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Weber State University's
Respirator Protection Program

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Introduction

Weber State University's respirator program complies with OSHA 29 CFR 1910.134 requirements, and includes standard operating procedures to protect employees from respiratory hazards, through proper respirator selection and use. At WSU, respirators are used only under the following conditions:

- 1) Where engineering controls of respirator hazards are not feasible;
- 2) While engineering controls are being installed; or
- 3) During emergencies.

Administrative Duties

WSU's Respiratory Protection Program Administrator is the Environmental Health & Safety (EH&S) hazardous materials specialist. The program administrator is solely responsible for all program facets, and has full authority to make necessary decisions to ensure this program succeeds. The program administrator's authority includes:

- Purchasing equipment necessary to implement and operate the program;
- Developing detailed written instructions covering the program's basic elements;
- Amending the program.

The program administrator has appropriate training and experience to:

- Administer and oversee WSU's Respiratory Protection Program;
- Evaluate the program's effectiveness by conducting required periodic program reviews;
- Act as the only person authorized to change the program.

Employees may obtain copies of WSU's Respiratory Protection Program from EH&S, Annex 5 (basement), or from the EH&S web site at <http://www.weber.edu/ehs>

I. Respirator Selection Guidelines

- A. WSU's respirators are selected by the program administrator on the basis of:
 1. Respiratory hazards to which workers are exposed;
 2. Workplace and user factors that affect respirator performance and reliability.
- B. WSU's respiratory protection program covers the following Occupational Safety & Health Administration (OSHA) requirements:
 1. Identify and evaluate respiratory hazard(s) in the workplace, including:
 - a. Reasonable estimates of employee exposures to respiratory hazard(s);
 - b. Identification of chemical states and physical forms of contaminants.

2. Select NIOSH-certified (National Institute for Occupational Safety and Health) respirators from a sufficient number of respirator models and sizes, so the respirators are acceptable to, and correctly fit, users.
3. Consider atmospheres Immediately Dangerous to Life or Health (IDLH), if employee exposure cannot be identified or reasonably estimated.
4. Consider all oxygen-deficient atmospheres to be IDLH.

OXYGEN-DEFICIENT ATMOSPHERE EXCEPTION: If WSU can demonstrate that, under all foreseeable conditions, the oxygen concentration can be maintained within the ranges specified in Table II of 29 CFR 1910.134 (i.e., for the altitudes set out in the table), then any atmosphere-supplying respirator may be used.

5. Provide one of these respirators for IDLH atmospheres:
 - a.. A full face piece pressure demand self-contained breathing apparatus (SCBA) certified by NIOSH for a minimum service life of thirty minutes;
 - b. A combination full face piece pressure demand supplied-air respirator self-contained breathing apparatus (SAR) with auxiliary self-contained air supply.
6. Provide respirators that are NIOSH-certified, for escape use only, when they are used only for the purpose of escape from an IDLH atmosphere.
7. Provide respirators for atmospheres that are not IDLH, based on the following criteria:
 - a. The respirator is, under routine and reasonably foreseeable emergency situations, adequate to protect the health of the employee, and to ensure compliance with all other OSHA statutory and regulatory requirements;
 - b. The respirator is appropriate for the chemical state and physical form of the contaminant.
8. Provide the following type respirators for protection against gases and vapors:
 - a. An atmosphere-supplying, or air-purifying respirator;
 - b. A respirator with cartridges equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant.
 - c. If there is no ESLI appropriate for conditions in WSU's workplace, implement a change schedule, for canisters and cartridges, that is based on objective information or data to ensure canisters and cartridges are changed before the end of their service life.
9. Provide one of the following type respirators for protection against particulates:
 - a. Atmosphere-supplying respirators;

- b. Air-purifying respirator equipped with a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter;
 - c. Air-purifying respirator equipped with a filter certified for particulates by NIOSH under 42 CFR 84.
10. Provide air-purifying respirators equipped with any filter certified by NIOSH for particulates for contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers,.

