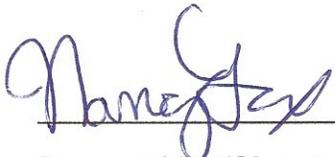


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UNIVERSITY

Environmental Health & Safety Department

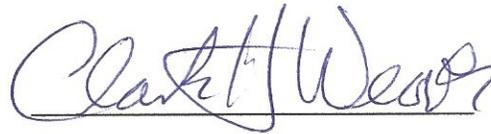
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**Respiratory Protection Program
Compliance Protocol**

 10-26-17

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Appendices

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Purpose

The control of occupational disease caused by breathing contaminated air should be accomplished through engineering control measures if possible. Engineering and administrative controls are the first line of defense for protection from hazardous materials exposures at Idaho State University. For example, general and local ventilation, isolation of process, or substitution of a less hazardous material are all effective controls that should be used to eliminate or reduce airborne hazards. Respirators should only be utilized if engineering and administrative controls are not feasible, may not completely control the identified hazards, or cannot be immediately implemented. In these situations, respirators and other protective equipment must be used. The purpose of the ISU Respiratory Protection Plan is to:

- Provide written procedures that can be used to administer an effective respiratory protection program to prevent employee exposure to airborne contaminants and assist in maintaining employee health.
- Outline specific elements of this program including: 1) appropriate respirator selection, 2) medical surveillance to evaluate employee's health and ability to wear a respirator, 3) employee respirator training, 4) fit-testing, and 5) respirator care and use.
- Meet the requirements of a written respiratory protection plan as outlined in the Idaho Division of Building Safety General Health and Safety Standards 050, personal protective equipment, sections .07-.10.
- Meet the requirements of the Occupational Safety and Health Administration (OSHA) general industry standard CFR 1910.134, OSHA Respiratory Protection Standard.
- Meet the requirements of NRC 20.1703, Use of Individual Respiratory Equipment.
- Meet the requirements of NUREG/CR-0041, Revision 1, Manual of Respiratory Protection Against Airborne Radioactive Materials.

Scope

This program applies to all ISU personnel (faculty, staff and students) who are required to wear respirators during normal university operations and during some non-routine or emergency operations such as a spill of a hazardous substance.

Responsibilities

University

The University will provide resources to implement this Respiratory Protection Program. The expenses associated with training, medical evaluation, exposure evaluation, and respiratory protection equipment will be borne by the University. Employees participating in the respiratory protection program do so at no cost to themselves.

Environmental Health & Safety Department– Respiratory Protection Program Manager

The Respiratory Protection Program Manager resides in the Environmental Health & Safety Department and is responsible for administering and overseeing the ISU respiratory protection program university wide. The duties of the Respiratory Protection Program Manager are to:

- Develop and monitor the ISU Respiratory Protection Program.
- Assist employees and supervisors with hazard assessments and respirator selection.
- Based on the information provided on the Hazard Assessment, determine the need for employee inclusion into the ISU Respiratory Protection Program.
- Provide or coordinate respirator training, fit-testing, and recordkeeping.
- Ensure that employees have been certified by a Licensed Physician to be medically qualified to wear a respirator.
- Ensure that quantitative or qualitative fit-testing is performed following approved OSHA protocols.
- Conduct an annual evaluation of the effectiveness of the program.

Departments

When employees are exposed to airborne contaminants (i.e., dust, mists, aerosols, vapors, gases, low oxygen levels, etc.), departments should contact the EHS department. Air monitoring will be conducted as appropriate to determine exposure concentrations. Departments must ensure that employees complete a Respirator Hazard Assessment Form (Appendix B) and submit it to EHS. Based on the information provided on the Hazard Assessment, EHS will determine the need for employee inclusion in the ISU Respiratory Protection Program. In addition, departments will:

- Ensure that respirator use is coordinated through the EHS Department.
- Ensure that appropriate respirators are properly stored and maintained.
- Provide funding for medical evaluation and purchase of respirators and needed filters or cartridges.

Supervisors

Specifically, departmental supervisors are to:

- Be aware of the tasks that may require respiratory protection and request monitoring or EHS assistance when needed.
- Complete the respirator hazard assessment form (Appendix B) for their employees, prior to respirator use. This assessment includes listing respiratory hazard(s) in the workplace, the work conditions and work to be conducted while wearing a respirator. (EHS Respiratory Protection Program Manager will determine and document on the Respirator Hazard Assessment form the appropriate respiratory protective equipment.)
- Ensure their employees receive initial and annual medical approval, training and respirator fit-testing.
- Ensure employees are fit-tested at least once per year. If any conditions or circumstances are observed by the supervisor that may affect the fit of an employee's respirator, the supervisor shall ensure respirators are not worn unless fit testing is repeated.
- Ensure approved respirators and cartridges are available as needed. Supervisors are to ensure that employees are provided the specific brand, model, and size of respirator indicated in the fit-test report.
- Ensure proper respirators and cartridges are used based on the employee's job hazard assessment.
- If applicable, ensure airline respirators deliver an acceptable air quality to the user. Only Grade D breathing air shall be permitted for use in cylinders. The supervisor is required to document the acceptability of breathing air by obtaining a report of the air quality from the supplier and keeping a copy in their file and forwarding a copy to EHS.
- All applicable supplied air systems with sorbent beds and filters are to be maintained and replaced per the manufacturer instructions. A tag indicating the most recent change data and the supervisor's signature shall be maintained at the compressor;

- Ensure employee respirators are inspected and maintained on a regular basis.
- Enforce the proper use of respiratory protection when necessary

Employees

Each employee has the responsibility to wear the respirator when and where required and in the manner in which they were trained. Employees must also:

- Care for and maintain their respirators as instructed, and store them in a clean sanitary location.
- Inform their supervisor if the respirator no longer fits well, and request a new one that fits properly.
- Be aware of tasks requiring the use of respiratory protection.
- Coordinate with the Respiratory Protection Program Manager on how to address respiratory hazards or other concerns regarding the program.
- Inform their supervisor or the Respiratory Protection Program Manager of any respiratory hazards that they feel are not adequately addressed in the workplace and of any other concerns that they have regarding the program.

Program Elements

Respirator Hazard Assessment

The department supervisors, with assistance from EHS as needed, will conduct a respirator hazard assessment to evaluate respiratory hazard(s) in the workplace, identify relevant workplace and user factors, and base respirator selection on these factors. This respirator hazard assessment process includes:

- A review of the Safety Data Sheets (SDS) for materials with which the employee will work.
- Completion of the Respirator Hazard Assessment Form (Appendix B).
- Review of work processes to determine where potential employee exposures to hazardous vapors, mists, fumes, dust, or other types of particulate may exist.
- Exposure monitoring to quantify potential exposures. All exposure records must be kept a minimum of termination of employment plus 30 years by ISU.

