no rescue): Yes/ No
- b. Emergency rescue only: Yes / No
- c. Less than 5 hours per week: yes / No
- d. Less than 2 hour per day: Yes / No
- e. 2 to 4 hours per day: Yes / No
- f. Over 4 hours per day: Yes / No

12. During the period you are using the respirator(s), is your work effort:

- a. Light (less than 200kcal per hour): Yes / No

If “yes,” how long does this period last during the average shift: ___ hrs.

_____ mins.

Examples of a light work are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

b. Moderate (200 to 350 kcal per hour): Yes / No

If “yes,” how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lb.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. Heavy (above 350 kcal per hour): Yes / No

If “yes,” how long does this period last during the average shift: _____ hrs. _____ mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up a 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.)

13. Will you be wearing protective clothing and/or equipment (other than the _____ respirator) when you’re using the respirator: Yes / No

If “yes,” describe this protective clothing and/or equipment: _____

14. Will you be working under hot conditions temperature exceeding 77° F)?

Yes / No

15. Will you be working under humid conditions: Yes / No

16. Describe the work you’ll be doing while you’re using your respirator(s):

17. Describe any special or hazardous conditions you might encounter when _____ you’re using your respirator(s) (for example, confined spaces, life – threatening gases):

18. Provide the following information, if you know it, for each toxic substance that you’ll be exposed to when you’re using your respirator(s):

Name of the first toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift _____

Name of the second toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift _____

Name of the third toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift _____

The name of any other toxic substances that you'll be exposed to while using your respirator:

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

Employee Signature

Date

Medical Practitioner

Date

Fit test exercises (instructor)

1. Normal breathing. In a normal standing position, without talking, the subject shall breathe normally
2. Deep breathing. In a normal position, the subject shall breathe slowly and deeply, taking caution not to hyperventilate.
3. Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
4. Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., looking at the ceiling.)
5. Talking. The subject shall talk out loud slowly and loud enough so as to be heard by the test giver. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.
6. Grimace (only for Quantitative)
7. Bending over. The subject shall bend at the waist as if he/she were touching their toes.
8. Normal Breathing (Repeat 1)

Each exercise shall be performed for 1 minute.

The test subject shall be questioned regarding the comfort of the respirator before and after testing.