II. Respirator Types and Uses

- A. Only NIOSH-certified respirators are selected and assigned at WSU. Where practicable, the respirators are assigned to individual workers for their exclusive use.
- B. The following types of respirators are used at WSU:

Types	Uses
Filtering face piece (dust mask)	Voluntary use for nuisance dusts
Half and full faced APR and PAPR	Asbestos, particulates, and chemical work
SCBA	Emergency use IDLH Unknown situations
Air-line supplied air	Auto shop paint booth

III. Medical Evaluations

- A. Before being assigned to duties requiring respirators, employees are medically evaluated to determine whether they are able to bear the physiological burden that is imposed by using a respirator.
- B. WSU employees are not assigned tasks requiring respirators, nor are they fit tested, unless they are determined physically able to perform the work while using the respirator.
- C. WorkMed/Ogden performs initial medical examinations to obtain information described in the medical questionnaire in Sections 1 and 2, Part A of Appendix C of 29 CFR 1910.134.
- D. Medical questionnaires and examinations are confidential, and are available to employees, during normal working hours, or at a times and places convenient to them.
- E. Medical questionnaires are administered in ways that ensure employees understand the content. Employees are provided opportunities to discuss questionnaires and examination results with their physicians or other licensed health care professional (PLHCP).
- F. Before employees are given initial examinations or questionnaires, WSU provides PLHCPs with the following information so they can make the best recommendations concerning employees’ ability to use respirators. Recommendations include:

1. Type of respirator to be used;
 2. Duration and frequency of respirator use (including use for rescue and escape);
 3. Expected physical work effort;
 4. Additional protective clothing and equipment to be worn;
 5. Temperature and humidity extremes that may be encountered;
 6. Types of hazards with which they will work.
- G. Once the PLHCP determines whether employees are able to use respirators or not, he/she sends WSU written recommendations containing the following information only:
1. Limitations on respirator use related to the medical condition of employees, or relating to the workplace conditions in which the respirator will be used, including whether or not the employees are medically able to use respirators;
 2. Needs, if any, for follow-up medical evaluations;
 3. Statements that the PLHCP has provided employees with copies of the PLHCP's written recommendations.

IV. Follow Up Medical Examinations

- A. Follow-up medical examinations are provided when:
1. Employees give positive responses to any of questions 1 through 8 in Section 2, Part A of Appendix C of 29 CFR 1910.134;
 2. If initial medical examinations reveal employees need follow-up medical examinations.
- B. Follow-up medical examinations include tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make final determinations.
- C. If an employee will use a negative pressure respirator, and the PLHCP finds a medical condition that may place the employee's health at increased risk during the respirator use, and if the PLHCP's medical evaluation finds the employee can use a powered air-purifying respirator (PAPR), WSU will provide a PAPR. If a subsequent medical evaluation reveals the employee medically able to use a negative pressure respirator, WSU will no longer provide a PAPR.

IV. Additional medical examinations:

- A. WSU provides additional medical evaluations if:
1. An employee reports medical signs or symptoms related to his/her ability to use a respirator;
 2. A PLHCP, supervisor, or the respirator program administrator informs the employer that an employee needs to be reevaluated;
 3. WSU's program administrator recommends reevaluation;

4. Workplace condition changes (e.g., physical work effort required, protective clothing needed, workplace temperature) may substantially increase an employee's physiological burden.
- B. WSU also provides annual medical examinations.
- C. Employees may contact the Program administrator for copies of their confidential medical evaluations or questionnaires.

V. Fit Testing Procedures

- A. WSU fit tests employees with respirators they will use to:
 1. Protect them against breathing contaminated ambient air;
 2. Provide proper fit that will maintain tight seals between the face piece and the user's face;
 3. Ensure contaminated air will not be drawn into the face piece and be breathed by the employee.
- B. WSU uses either qualitative or quantitative methods for fit testing.
 1. Qualitative fit testing (QLFT) involves introducing a gas, vapor, or aerosol test agent into an area around the head of the respirator user. If the user detects the presence of the test agent through subjective means, such as odor, taste, or irritation, the respirator fit is determined inadequate.
 2. Quantitative fit testing (QNFT) measures the amount of leakage into the respirator, either by generating an aerosol test atmosphere, using ambient aerosol as a test agent, or using controlled negative pressure to measure the volumetric leak rate. Appropriate instrumentation quantifies QNFT.
- C. WSU ensures employees are fit tested at the following intervals with the same makes, models, styles, and sizes of respirators they use:
 1. Before employees are required to use any respirator with a negative or positive pressure tight-fitting face piece;
 2. Whenever a different respirator face piece (size, style, model, or make) is used;
 3. At least annually;
 4. Whenever the employee, PLHCP, supervisor, or program administrator observes changes in the employee's physical condition that could affect respirator fit, including, but not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight;
 5. When an employee, after passing a QLFT or QNFT, notifies the program administrator, supervisor, or PLHCP that the fit of the respirator is unacceptable. The employee is retested with a different respirator face piece.
- D. Employees must pass one of the following type fit tests, following protocols and procedures contained in 29 CFR 1910.134 Appendix A:
 1. QLFT (Only used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less. May be used to test tight-fitting atmosphere-