The Respirator Hazard Assessment Form is available from the EHS Office to employees and supervisors. Once completed, it is submitted to EHS. The Respiratory Protection Program Manager will work with supervisors and employees to evaluate the feasibility of engineering controls to eliminate the need for respiratory protective equipment. If respiratory protection is needed, the Respiratory Protection Program Manager will determine proper respirator and cartridge selection.

If an employee feels that respiratory protection is needed during a particular activity, the employee can contact the Respiratory Protection Program Manager. The Respiratory Protection Program Manager will work with the supervisor and employee to evaluate the potential hazard. If respiratory protection is being considered as a potential control option, a Respiratory Protection Hazard Assessment will be completed.

The department with the help of the Respiratory Protection Program Manager must revise and update the hazard assessment as needed (i.e., any time work process changes that may potentially affect exposure).

Selection Procedures

- Respirators will be selected on the basis of workplace hazard assessments, as well as guidance from The OSHA Respiratory Protection Standard, 29CFR1910.134, the American National Standard Institute (ANSI) *Practices for Respiratory Protection Z88.2-1992*, the National Institute for Occupational Safety and Health (NIOSH) *Respirator Protection Logic (2004)* and the most current version of the NIOSH *Pocket Guide to Chemical Hazards*. Final

selection of any respiratory protection device must be made in consultation with EHS. Only NIOSH approved respirators will be used. When respirators are being utilized for protection against radioactive materials NRC 20.1703, *Use of Individual Respiratory Equipment* and NUREG/CR-0041, *Revision 1, Manual of Respiratory Protection Against Airborne Radioactive Materials* will be utilized in respirator selection.

The use of required respiratory protection equipment at ISU is strictly limited to employees or students with a documented need to utilize such equipment (i.e., hazard assessment), passing and maintaining an appropriate medical evaluation, attending annual training, and completing annual fit-testing (for all tight fitting respirators). The Respiratory Protection Program Manager will assist departments in selecting respirators based on the hazards to which workers are exposed. Respirator selection includes the following considerations:

- The nature of the respiratory hazard
- The extent or (estimated) concentration of the hazard
- The Permissible Exposure Limit (PEL) and Immediately Dangerous to Life and Health (IDLH) levels for the hazard. In the absence of a PEL, other suitable exposure guidelines such as the American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit values (TLVs).
- Maximum use concentration (MUC): Assigned protection factor X Exposure Limits.
- For radioactive materials, the Nuclear Regulatory Commission's Derived Air Concentration (DACs) and the Annual Limit on Intake (ALI) values will be utilized.
- Characteristics of the hazardous operation or process.
- Location of hazardous area
- Physical conditions in the work environment
- Work activities and conditions
- Vision and Communication
- Characteristics and limitations of available respirators
- Need for protection against skin absorption or severe eye irritation, and
- Potential for oxygen deficiency (<19.5% oxygen) or oxygen enrichment (>23.5% oxygen)

Only positive-pressure Supplied Air Respirators (SAR) will be utilized in atmospheres that are oxygen-deficient or contain levels of contaminants considered Immediately Dangerous to Life and Health (IDLH).

Employees and supervisors are required to have respirator selection criteria reassessed whenever circumstances change that may impact the type of respirator to be used (i.e., new inhalation hazards, new equipment, work practices modifications, etc.)

NIOSH Certification

All respirators must be certified by the National Institute for Occupational Safety and Health (NIOSH) and shall be used in accordance with the terms of that certification. In addition, all filters, cartridges, and canisters must be labeled with the appropriate NIOSH approval label. The label must not be removed or defaced while any of the above are in use.

Medical Evaluation

All employees who use respirators must pass a medical evaluation before being permitted to wear a respirator on the job. Employees are not permitted to wear respirators until a physician has determined that they are medically able to do so. Any employee refusing the medical evaluation will not be allowed to work in an area requiring respirator use.

Medical screening shall be conducted as follows:

1. Once the respirator hazard assessment form has been signed by the EHS Respiratory Protection Program Manager, the employee is notified to proceed with medical evaluation.
 - a. The Respiratory Protection Program Manager will refer the employee to a local Physician or other Licensed Healthcare Provider for medical evaluation.
 - b. The appropriate OSHA respiratory protection medical evaluation questionnaire will be utilized in evaluating medical fitness to wear a respirator.
 - c. A copy of the *“determination of medical fitness for respirator use”* form (completed and signed by the Healthcare Provider) will be sent to EHS (required before fit-testing), by the Physician.

All medical related information will be handled in a confidential manner and shall be maintained for the duration of the employee's employment plus 30 years by the Healthcare Provider.

To the extent feasible, the University will assist employees who are unable to read the questionnaire (by providing help in reading the questionnaire). When this is not possible, the employee will be sent directly to the physician for medical evaluation.

If the Physician finds a medical condition that may place the employee's health at increased risk by using a negative pressure respirator and if the Physician's medical evaluation finds that the employee can use a PAPR, one will be provided to the employee. If a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then ISU is no longer required to provide a PAPR.

Medical evaluation will be updated on an annual basis. Additional medical evaluations will be provided under the following circumstances:

- Employee reports signs and/or symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing.
- Observations made during fit testing and program evaluation indicates a need for reevaluation.
- A change occurs in workplace conditions that may result in an increased physiological burden on the employee.

Fit Testing

The safe and effective use of tight fitting respiratory protection equipment requires that the respirator be properly fitted to the employee. Poorly fitting respirators fail to provide the expected degree of protection. Additionally, no one model or size of respirator is capable of fitting all people. Several models may be tried 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 respirator.

Supervisors are responsible for ensuring employees are fit-tested at least once per year. If any conditions or circumstances are observed by the supervisor that may affect the fit of an employee's respirator, the supervisor shall ensure respirators are not worn unless fit testing is repeated. Copies of fit-test reports will be given to the employee, maintained by EHS and made available to the Department. 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.

Fit testing is conducted by EHS using methods compliant with Appendix B of the

OSHA Respiratory Protection Standard, 29CFR1910.134

An employee cannot be fit-tested issued or wear a face-sealing respirator if there is any facial hair present between the skin and facemask-sealing surface. Even 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 immediately before commencing with the fit-test.

Any employee who experiences difficulty breathing or exhibits severe psychological reaction during any phase of fit-testing shall be referred to the Physician 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 include:

- Weight change of 20 pounds or more
- Significant facial scarring in areas of the face seal
- Significant dental changes (i.e., multiple extractions or new dentures)
- Reconstructive or cosmetic surgery in the head/face; or
- Any condition which may affect the face-respirator seal

In most cases, quantitative fit tests will be performed. Qualitative fit tests will be performed if testing equipment deficiencies preclude use of quantitative testing methods. Personnel must successfully pass the fit test before being issued a respirator and annually thereafter as long as they are in the program.

