

Section 13

Respiratory Protection Program

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Respiratory Protection Program

A. Introduction

Western Washington University's respiratory protection program is based upon the University's safety and health policy number U5950.01. Elements of the policy as they apply to respiratory protection include the following:

- The University is committed to protecting the health of all University personnel working in University facilities from airborne contaminants. When engineering controls are not able to maintain adequate air quality levels, respirators will be worn. The University requires that students and volunteers receive the same protection as employees.
- The University complies with the Washington Administrative Code (WAC) Part 296-842 regarding respiratory protection of personnel.
- The Environmental Health and Safety office administers the program and provides departmental training and an annual program evaluation (as described in Section M). The Director of Environmental Health and Safety is the 'program administrator' for the respiratory protection program in accordance with state laws.
- Department heads and center directors ensure that the departmental respiratory protection program is in compliance with state laws. This includes ensuring that students and volunteers have appropriate respiratory protection, that employees use required respiratory protection, and that personnel are not assigned to perform tasks requiring a respirator if their training, medical evaluations and fit testing status does not permit wearing a respirator.
- Department heads or center directors may delegate responsibility for the respiratory protection program to a person within the department, but they will continue to ensure that respirators are provided for personnel along with associated replacement parts and cartridges, medical evaluations, training and fit-testing.
- Supervisors are responsible to the department heads or center directors for implementing the respiratory protection program, including evaluating the effectiveness of the program in their area to assure compliance and provision of replacement parts for respirators under their purview.

This written program found in Section 13 of the *Safety Information Book* provides details regarding the use of respirators for personal protection against airborne contaminants as required by regulation.

Departments involved in the respiratory protection program maintain a copy of this written respirator protection program in their University **Safety Information Book** to ensure that it is available at all times.

Departments ensure that a written list of all routine, non-routine, or emergency tasks requiring respiratory protection is maintained in the department, with a copy provided to Environmental Health and Safety. This information is developed as part of the Hazard Assessment Certification (Section 5 – Personal Protective Equipment of the University **Safety Information Book**) and will be reviewed and updated annually by the department.

A list of employees in the respirator program is kept by departments, with a copy sent to Environmental Health and Safety. A list of student and volunteer activities and/or classes requiring respiratory protection is kept in the department as well. Environmental Health and Safety documents compliance with respiratory protection training, medical evaluations and fit-testing and makes this information available to departments.

Personnel must use respiratory protection provided in accordance with instructions and training received. Employees notify supervisors or Environmental Health and Safety of any defects in respirator equipment so they may be remedied.

The following are written elements of the respiratory protection program to ensure compliance with Washington Administrative Code, Part 296-842.

B. General

The airborne contaminants encountered within a University setting vary widely; consequently, all situations cannot be listed within this text. Table 1 which follows includes common respirator uses at the University:

Table 1. Common Respirator Uses

Contaminants	Operation	Type of Respirator
Asbestos	Asbestos area entry	Half face negative pressure respirator with HEPA filter cartridge, powered air purifying respirator with HEPA cartridge, or full-face respirator with supplied air
Asbestos	Asbestos removal	Half face negative pressure respirator with HEPA filter cartridge, powered air purifying respirator with HEPA cartridge or full-face respirator with supplied air
Paint/solvent	Painting	Half mask or full face negative pressure with organic vapor cartridge
Degreasers	Mechanical work	Half mask or full face negative pressure with organic vapor cartridge
Acids	Acid Use/Spill	Full face negative pressure with acid gas cartridge
Mercury	Mercury use/spill	Disposable mercury respirator or half or full face negative pressure with mercury vapor cartridge
Lead-contaminated paint	Paint removal	Half mask or full face negative pressure respirator with HEPA filter cartridge
Tuberculosis	Medical or emergency	N-95 or P-95 disposable or re-usable respirator or powered air purifying respirator with HEPA cartridge
Formaldehyde	Formaldehyde Spill	Half or full face negative pressure with formaldehyde vapor cartridge
Severe Acute Respiratory Syndrome	Medical or emergency	N-95 or P-95 disposable or re-usable respirator or powered air purifying respirator with HEPA cartridge

Medical or biological monitoring are provided, if applicable, to determine the effectiveness of respirator protection.