- supplying respirators and tight-fitting powered air-purifying respirators if tested in the negative pressure mode);
2. QNFT (May be used to fit test a tight-fitting half face piece respirator that must achieve a fit factor of 100 or greater, or a tight-fitting full face piece respirator that must achieve a fit factor of 500 or greater, or tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators if tested in the negative pressure mode).
- E. WSU uses banana oil, Bitrex or irritant smoke to determine the fit of a respirator, in the QLFT method, or a Porta Count in the QNFT method.

VI. Proper Use Procedures

- A. Once the respirator has been properly selected and fitted, its protection efficiency is maintained by proper use in accordance with 29 CFR 1910.134(g).
- B. WSU uses the following list to ensure proper use procedures include OSHA requirements:
 1. Face piece seal protection
 - a. Respirators with tight-fitting face pieces may not be worn by employees who have:
 - 1) Facial hair which comes between the sealing surface of the face piece and the face, or which interferes with valve function;
 - 2) Any condition that interferes with the face-to-face piece seal or valve function.
 - b. If an employee wears corrective glasses, goggles, or other personal protective equipment, equipment must be worn in a manner that does not interfere with the seal of the face piece to the face of the user.
 - c. For all tight-fitting respirators, ensure that employees perform a user seal check each time they put on the respirator using the procedures in 29 CFR 1910.134 Appendix B-1 (User Seal Check Procedures) or procedures recommended by the respirator manufacturer that you can demonstrate are as effective as those in Appendix B-1
 2. Continuing respirator effectiveness
 - a. Appropriate surveillance of work area conditions and degree of employee exposure or stress is maintained. When work area conditions, degree of employee exposure, or stress that may affect respirator effectiveness change, the effectiveness of the respirator must be reevaluated.
 - b. Employees must leave the respirator use area for the following reasons:
 - 1) To wash their faces and respirator face pieces as necessary to prevent eye or skin irritation associated with respirator use;

- 2) If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece;
 - 3) To replace the respirator or the filter, cartridge, or canister elements.
3. If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece, the supervisor must ensure the employee replaces or repairs the respirator before allowing the employee to return to the work area.

VII. IDLH Atmosphere Procedures

- A. For work in IDLH atmospheres, the program administrator ensures:
1. One or more employee remains outside the IDLH atmosphere;
 2. Employees inside and outside the IDLH atmosphere maintain visual, voice, or signal line communication;
 3. Employees outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;
 4. *Before* the employee(s) assigned to remain outside the IDLH atmosphere enters the IDLH atmosphere to provide emergency rescue, the employer or designee must be notified;
 5. Once notified, the employer or authorized designee provides necessary assistance appropriate to the situation;
 6. Employees assigned to remain outside the IDLH atmospheres are equipped with:
 - a. Pressure demand, other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirators with auxiliary SCBAs; and either:
 - 1) Appropriate retrieval equipment for removing employees from inside the hazardous atmosphere, where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or
 - 2) Equivalent means for rescue, where retrieval equipment is not required.

VIII. Cleaning & disinfecting

- A. WSU provides respirator users with respirators that are clean, sanitary, and in good working order. Respirators are cleaned and disinfected using the procedures recommended by the respirator manufacturer. (See attached procedures.) These procedures must be as effective as Appendix B-2 of 29 CFR 1910.134.
- B. Respirators are cleaned and disinfected at the following intervals:

Respirator type:	Are cleaned and disinfected at the following interval:
Issued for the exclusive use of an employee	As often as necessary to be maintained in a sanitary condition
Issued to more than one employee	Before being worn by different individuals
Maintained for emergency use	After each use
Used in fit testing and training	After each use

IX. Storage

- A. Respirators are stored in a manner that:
1. Ensures the equipment is protected, and not subject to environmental conditions that may cause deterioration;
 2. Protects them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture and damaging chemicals, and in a zip-locked bag.
 3. Prevents respirators from becoming deformed;
 4. Keeps emergency respirators accessible to the work area, stored in covers that are clearly marked; and stored according to applicable manufacturer instructions.