1. Quantitative Fit Test

- a. A PORTACOUNT PLUS is used to accurately measure respirator fit by comparing the dust concentration in the surrounding air with the dust concentration inside the respirator. The ratio of these concentrations is called the Fit Factor. A modified filter cartridge (or a modified respirator face piece) equipped with a sampling port is used to collect air from inside the respirator. With the sampler attached, the wearer is asked to perform several exercises to challenge the respirator fit. During these movements, any leakage is measured by the particle counting device. A computer stores the fit test data and a final test report is generated. For half-face or filtering face piece respirators, an acceptable fit test is a measured fit factor of at least 100. Full-face respirators must demonstrate an acceptable fit factor of at least 500.

2. Qualitative Fit Testing will only be utilized when quantitative methods are not

available.

- a. The employee is exposed to an atmosphere containing irritant smoke, and then asked to perform several exercises to challenge the respirator fit.

Training

All employees who use a respirator will be required to complete respiratory protection training program before initial use and annually thereafter. Employees must pass a written examination with a score of greater than or equal to 80% along with practical exercise demonstrating the proper donning and doffing of their respirator prior to fit testing. Training program objectives will include specific procedures applicable to their work areas and assignments as contained in the written Respirator Protection Plan. The initial training course covers the following topics:

- General requirements of the OSHA Respiratory Protection standard 29 CFR 1910.134
- Idaho Division of Building Safety General Health and Safety Standards 050, personal protective equipment, sections .07-.10.
- When applicable, NRC Use of individual respiratory protection equipment, 10 CFR 20 part 1703.
- Respiratory hazards and health effects
- How respirators work
- Limitations and capabilities of respirators
- Engineering controls versus respirator use
- Respirator Donning/Doffing and Field checks
- Fit-testing
- Maintenance and storage of respirators
- Medical evaluation requirements
- Respirator selection rationale
- Maximum use concentration (MUC)

General Use Requirements/Procedures

Employees will use their respirators under conditions specified by this program and in accordance with the training they receive on the use of each particular model. In addition, a respirator shall not be used in a manner that is not certified by NIOSH or by the manufacturer.

All employees shall conduct user seal checks each time that they wear their respirator. Employees shall use both the positive or negative pressure checks.

All employees shall be permitted to leave the work area to adjust or check status of their respirator. This may include; cleaning their respirator if the respirator is impeding their ability to work, changing filters or cartridges, replacing parts, or inspecting respirator if it stops functioning as intended. Employees should notify their supervisor before leaving the area.

Employees are not permitted to wear tight-fitting respirators if they have any condition, such as facial scars, facial hair, or missing dentures, that prevents them from achieving a good seal. Employees are not permitted to wear headphones, jewelry, or other articles that may interfere with the face-piece-to-face seal.

For any malfunction of an air purifying respirator (e.g., breakthrough, face-piece leakage, or improperly working valve), the respirator wearer should immediately go to the designated safe area, where contaminant levels are controlled to replace/maintain the respirator. If the respirator no longer functions, he/she should then inform his or her supervisor or the Respiratory Protection Program Manager that the respirator no longer functions as intended. The supervisor or Respiratory Protection Program Manager must ensure that the respirator is repaired or that the employee is provided a new respirator.

Respirators that are defective or have defective parts shall be marked and taken out of service immediately. Employees should bring defective respirators to their supervisors or Program Manager to have respirator repaired or to facilitate a replacement of the same make, model, and size or another fit test before resuming work activities requiring the use of a respirator. If the respirator is irreparable, it will be disposed of or dismantled for spare parts immediately. Defective respirators will not be stored or left in the work area where they may be inadvertently used.

IDLH Procedures

For IDLH conditions ISU will utilize outside (non-ISU) hazardous materials emergency response personnel.

Air Quality

Any department using Supplied Air Respirators (SARs) shall maintain a minimum air supply of one fully charged replacement cylinder for each SAR unit. For SARs, only Grade D breathing air shall be used in the cylinders. The vendor is required to certify that the air in the cylinders meet the specifications of Grade D breathing air.

Compressed oxygen shall not be used in atmosphere-supplying respirators.

Cleaning

Manufacturer's recommended procedures are included with each new respirator. The following information is intended as a general guideline for appropriate cleaning and should not replace manufacturer's recommended procedures. Respirators should be cleaned before and after each use. The following procedures are provided for employee's use when disinfecting respirators. Other methods may be used as long as they are equivalent in effectiveness.

Procedures for Cleaning and disinfecting Respirators

1. Remove filters, cartridges, or canisters.
2. Disassemble face pieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. If respirator is malfunctioning, discard the respirator and get a new one.
3. Wash components in warm (110 °F maximum) water with a mild detergent or with a cleaner recommended by manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
4. Rinse components thoroughly in clean, warm (110 °F maximum), preferably running, water. Drain.
5. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
 - a. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter (one tablespoon) of laundry bleach ("Clorox") to one gallon of warm water
 - b. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of warm water
 - c. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer

6. Rinse components thoroughly in clean, warm (110 °F maximum), running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on face pieces may result in dermatitis (skin irritation). In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
7. Components should be hand-dried with a clean lint-free cloth or air-dried.
8. Reassemble face piece, replacing filters, cartridges, and canisters where necessary.
9. Test the respirator to ensure that all components work properly.

Maintenance

Respirators are to be properly maintained at all times to ensure that they function properly and adequately protect the employee. Each respirator shall be inspected before and after use, performing a thorough visual inspection for cleanliness and defects. In addition, after cleaning, each respirator shall be inspected to determine if it is properly functioning and if repairs or replacement parts are required.

Qualified EHS staff will provide respiratory maintenance. Worn or deteriorated parts will be replaced prior to use. No components are to be replaced or repairs made beyond those recommended by the manufacturer. All repairs or adjustments to regulators, reducing and admission valves, or alarms of atmosphere-supplying respirators will be conducted by the manufacturer.

The university does not anticipate the use of self-contained breathing apparatus (SCBA) by employees. Individuals or Supervisors wishing to utilize SCBAs must contact the EHS department and obtain approval for use from the EHS Director.

Storage

Respirators must be stored so that they are protected against damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and/or in accordance with the manufacturer's recommendations. The face-piece and exhalation valve must be stored in a manner that will prevent deformation. Each respirator should be positioned so that it retains its natural configuration. Each employee will clean and inspect their own air-purifying respirator in accordance with the provisions of this program and will store their respirator in a clean plastic bag. Each employee will have his/her name on the bag and that bag will only be used to store that employee's respirator.