C. Availability of Respirators

Each employee who requires a respirator is issued one at the University's expense with replacement parts, cartridges and filters available upon request. Volunteers and students may be required to purchase their own respiratory protection equipment at a department's discretion. Respirators are to be available which provide adequate protection in specific circumstances, including those listed above. If respirators are not available for specific circumstances, alternatives to entry by University personnel will be undertaken.

D. Work Area Surveillance

Air sampling is conducted as necessary to define personal exposures associated with potentially hazardous operations. Follow-up air sampling is conducted when conditions change.

E. Use of Respirators

Each employee who requires a respirator wears a NIOSH/MSHA approved respirator, properly fitted, at all times. Respirator uses include: while performing an operation defined as potentially hazardous; or working in the immediate area of another person performing a potentially hazardous operation with a risk of

overexposure. No alterations of respirators are permitted.

E. Use of Respirators - Continued

Respirator wearers, both students and employees, are permitted to leave a hazardous area for a respirator-related cause. Reasons include (but are not limited to) the following: failure of the respirator to provide protection; malfunction; detection of leakage of air contaminant into the breathing zone; increased resistance to breathing; severe discomfort; or illness of the respirator wearer, including dizziness, nausea, weakness, breathing difficulty, sneezing, coughing, vomiting, fever, or chills.

In areas where the wearer, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one additional person is to be present. Communication (voice, visual, or signal line) is maintained between both or all individuals present. One individual unaffected by any likely incident and having the proper rescue equipment is available and able to assist in case of emergency. Air quality monitoring is to be performed where oxygen-deficiency may be present.

In the remote event that persons are using air line respirators in atmospheres immediately dangerous to life or health, safety harnesses and safety lines for lifting or removing persons or other, equivalent provisions are used. Standby persons with suitable self-contained breathing apparatus are to be at the nearest fresh-air base for emergency rescue during such events.

F. Voluntary Use of Respirators

Voluntary respirator use is respirator use that is requested by the employee and permitted by the University when **no** respiratory hazard exists. Voluntary respirator use may not interfere with a person's ability to work safely, for example, it may not restrict necessary vision, interfere with radio communication or create health hazards. Each person wearing a respirator voluntarily must receive the form in Figure 1 at the end of this section.

G. Selection of Respirators

A department's Hazard Assessment Certification shows the proper respirator by task and associated hazard. Refer to Section 5 of the *Safety Information Book*. The WAC, Section 296-842 is consulted for detailed information on respirator selection. The NIOSH [Pocket Guide to Chemical Hazards](#) may also be used as a reference text for the selection of an appropriate respirator. Copies are available in the Environmental Health and Safety office.

The useful life of each respirator depends mainly on the employee's job duties and the actual time the unit is in use. Cartridge selection follows WAC 296-842 and is color coded. Refer to Table 2 on the following page for a summary of anticipated change-outs of cartridges.

Respiratory selection must comply with WAC 296-842, including use of assigned protection factors. Employees must be able to select respirators from a sufficient number of models and sizes to obtain a comfortable, correct fit.

Respirators have limitations. Air filtration respirators do not provide oxygen and may never be used in the absence of sufficient oxygen, at least 19.5 percent. Air filtration respirators are not to be used when concentrations of contaminants are immediately dangerous to life and health (IDLH). Air filtration respirators may not be used where the airborne concentration exceeds the maximum use concentration for the type of respirator.

Emergency and rescue use of air-filtration respirators employ full-face air filtration respirators with HEPA/organic vapor/acid gas/formaldehyde cartridges. The air contaminants present in the area of concern are to be evaluated prior to entry.

G. Selection of Respirators - Continued

Table 2. Frequency of Cartridge Change-Out

Respirator Cartridge	Location	Chemicals in Use	Replacement Schedule
Organic Vapor	Carver Gym	Hilliard 450 gym floor finish	8 hours
Chlorine	Chorine Shed	Chlorine	4 hours
Organic Vapor	Paint Shop	Oil-based Paint	8 hours
Organic Vapor	Paint Shop	Lacquer Thinner	4 hours
Organic Vapor/HEPA	Engineering Technology – Plastics Laboratory	Styrene monomer and plastics particulates	6 hours
HEPA	Campus	Asbestos or other toxic particulate	8 hours
Multi-gas/HEPA	Campus	Emergency Response	8 hours or single use
N-95	Campus	Welding, Tuberculosis, SARS, Non-toxic dusts, Tin, Non-asbestos insulation	8 hours
Organic Vapor	Campus	Gasoline, diesel or other solvent spill	2 hours or single use
Mercury	Campus	Mercury spills	6 hours or single use
Formaldehyde	Campus	Formaldehyde use or spill	2 hours (single use for spill)