X. Inspection

- A. To assure the continued reliability, respirator equipment is regularly inspected, according to the following table:

Respirator type:	Inspected at the following frequencies:
All types used in routine situations	Before each use and during cleaning
For use in emergency situations	At least monthly (and according to manufacturer's recommendations) for proper function before and after each use
Emergency escape-only respirators	Before being carried into the workplace for use

- B. Respirator inspections include checks for the following:
1. Respirator function, tightness of connections, and condition of the various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters;
 2. Pliability deterioration of elastomeric parts.

- C. SCBA air and oxygen cylinders are inspected monthly to ensure they are:
 - 1. Maintained fully charged.
 - 2. Recharged when the pressure falls to 90% of the manufacturer's recommended pressure level, and determine the regulator and warning devices function properly.
- D. Respirators maintained for emergency use are certified by documenting:
 - 1. Inspection date;
 - 2. Inspector's name (or signature);
 - 3. Findings, required remedial action, and a serial number or other means of identifying the inspected respirator.
- E. Inspection information is maintained with respirators at all times. (*See the attached respirator inspection records.*)

XI. Repairs

- A. Respirators found defective, or which otherwise fail inspection, are removed from service, and are discarded, repaired, or adjusted according to the following procedures:
 - 1. The EH&S Office is notified replacement or repair is needed;
 - 2. Repairs or adjustments are to be made only by persons appropriately trained to perform them, and only with the respirator manufacturer's NIOSH-approved parts designed for that respirator;
 - 3. Repairs must be made according to manufacturer recommendations and specifications for the type and extent of repairs performed;
 - 4. Reducing and admission valves, regulators, and alarms are adjusted or repaired only by the manufacturer, or a technician trained by the manufacturer.

XII. Discarding respirators: Respirators that fail inspections, or are otherwise not fit for use, and cannot be repaired, are made inoperable by cutting the straps and face piece, then discarded.

XIII. Air Quality Procedures

- A. WSU's procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators include the following OSHA requirements:
 - 1. Compressed air, compressed oxygen, liquid air, and liquid oxygen:
 - a. Compressed air, compressed oxygen, liquid air, and liquid oxygen meet the United States Pharmacopoeia requirements for medical or breathing oxygen;
 - b. Compressed breathing air at least meets the requirements for Grade D breathing air described in ANSI/Compressed Gas Association

Commodity Specification for Air, G-7.1-1989, and contains the following:

- 1) Oxygen content (v/v) of 19.5-23.5%;
 - 2) Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
 - 3) Carbon monoxide (CO) content of 10 ppm or less;
 - 4) Carbon dioxide content of 1,000 ppm or less; and
 - 5) Lack of noticeable odor.
- c. Compressed oxygen is not used in atmosphere-supplying respirators which have previously used compressed air.
- d. Oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.
- B. Cylinders used to supply breathing air to respirators:
1. Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR 173 and 178);
 2. Cylinders of purchased breathing air must have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air.
 3. The moisture content in the cylinder must not exceed a dew point of -50E F (-45.6 deg. C) at 1 atmosphere pressure.
- C. Compressors used to supply breathing air to respirators are constructed and situated to:
1. Prevent contaminated air from entering the air-supply system;
 2. Minimize moisture content so the dew point at 1 atmosphere pressure is 10 EF (5.56E C) below the ambient temperature;
 3. Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Sorbent beds and filters are maintained and replaced or refurbished periodically following the manufacturer's instructions; and
 4. Have tags indicating most recent change dates and signatures of the persons authorized by WSU to perform changes, and tags are maintained at the compressors.
 5. Compressors that are not oil-lubricated ensure carbon monoxide levels in the breathing air does not exceed 10 ppm.
 6. Oil-lubricated compressors use a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply is monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.
- D. Breathing Air Couplings are incompatible with outlets for non-respirable work site air or other gas systems, so no asphyxiating substance can be introduced into breathing air lines.
- E. Breathing gas containers are marked according to the NIOSH respirator certification

standard, 42 CFR part 84.

- F. All filters, cartridges and canisters used in the workplace are labeled and color coded with NIOSH approval labels which are not removed, and are legible.