Inspection

Employees shall inspect respirators prior to each use and during cleaning. If the respirator it is found to be defective during inspection, it shall be taken out of service and given to the supervisor. Respirator inspection items should include:

- Tightness of connections.
- Condition of face-piece, straps, and all other parts and filter and cartridge elements.
- Condition of the exhalation and inhalation valves. (If the sides of the exhalation valve do not seal, even slightly, it must be replaced with a new valve).
- Pliability and flexibility of rubber parts. Deteriorated rubber parts must be replaced. Unused rubber parts should be worked, stretched and manipulated with a massaging action, according to manufacturer's specifications.
- If using a full-face respirator, the condition of lenses should be checked. Lenses must be tight in the face-piece. Scratched or damaged lenses must be replaced.

For more detailed information on the care and use of respirators see:

Appendix H – Care and use of half face air purifying respirators (APRs)

Appendix I – Care and Use of full face air purifying respirators (APRs)

Appendix J – Care and Use of Powered Air Purifying Respirators (PAPRs)

Defective Respirators

Respirators that are defective or have defective parts shall be taken out of service immediately. If, during an inspection, an employee discovers a defect in a respirator, he/she is to bring the defect to the attention of his or her supervisor. Supervisors will decide whether to:

- Temporarily take the respirator out of service until it can be repaired, perform a simple fix on the spot such as replacing a head strap, take the respirator to the EHS Office, or dispose of the respirator due to an irreparable problem or defect.

When a respirator is taken out of service for an extended period, the respirator will be tagged out of service and the employee will be given a replacement of similar make, model, and size.

Respirator Cartridge Change-out

Air-purifying respirators function by removing contaminants from the air before inhalation. Contaminants are removed by filtration (i.e., asbestos, fiberglass, and dusts), adsorption (i.e., benzene, carbon tetrachloride), or by chemical reaction (i.e., ammonia). Filters and cartridges designed for contaminant removal have limited effective service lives. 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.

Cartridges of air-purifying respirators used for protection against gases and vapors will be changed out after each use unless 1) they are equipped with an End-of-Service-Life (ESL) indicator on the cartridge or 2) the Program Administrator designates a cartridge change-out schedule. The cartridge change out schedule is based upon objective information or data to ensure that filter cartridges are changed before the end of their service life. Cartridges will immediately be changed out if:

- You sense (i.e., smell) the contaminated environment in which you are working
- The cartridges become wet
- The cartridge is damaged
- It becomes hard to breathe

Employees wearing APRs or PAPRs with High Efficiency Particulate Air (HEPA) filters for protection against particulates shall change the cartridges on their respirators based the manufacturer's recommendations or when they first begin to experience difficulty breathing (i.e., resistance) while wearing the respirator. An established and enforced cartridge/canister change-out schedule that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life.

Supplied Air Respirators (SARs)

Supplied-air respirators pose additional hazards due to the need to assure provision of adequate air. The use, inspection, and maintenance of supplied air respirators require implementation of additional procedures. All workers wearing supplied air respirators will work with a buddy.

- Airline respirators must deliver an acceptable air quality to the user. Only Grade D breathing air shall be permitted for use in cylinders. The supervisor is required to document the acceptability of breathing air by obtaining a report of the air quality from the supplier and keeping a copy in their file and forwarding a copy to EHS. If a new supplier is used,

documentation must be obtained prior to use of the breathing air.

The breathing air of the worker must meet Grade D air requirements as outlined in ANSI G-7.1-1989 and listed below:

Oxygen Content	19.5-23.5%
Hydrocarbon (condensed)	< 5mg/m ³
Carbon Monoxide (CO)	< 10 ppm
Carbon Dioxide (CO ₂)	< 1000 ppm

Lack of a noticeable odor

- Supervisors are responsible for ensuring inspections are conducted and records are available for inspection. The supervisor shall include details of the inspection program (procedures, responsibilities, document locations) in their documentation.

Breathing air compressors used to supply breathing air to respirators must be specifically approved for such use. They must be constructed and used so that:

- a. Contaminated air is not allowed into the air-supply system;
- b. Moisture content is minimized so that the dew point at one atmosphere pressure is 10° F below the ambient temperature;
- c. Suitable in-line air-purifying sorbent beds and filters are installed to ensure breathing air quality;
- d. Sorbent beds and filters are maintained and replaced per the manufacturer instructions. A tag indicating the most recent change data and the supervisor's signature shall be maintained at the compressor;
- e. Carbon monoxide concentrations must not exceed 10 parts per million (ppm);
- f. Oil-lubricated compressors have a high-temperature alarm;
- g. Breathing airline couplings are incompatible with outlets for non-respirable gases in the workplace.

Special Situations

A. Facial Hair

All employees must be clean-shaven to remove facial hair that could interfere with the face-to-face piece seal area or function of the face piece whenever they wear a respirator. Employees who have a medical condition which precludes their ability to be clean-shaven on the job must consult with their supervisor and the Respirator Protection Program Manager. If necessary, the employee may be referred to the Physician for a medical evaluation of their condition as it regards shaving facial hair.

B. Corrective Lenses

Employees who require corrective lenses (i.e., glasses) must take special precautions to ensure that their eyeglass frames do not interfere with respirator seal. Eyeglasses with temple bars will not be worn with full-face respirators including power air-purifying respirators (PAPRs) and self-contained breathing apparatus (SCBAs). A spectacle kit recommended by the manufacturer of the employee's respirator will be provided by EHS to the employee at no charge. The employee is responsible for the procurement and installation of their prescription lenses in the respirator spectacle kit.

The use of prescription eyeglasses with half face air-purifying respirators (APR) will be done in such a manner as not to interfere with the seal of the face-piece. If the employee is unable to wear his eyeglasses with a half face APR, a full face APR shall be worn with the proper spectacle kit installed.

C. Emergency Use of Respirators:

Idaho State University campuses rely on local agency emergency responders for hazardous materials and fire emergency response. University personal may utilize air purifying respiratory protection for non-emergency clean-up of small spills of relatively low hazard materials that have been characterized and deemed appropriate (by EHS) for university clean-up. Common spills of this type include small (thermometer) mercury spills and small outdoor oil and fuel spills.

Program Evaluation

Periodic review of the effectiveness of the respirator program is essential. EHS will conduct an annual evaluation to determine the effectiveness of the respirator program, using Appendix K. This will include worksite inspections, interviews with respirator wearers, air monitoring, and review of records. The evaluations will include consultations with employees who use respirators and their supervisors, site inspections, air monitoring, and a review of records. The Program Manager will conduct

periodic evaluations of the workplace to ensure that the provisions of this program are being implemented.