Compressed gaseous air, compressed gaseous oxygen, liquid air, and liquid oxygen for respirator use is to be of high purity. Compressed gaseous or liquid oxygen meets the requirements of the United States Pharmacopoeia for medical or breathing oxygen. Chemically generated oxygen meets the requirements of U.S. Department of Defense Military Specification MIL-E-83252 or Military Specification MIL-O-15633c. Compressed gaseous air meets at least the requirements for Type II-Grade B breathing air as described in the American National Standard Commodity Specification for Air, ANSI Z86.1-1973.

Compressed gaseous air may contain low concentrations of oil. If high-pressure oxygen passes through an oil- or grease-coated orifice, an explosion or fire may occur. Therefore, compressed gaseous oxygen is not used in supplied-air respirators or in open-circuit-type self-contained breathing apparatus that have previously used compressed air.

Breathing air may be supplied to respirators from cylinders or air compressors. Cylinders are tested and maintained in accordance with applicable Department of Transportation specifications for shipping containers (Title 49, Code of Federal Regulations, Part 173 and Part 178). A compressor is constructed and situated to avoid entry of contaminated air into the air supply systems and is equipped with a suitable in-line particulate filter followed by a bed of activated charcoal and, if necessary, a moisture absorber to further assure breathing air quality. These filters are placed before any receiver and after the discharge in the compressor. If an oil-lubricated compressor is used, it is equipped with a carbon monoxide alarm or an equally effective alternative if approved by the Department of Labor and Industries.

H. Training of Employees

Respirator training is provided by the Environmental Health and Safety staff unless the department has an adequately trained instructor present. Training is provided to employees, students and volunteers before they are required to wear a respirator, annually, and when problems occur requiring re-training in accordance with WAC 296-842.

Training provided on campus complies with the WAC, Section 296-842. It includes: reasons for respiratory protection, respiratory hazards, engineering controls, the capabilities and limitations associated with the type of respirator selected, and the operation, capabilities and limitations of the respirator, donning the respirator, checking the respirator fit, wearing the respirator, maintenance, storage, and emergency situations. The respirator users are made aware of this written respirator program and the Washington Administrative Code regarding respiratory protection.

H. Training of Employees - Continued

Each respirator user is trained in how to use and maintain his or her assigned respirator(s), and color coding for cartridges. Users are trained to change cartridges or disposable respirators according to the assigned change-out period (Table 2), and immediately when the odor of the chemical "breaks through" the filter, or there is an increased resistance to breathing.

Refresher training is given at least annually. Supervisors of respirator users are trained to ensure proper application of the respiratory protection program. Asbestos program respirator training complies with asbestos regulations.

I. Fitting of Respirators

Fit-testing is provided initially and on an annual refresher basis to employees, students and volunteers. Fit testing may only occur if medical evaluation permits respirator use. Facial hair must be removed if it interferes with respirator sealing.

Contact lenses may not be worn if the risk of eye damage is increased by use. Other protective equipment that interferes with respirator sealing may not be worn.

Proper fitting of air filtration respirators is essential. Air that passes around the edges of the respirator, rather than through it, is not filtered air. In order to ensure a good face seal, the following rules are observed:

1. The respirator and straps must be in place and worn in the appropriate position. To adjust the headbands, pull the free ends tight until a comfortable fit is obtained. All straps are to be secured.
2. To adjust the face piece properly, simply position your chin firmly in the chin cup and manually shift the rubber mask until the most comfortable position is located. Make final adjustments in the head band and do not break the nasal seal. Modifications to the respirator or straps may not be made.
3. Proper fit must be checked each time the respirator is worn according to the manufacturer's instructions.

Respirators are not worn when projections under the face piece prevent a good face seal. Note: Such conditions may be a growth of beard, sideburns, temple pieces on glasses, or a skull cap that projects under the face piece.

4. Respirators must be fit-tested using the appropriate qualitative or quantitative fit tests in WAC 296-842. Fit testing of negative pressure air-purifying respirators may be qualitative only when the air concentration is less than 10 times the PEL. Otherwise, quantitative fit testing must be performed.