XIV. Training

- A. WSU's training program requires employees who use respirators to perform any part of their job to receive the following training *before* being issued respirators:
 - 1. Respiratory hazards to which employee may be exposed during routine and emergency situations;
 - 2. Proper use of necessary respirators, including putting on, removing, limitations, and maintenance.
- B. If, within 12 months prior to being hired, an employee has received training addressing the seven basic elements of respiratory protection (see "Seven basic elements" below), and WSU and the employee can demonstrate knowledge of those elements, that employee is not required to repeat initial respirator training.
- C. WSU requires all employees issued respirators to be retrained annually, and when the following situations occur:
 - 1. An employees previous respirator training is rendered obsolete by changes in the workplace or in the type of respirator used;
 - 2. Inadequacies in the employee's knowledge or use of the respirator indicate that an employee has not retained the requisite understanding or skill;
 - 3. Any other situation arises which requires retraining to ensure safe respirator use.
- D. WSU's respirator training ensures employees are trained sufficiently to demonstrate knowledge of the following seven basic elements:
 - 1. Why the respirator is necessary, and how improper fit, usage, or maintenance can compromise the respirator's protection;
 - 2. Limitations and capabilities of the respirator;
 - 3. How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
 - 4. How to inspect, put on, remove, use, and check the seals of the respirator;
 - 5. Respirator maintenance and storage procedures;
 - 6. How to recognize medical signs and symptoms that may limit or prevent effective respirator use;
 - 7. General requirements of 29 CFR 1910.134.

XV. Responsibilities

- A. WSU employees have the responsibility to:
 - 1. Wear, clean, inspect, and store their respirators according to the training they receive;

2. Report to the program administrator any changes in work practices, hazards or physical changes that could effect the respirator's ability to protect them from the hazard for which their respirator was issued;
 3. Report any problems with the respirator itself, including improper fit or needed repairs;
- B WSU supervisors are required to:
1. Monitor employees' jobs, and inform the program administrator of jobs which require respirator use;
 2. Ensure employee work habits are in accordance with proper respirator work procedures.

XVI. Respirators not required under the standard

- A. If, when not required under the standard, WSU provides a respirator for voluntary use, or if an employee provides his/her own respirator when not required under the standard, the employee must ensure the respirator itself does not present a hazard, by the following means:
1. Read and heed all instructions provided by the respirator manufacturer concerning use, maintenance, cleaning, care, and respirator limitation warnings;
 2. Choose a respirator certified by NIOSH for the contaminant of concern (It will define the respirator's designed protection capabilities.);
 3. Use the respirator only in atmospheres containing contaminants from which it was designed to protect. **EXAMPLE:** a respirator designed to filter dust particles will not protect against gases, vapors, or very small solid particles of fumes or smoke;
 4. Keep track of the respirator to prevent mistakenly using one belonging to someone else.

XVII. Program Evaluation

- A. Although it is not possible to eliminate all problems associated with respirator use, WSU will eliminate as many problems as possible to improve respiratory protection, and to encourage employees to accept and safely use respirators.
- B. WSU's program administrator will thoroughly evaluate and, as necessary, revise the Respiratory Protection Program each year, including the following:
1. Conduct workplace evaluations, to ensure provisions of the current written program continue to be effective, and are being implemented;
 2. Consult regularly with employees required to use respirators, to assess their views on program effectiveness, and to identify and correct problems;
 3. Assess the following additional factors, and any others which may arise:

- a. Respirator fit (including the ability to use a respirator without interfering with effective workplace performance);
- b. Appropriate respirator selection for the hazard(s) to which the employee is exposed;
- c. Proper respirator use under the workplace conditions the employee encounters;
- d. Proper respirator maintenance .

XVIII. Appendices

- A. *Appendix 1—References*—The following documents are helpful references:
 1. 29 CFR 1910.134, Respiratory Protection, and Appendices,
 2. 42 CFR 84, Approval of Respiratory Protective Devices,
 3. NIOSH Guide to Industrial Respiratory Protection-1987 (however, this may be out of date),
 4. NIOSH Guide to the Selection and Use of Particulate Respirators Certified Under 42 CFR 84 (4/23/96).
- B. *Appendix 2--Respiratory Protection Program Attachments*
 1. Respirator manufacturer instruction Manual
 2. Respirator inspection forms