Recordkeeping

All medical determinations for respirator use, records of training, and fit-test air monitoring results will be kept by the EHS Department. These records will be updated as new employees are enrolled in the program and as existing employees receive updated medical evaluations, refresher training, and renewed fit testing.

Definitions

Air-purifying Respirator means 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) means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.

Atmosphere-supplying Respirator means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere. Includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

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

Emergency means 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 significant release of an airborne contaminant.

Employee Exposure means 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) means 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 means a respirator intended to be used only for emergency exit.

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

Filtering Face-piece (dust mask) means 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.

Fit Factor means 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 Test means 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.)

Helmet means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

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

Hood means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately Dangerous to Life or Health (IDLH) means 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 means a respiratory inlet covering that is designed to form a partial seal with the face.

Maximum Use Concentration (MUC) means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator. This is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine a MUC on the basis of relevant available information and informed professional judgment.

Negative Pressure Respirator (tight fitting) means 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 means an atmosphere with an oxygen content below 19.5% by volume.

Positive Pressure Respirator means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

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

Pressure Demand Respirator means 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) means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

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

Respiratory Inlet Covering means that 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) means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

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

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

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

User Seal Check means an action conducted by the respirator user to determine if the respirator is properly seated to the face.



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Appendix A - Respiratory Protection Program Procedures for Approved Respirator Use

1. Employee and Supervisor complete and sign the Respirator Hazard Assessment form and submit to EHS.
2. EHS Respiratory Protection Program Administrator:
 - a. Evaluates Respirator Hazard Assessment
 - b. Determines need for respirator.
 - c. Recommends respirator type, cartridges/filters and cartridge change-out schedule as needed.
 - d. Signs Respirator Hazard Assessment
3. Program Administrator refers employee for medical evaluation to Licensed Professional Healthcare Provider.
4. Health Care Provider provides medical determination of fitness for respirator use to EHS Program Administrator.
5. Department pays for medical evaluation and provides respirator as indicated on the Respirator Hazard Assessment
 - a. Copy of completed hazard assessment provided to Employee, Supervisor and Department.
6. EHS facilitates respiratory protection training and respirator fit-testing
 - a. Employee and supervisor receive documentation of fit testing
 - b. Supervisors complete initial Respiratory Protection training
 - i. Refresher training if needed and as deemed necessary by the Program Administrator.
7. Follow up medical evaluation required annually and when
 - a. An employee reports medical signs or symptoms that are related to ability to use a respirator;
 - b. A PLHCP, supervisor, or the respirator program administrator informs the employer that an employee needs to be reevaluated;
 - c. Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or
 - d. A change occurs in workplace conditions. (e.g., physical work effort, protective clothing, temperature) that may result in a substantial increase in the physiological burden placed on an employee.
8. Hazard assessment update, medical evaluation, respirator training and fit testing required annually



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**Appendix B - Respiratory Protection Program
Respirator Hazard Assessment**

This form is used to obtain information prior to the use of respirators at Idaho State University. It is to be completed by employee and supervisor and signed by both. This completed form is to be forwarded to the Environmental Health & Safety Department Respiratory Protection Program Administrator. The Program Administrator will make the final recommendation on respirator use, type and cartridge/filters.

Employee's Name:	Employee's Phone:
Supervisor's Name:	Supervisor's Phone:
Department/Unit:	Date sent to EHS:

1. Will this respirator be used for the following (check appropriate box):

Emergency Response?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA
Firefighting?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA
Oxygen-Deficient Areas?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA
Emergency Escape?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> NA

2. On the average how often is employee expected to wear respirator (check one block)?

1-5 hours per week	<input type="checkbox"/>
2-4 hours per day	<input type="checkbox"/>
5-6 hours per day	<input type="checkbox"/>
Entire shift every day	<input type="checkbox"/>
Other:	<input type="checkbox"/>

3. What is the number of hours' employee would spend doing the following in a given day:

Light work (less than 200 kcal per hour). Examples of a light work effort are sitting while writing, typing, drafting or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.	___ Hrs.
Moderate work: (200-350 kcal per hour). 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 lbs. 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.	___ Hrs.
Heavy work: (about 350 kcal per hour). 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 an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.)	___ Hrs.

4. Describe typical work conducted by employee while wearing respirator (may use job description) Include potential hazards to which the employee may be exposed (i.e. solvents, acids, dusts, fumes, infectious materials, etc.) List of hazardous materials or products can be attached to this form.:

5. Describe personal protective clothing (other than respirator) that the employee will wear while using the respirator.

6. Describe temperature and humidity condition extremes (Including extreme conditions) that this employee will experience while wearing respirator:

**This section for internal use by ISU EHS Respiratory Program Administrator
after receipt of medical evaluation determination**

EHS recommended type of respiratory protective equipment:

Disposable mask	Tight-fitting powered APR
Half-face APR	Airline (compressed air)
Full-face APR	Airline (compressor)
Loose-fitting powered APR	SCBA

To be used with the indicated cartridges, filters and pre-filters:

HEPA filter	Chlorine
Organic vapor (OV) cartridge	Hydrogen sulfide
Acids cartridge	Combination (OV, acid gas and HEPA)
Radioactive	Other

Type of corrective lens this employee will wear (if necessary) when using the respirator (check one box):

Spectacle Kit (For wearing glasses inside full face)	Contact Lenses	Not Required
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Special Conditions/Comments:

Program Administrator Name: _____

Program Administrator Signature: _____ Date _____



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**Appendix C - Respiratory Protection Program
Respirator Hazard Assessment Update Form**

This form is used to provide update information annually for employees currently enrolled in the Respiratory Protection Program.

Part 1: To be completed by the Supervisor

Employee's Name:	Employee's Phone:
Supervisor's Name:	Supervisor's Phone:
Supervisor's signature:	Date:
Department/Unit:	

Please check the appropriate block(s) and process the form as indicated:

Employee's Medical Clearance must be renewed. No changes have occurred that impact respirator use or physical working conditions (forward medical surveillance form to Student Health Services).	<input type="checkbox"/>
Employee is exposed to inhalation hazards that have not previously been assessed (Provide specific information in the comment section of this form for new inhalation hazards and email form to EHS)	<input type="checkbox"/>
Employee's physical working conditions while wearing respiratory protection have changed. (Provide specific information concerning changes in comment section of this form and email form to Student Health Services.	<input type="checkbox"/>
Employee's medical clearance must be renewed. Other changes have occurred that impact respirator use or working conditions (Provide specific information concerning changes in comment section of this form and forward form to EHS).	<input type="checkbox"/>
Other changes have occurred that may impact the employee's use of respiratory protection. (Provide details regarding changes in comment section of this form, and forward form to EHS)	<input type="checkbox"/>
Comment Section (additional information explaining above selections). Include new hazards, concentrations, concerns, etc. that have changed since the initial respirator hazard assessment):	
Program Administrator's review and comments:	

Program Administrator Name:
Program Administrator's signature
Date:



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Appendix D - Respiratory Protection Program
Medical Evaluation Questionnaire

OSHA 29CFR1910.134

Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:

You are allowed to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, this employer will deliver or send this questionnaire to the health care professional who will review it.