Qualitative fit testing is permitted in the negative pressure mode for tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators.

Asbestos-related respiratory protection evaluation complies with appropriate asbestos regulations.

If an employee is unable to obtain a satisfactory fit with the type of respirator furnished, the department head or supervisor makes an effort to correct the problem by providing the employee a reasonable opportunity to select a different respirator face piece and be re-tested.

J. Cleaning, Inspection, And Maintenance of Respirators

Respirators must be kept clean, sanitary, and in good working order. Respirators are cleaned as in WAC 296-842 or in accordance with manufacturer's instructions. The following cleaning and disinfecting schedule applies.

J. Cleaning, Inspection, And Maintenance of Respirators - Continued

Type of Respirator Use	Cleaning and Disinfecting
Exclusive use of one person	As often as needed to keep sanitary
More than one person	Before being worn by different individuals
Emergency Use	After each use
Used in Fit-testing	Before being worn by different individuals

Any malfunction of the respirator is reported to the supervisor. Replacement parts are available from the supervisor or department head.

Each worker assigned to use a respirator maintains and routinely inspects it before and after each use during cleaning. Respirators for emergency or rescue use are inspected monthly to assure that they are kept clean and in satisfactory working condition. Self-contained breathing apparatus (SCBA's) are inspected monthly.

Inspections include a check for tightness of connections, for condition of the respiratory-inlet covering, head harness, valves, connecting tubes, harness assemblies, filters, cartridges, canisters, end-of-service life indicator, shelf life date(s), and proper function of regulators, alarms, and other warning systems. Rubber and elastomer parts are inspected for pliability and signs of deterioration. Air and oxygen cylinders are inspected to ensure they are fully charged according to manufacturer's instructions.

K. Storage of Respirators

Respirators are stored to protect them from damage, contamination, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. Storage must prevent deformation of the face piece and exhalation valves. Storage must comply with manufacturer's instructions.

Emergency respirators are stored in an accessible area and containers must be marked as containing emergency respirators.

L. Medical Evaluation (Physiological and Psychological Limitations)

Prior to using a respirator, a determination is made regarding physiological and psychological limitations to wearing a respirator (medical evaluation). Each respirator user completes a questionnaire prior to initial respirator use.

A licensed health care provider reviews each questionnaire. Based upon the questionnaire responses, the provider may require supplemental testing or evaluation. The provider documents that a respirator user is "physically able to perform the work and use the equipment in accordance with WAC 296-842. Medical reviews are performed annually or at a frequency determined by the medical provider.

An additional medical review is required: if an employee reports medical signs or symptoms related to his/her ability to use a respirator; if information from the respiratory protection program indicates a need for employee re-evaluation; if a supervisor or program administrator determines a need for re-evaluation; or if a change occurs in the workplace increasing the physiological burden placed on an employee.

M. Respirator Program Evaluation

The Environmental Health and Safety office conducts an evaluation of this program annually.

1. Unscheduled observation of employee activities to confirm proper respirator use.
2. Observation of and discussion with new or relocated employee(s) to confirm working knowledge of the respirator program.
3. Discussion with selected supervisors regarding the respirator program's successes or problems.

Department heads review their respiratory protection program annually as part of the review of their Hazard Assessment Certification (See Section 5, *Safety Information Book*).

N. Recordkeeping

Records are maintained in the Environmental Health and Safety office to document that each respirator wearer has been provided training and fit testing initially and on an annual basis. Records comply with WAC 296-842.

Physician's statements regarding the ability of a person to wear a respirator are maintained in the Environmental Health and Safety office. Physiological and psychological questionnaires or medical evaluations or test results are maintained by the medical provider only.

Records are kept for the duration of employment or activities at the University plus three years. Monthly inspections of respirators kept for emergency or rescue use are maintained in the Environmental Health and Safety office.

A list of employees in the respirator program is kept by departments, with a copy to the Environmental Health and Safety office. Student records are kept in the department.

Figure 1

Voluntary Respirator Use Information for Employees

Information for Employees on Voluntary Use of Respirators (Respirators Not Required Under WAC 296-842)

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 is 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 WISHA standards.

If Western provides a respirator 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 if you wear a respirator voluntarily:

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.