Contact the ISU Environmental Health & Safety Department Respiratory Protection Program Administrator for the contact information of the Designated Physician or Licensed Health Care Provider who will review this information. The health care provider will provide a determination of fitness for respirator use to you and the EHS Program Administrator. Do not send this completed form to the EHS as it contains confidential medical information.

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 reviews this questionnaire (include the Area Code): _____

9. The best time to phone you at this number: _____

10. Has your employer told you how to contact the health care 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):

- a. _____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
- b. _____ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

12. Have you worn a respirator (circle one): Yes/No

If "yes," what type(s): _____

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: 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've 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
 - d. 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: 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-facepiece 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, or 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 25 lbs: 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 at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/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 hours *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 200 kcal per hour): Yes/No

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

Examples of a light work effort 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 lbs.) 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 an 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 your respirator: Yes/No

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

14. Will you be working under hot conditions (temperature exceeding 77 deg. 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):



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Appendix E - Respiratory Protection Program Respirator Types

Surgical masks and dust masks



Surgical masks and dust mask are not considered respirators. Surgical masks are not meant to protect the person wearing the mask from particles in the air. They are meant to protect other people (like a patient in an operating room) from germs that the person wearing the mask has. A dust mask is a flexible pad held over the nose and mouth by elastic or rubber straps to protect against dusts. These masks have not been tested by NIOSH and may not remove very small particles.

Disposable Particulate Respirator



Disposable particulate respirators are sometimes confused with “dust masks” but are distinctly different. A disposable respirator has been tested by the National Institute of Occupational Safety and Health (NIOSH) to make sure it can remove very small particles. A disposable respirator only removes particles. It does not remove gases, chemicals, or vapors from the air you breathe.

Air-Purifying Respirators

Air purifying respirators have filters, cartridges, or canisters that remove contaminants from the air by passing the ambient air through the air-purifying element before it reaches the user. They are different from the disposable masks and particulate respirators addressed above, because they have an elastomeric face piece and replacement pieces and parts (including filter and/or cartridge). Half face and full face respirators with the appropriate filters and cartridges are used to provide protection from airborne hazards.



A half face respirator has an OSHA assigned protection factor of 10. This means that this will protect up to 10 times the established permissible exposure limit value.



Respirator with particulate filters capture particle in the air, such as dusts, mists, and fumes but do not protect against gases or vapors. Filters should be replaced when user finds it difficult to breathe through them.



Combination respirator cartridges are normally used in atmospheres that contain hazards of both particulate and gases or vapors. They have particulate filters and gas/vapor cartridges combined. Specific chemicals must be known. An established change out-schedule must be established for these cartridges unless an end-of-service indicator is provided on the cartridge.



Full face air purifying respirators have an OSHA assigned protection factor of 50. This means that this will protect up to 50 times the established permissible exposure limit value.

Gas and Vapor cartridges are normally used when there are only hazardous gases and vapors in the air. Use chemical cartridges (specific chemicals must be known) to remove dangerous gases or vapors. They do not protect airborne dusts.

Supplied Air Respirators (or Air Supplied Respirators)



This type of respirator supplies clean air directly to the user from a source other than the air surrounding the user (i.e., breathing air compressor or large cylinders of Grade D breathing air). Depending on the type of mask used will determine the protection factor (OSHA)

Protection Factor

<u>Facepiece System</u>	<u>Half-Face</u>	<u>Full-Face</u>
Continuous flow mode	50	1000
Pressure demand	50	1000

Self-Contained Breathing Air (SCBA)



This type of respirator supplies clean air directly to the user from a cylinder worn on the back of the user containing Grade D breathing air. Most cylinders are rated to last 30 to 45 minutes depending on size and breathing rate.

Protection Factor

<u>Facepiece System</u>	<u>Half-Face</u>	<u>Full-Face</u>
Pressure demand	---	10,000



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Appendix F - Respiratory Protection Program Fit-Testing Procedures

The University EHS staff shall conduct fit testing using the following procedures. In most cases, quantitative fit tests will be performed. Qualitative fit tests will be performed if quantitative fit testing equipment deficiencies preclude use of quantitative testing methods. EHS staff who perform fit testing will be trained on these protocols and the use of the Quantitative Equipment

General procedures for quantitative and qualitative fit testing.

1. The test subject shall be offered a respirator from a sufficient number of respirator models and sizes so that it is acceptable to, and correctly fits the user. The two primary brands of air purifying respirators at ISU are North and 3M.
2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.
3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit. The respirators will be cleaned after each try.
5. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
 - Position of the mask on the nose

- Room for eye protection
- Room to talk
- Position of mask on face and cheeks

The following criteria shall be used to help determine the adequacy of the respirator fit:

- Chin properly placed;
 - Adequate strap tension, not overly tightened;
 - Fit across nose bridge;
 - Respirator of proper size to span distance from nose to chin;
 - Tendency of respirator to slip;
 - Self-observation in mirror to evaluate fit and respirator position.
7. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Appendix C of this document or those recommended by the respirator manufacturer which provide equivalent protection. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.
 8. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.
 9. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.
 10. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.
 11. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
 12. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.
 13. Employers must perform the following test exercises for all fit testing methods prescribed in this Appendix. Employers must ensure that employees perform the test exercises in the appropriate test environment in the following manner:
 - Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

- Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
- 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.
- 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., when looking toward the ceiling).
- Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.
- Grimace. The test subject shall grimace by smiling or frowning

The following exercises are performed for quantitative testing (QNFT) but not qualitative:

- The test subject shall bend at the waist as if he/she were to touch his/her toes.
- Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.
- Normal breathing.

Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

In most cases, quantitative fit tests will be performed using the TSI Porta count Plus. If the Portacount is not available, qualitative fit testing can be performing using the Irritant Smoke method.

Quantitative Fit Testing (QNFT)

Staff performing quantitative fit testing will be trained on the equipment and understand how to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and ensure that test equipment is in proper working order. EHS staff will ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.

Quantitative Fit Testing - Portacount Plus procedure

1. Check the respirator to make sure the sampling probe and line are properly attached to the facepiece and that the respirator is fitted with a particulate filter capable of preventing

significant penetration by the ambient particles used for the fit test (e.g., NIOSH 42 CFR 84 series 100, series 99, or series 95 particulate filter) per manufacturer's instruction.

2. Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This individual shall already have been trained on how to wear the respirator properly.
3. Check the following conditions for the adequacy of the respirator fit: Chin properly placed; Adequate strap tension, not overly tightened; Fit across nose bridge; Respirator of proper size to span distance from nose to chin; Tendency of the respirator to slip; Self-observation in a mirror to evaluate fit and respirator position.
4. Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece, try another size of the same model respirator, or another model of respirator.
5. Follow the manufacturer's instructions for operating the Portacount and proceed with the test. These include:
6. Set up test equipment as outlined in the Portacount Manual. Conduct daily checks to insure Portacount is working. Be sure to allow alcohol wick to drip excess alcohol before inserting into Portacount. Attach Portacount sampling device to respirator (an adapter is available). Attach HEPA filters to respirator.
7. Have employee put on respirator and perform fit-checks. Note: the sampling line from the Portacount should be crimped closed in order to avoid air pressure leakage during fit-checks. The respirator should be worn 5 minutes prior to the fit-test.
8. Perform a screening fit-test (real time) while you explain the following:
 - a. Purpose of the screening test
 - b. What the fit-test procedures are and how long they take
 - c. What the fit factor is required for the mask
9. If screening test shows a good fit, begin the fit-test exercise. These include:
 - a. Normal Breathing (60 seconds)
 - b. Deep Breathing (60 seconds)
 - c. Turning Head side to side (60 seconds)
 - d. Moving head up and down (60 seconds)
 - e. Talking (Rainbow passage-60 seconds)
 - f. Grimacing (15 seconds)
 - g. Bending Over or Jogging in place (60 seconds)
 - h. Normal breathing (60 seconds)
10. The Portacount Plus will calculate the fit-factor for each exercise and the overall fit—factor. A minimum fit-factor of 100 is required for a half-face respirator and dust mask and a minimum fit test factor of 500 is required for a full-face respirator.

11. A copy of the fit test result including wallet card for employee, will be provided to employee and department. A copy will be kept in EHS files.

Qualitative Fit testing

The University shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed. The Irritant smoke (Stannic Chloride) qualitative method will be utilized if the quantitative fit testing method utilizing the Portacount Plus are not available.

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator

General Requirements and Precautions

- The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).
- Only stannic chloride smoke tubes shall be used for this protocol.
- No form of test enclosure or hood for the test subject shall be used.
- The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.
- The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

Sensitivity Screening Check

- The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.
- The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.
- The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.

- The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

Qualitative Fit testing - Irritant Smoke (Stannic Chloride) Procedures

1. The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).
2. The test subject shall be instructed to keep his/her eyes closed.
3. The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.
4. If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.
5. The exercises identified in section I.A. 14. of this appendix shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.
6. If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.
7. Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.
8. If a response is produced during this second sensitivity check, then the fit test is passed.
9. The employee and department will receive documentation of the fit testing.



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Appendix G - Respiratory Protection Program User Seal Checks

What is a User Seal-Check?

Any respirator user is required to do seal checks each time they don a respirator. These requirements are in 1910.134 Appendix B-1 of the OSHA general industry standard. Either the positive and negative pressure checks listed in this appendix, or the respirator manufacturers recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

A. Facepiece Positive and/or Negative Pressure Checks *Positive pressure check:* Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

Negative pressure check: Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.



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Appendix H - Respiratory Protection Program Standard Operation Procedure (SOP) for USE AND MAINTENANCE OF AIR PURIFYING HALF-FACE RESPIRATORS

This Standard Operating Procedure (SOP) describes general use and maintenance of air purifying, half mask respirators. This SOP is not a substitute for respirator-specific information and instructions provided by the manufacturer.

As with other types of respiratory protection devices, use of this type of respirator is contingent upon medical qualification, fit-testing, and training. This type of respirator is appropriate only under certain use conditions. Therefore, changes in the job situation or nature or level of airborne contaminants necessitate a new assessment to assure that the protection provided by the respirator is sufficient to protect against over-exposure.

Limitations

Air purifying respirators do not supply oxygen. Therefore, they must not be used in atmospheres that are oxygen deficient, or immediately dangerous to life and health (IDLH). Half-mask respirators provide a lower level of protection than full-face, air-purifying and supplied air respirators. Typically, a half-mask respirator is appropriate when the concentration of atmospheric contaminants exceeds an exposure level, but is relatively low. They cannot be used to protect against contaminant concentrations that exceed the established protection factor for this type of respirator; and will only provide protection if the correct type of filters and/or cartridge(s) is/are used for the contaminant(s) of concern. Half -mask respirators do not provide skin or eye protection. Therefore, they should not be used in atmospheres where contaminants may cause eye or skin irritation. All respirators must be used in accordance with the manufacturer's instructions and in compliance with the conditions of the respirator's NIOSH certification.

Cartridge and Filter Replacement

A half-mask respirator is effective only when the correct type and combination of cartridges and/or filters are used. Cartridges and filters must be specifically designed for use with the brand of mask being worn and in consideration of the type and nature of the airborne contaminants. Cartridges and filters have a limited service life. Some cartridges are equipped with an End-of-Service-Life (ESLI) indicator. Those that are not equipped with ESLIs must be changed in accordance with a change schedule.

EHS will determine and document an appropriate change-out schedule in consideration of the conditions documented in the Respiratory Protective Equipment Hazard Assessment including manufacturer's recommendation, OSHA requirements, specific workplace parameters (e.g., humidity, contaminant

concentrations, etc.), etc. A copy of the written change schedule will be provided to the employee and their supervisor. Employees must adhere to the established schedule and report to EHS if they experience breakthrough before the end of the predicted service life so that adjustments to the schedule can be made as necessary. Under no circumstances shall a user rely on breakthrough in lieu of the written change schedule.

Face to Respirator Seal

A half-mask respirator is effective only when a good face-to-respirator seal is maintained. Growth of facial hair, scars, and weight gain/loss are some of the factors that can affect the fit of the respirator. Respirator users must be clean-shaven in the areas where the facepiece meets the face. If a respirator user experiences a change in facial configuration that may affect the fit of the respirator, such as facial scarring or extreme weight gain/loss, they should report the situation to their supervisor and contact EHS for re-testing. (**Note:** Employees that are not clean-shaven at the time of respirator fit testing will not be fitted with a respirator.)

Standard eyeglasses may interfere with the mask-to-face seal. Respirator users who wear eyeglasses should be fit-tested while wearing their eyeglasses.

Equipment Inspection

Users must inspect their respirators prior to each use. Inspection must follow all manufacturer's recommendations and include but not limited to the following checks:

- The respirator is clean and ready for use.
- The proper cartridges and/or filters are in place, securely mounted, and are not at the end of their service life.
- There are no holes, punctures, or tears in the equipment and that the mask remains flexible.
- The valves are in place and properly seated.
- The straps are in good condition and elasticity has not been lost.

Donning the Equipment

Put on the mask before entering the hazardous environment or beginning a task that will generate an airborne hazard.

- Hold the mask so the narrow nose-cup points upward. Grasp both of the lower mask straps and hook them behind the neck. Place the top cradle straps on top of and behind the head.
- Adjust the mask and tighten the straps enough to assure a good seal to the face without significant discomfort.
- Perform a positive seal check by closing off the exhalation valve with the palm of the hand or a flat piece of paper and blowing gently into the respirator. The mask should lift or push away from the face before air comes out.
- Perform a negative seal check by sealing off the filters or cartridges as recommended in the instructions for the brand of respirator and inhaling gently. The mask should collapse slightly on the face without leakage of air into the facepiece.
- Make adjustments, as needed, to assure a good fit.

Working While Wearing the Equipment

Know the hazards of the airborne contaminants and the signs and symptoms of exposure. Discontinue work, leave the area, and notify your supervisor and EHS immediately if experiencing signs or symptoms of exposure. Seek medical attention, if necessary.

- While using particulate filters, if breathing becomes more difficult and the facepiece collapses slightly when inhaling, it is a sign that the cartridge/filter needs to be replaced. Leave the area and replace the filter/cartridge.
- Detection of chemical odors/taste is a sign that the protection provided by the respirator has been compromised. Stop working, leave the area, wash hands and face, and check the fit. If the fit is adequate, change the cartridges/filters. If the problem persists, stop work and do not resume until the problem has been identified and corrected. Report any breakthrough that occurs before the end of the required change out period to EHS.
- If the respirator and/or face become dirty during use, exit the area, and wash the face and hands. Clean the respirator as directed by the manufacturer.

Cleaning the Respirator

Employers must provide supplies needed to properly clean and store respiratory protection equipment. Procedures for Cleaning Respirators.

- Clean the respirator thoroughly at the end of the day. A respirator wipe may be sufficient for this daily cleaning. Replace cartridges as required. Do not share respirators with other workers.
- Monthly cleaning and decontamination of respirators:
 1. Remove filters, valves, cartridges, or canisters and any other components recommended by the manufacturer. If respirator is malfunctioning, discard the respirator and get a new one.
 2. Wash respirator in warm (110 deg F maximum) water with a mild detergent or with a cleaner recommended by manufacturer. A semi-stiff bristle (not wire) brush may be used to facilitate the removal of dirt
 3. Rinse components thoroughly in clean, warm (110 deg F maximum) preferably running water.
 4. Immerse for two minutes in
 - a. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter (one tablespoon) of laundry bleach ("Clorox") to one gallon of warm water.
 - b. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of warm water..
 - c. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer
 - d. Air dry
 5. When the respirator is clean and dry, reassemble the respirator and replace defective valves, straps, or other parts. Seal the mask in a bag or box.

Storage of the Respirator

Store respiratory protection equipment in a designated location away from chemicals, dust, sunlight, or temperature extremes when not in use. Store in a manner that prevents damage and deformation of the face piece. Preferably a plastic bag with the user's name on the bag.

Adapted from University of Nebraska Lincoln Environmental Health and Safety



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Appendix I - Respiratory Protection Program
**Standard Operation Procedure (SOP) for
USE AND MAINTENANCE OF AIR PURIFYING
FULL-FACE RESPIRATORS**

This SOP describes proper use and maintenance of air purifying, full-face mask respirators. Information provided in this SOP is general in nature, and is not a substitute for respirator-specific information and instructions provided by the manufacturer.

As with other types of respiratory protection devices, use of this type of respirator is contingent upon medical qualification, fit-testing, and training. This type of respirator is appropriate only under certain use conditions. Therefore, changes in the job situation or nature or level of airborne contaminants necessitate a new assessment to assure that the protection provided by the respirator is sufficient to protect against over-exposure.

Limitations

Air purifying respirators do not supply oxygen. Therefore, they must not be used in atmospheres that are oxygen deficient, or immediately dangerous to life and health (IDLH). They cannot be used to protect against contaminant concentrations that exceed the established protection factor for this type of respirator; and will only provide protection if the correct type of filters and/or cartridge(s) is/are used for the contaminant(s) of concern. All respirators must be used in accordance with the manufacturer's instructions and in compliance with the conditions of the respirator's NIOSH certification.

Cartridge and Filter Replacement

A full-mask respirator is effective only when the correct type and combination of cartridges and/or filters are used. Cartridges and filters must be specifically designed for use with the brand of mask being worn and in consideration of the type and nature of the airborne contaminants. Cartridges and filters have a limited service life. Some cartridges are equipped with an End-of-Service-Life (ESLI) indicator. Those that are not equipped with ESLIs must be changed in accordance with a change schedule.

EHS will determine and document an appropriate change-out schedule in consideration of the conditions documented in the Respiratory Protective Equipment Hazard Assessment including

[ISU SOP FULL-FACE RESPIRATOR USE AND MAINTENANCE](#)

manufacturer's recommendation, OSHA requirements, specific workplace parameters (e.g., humidity, contaminant concentrations, etc.), etc. A copy of the written change schedule will be provided to the employee and their supervisor.

Employees must adhere to the established schedule and report to EHS if they experience breakthrough before the end of the predicted service life so that adjustments to the schedule can be made as necessary. Under no circumstances shall a user rely on breakthrough in lieu of the written change schedule.

Equipment Inspection

Respirators must be inspected prior to each use. Inspection must follow all manufacturer's recommendations and include but not limited to the following checks:

- The respirator is clean and ready for use.
- The proper cartridges are in place, securely mounted, and are not at the end of their service life.
- There are no holes, punctures, or tears in the equipment and the mask remains flexible.
- The valves are in place and properly seated.
- The straps are in good condition and elasticity has not been lost.
- The lens is not cracked or damaged.

Donning the Equipment

Put on the mask before entering a hazardous environment or beginning a task that will generate an airborne hazard. Respirators should be individually assigned and not shared amongst workers.

- Loosen all straps; pull the harness over the head and place the chin in the chin cup.
- Pull the head harness firmly down on the back of the head.
- Tighten the harness gently, starting with the bottom straps and then the middle and top straps.
- Perform a positive seal check by closing off the exhalation valve with the palm of the hand or a flat piece of paper and blowing gently into the respirator. The respirator should gently push away from the face before leakage of air.
- Perform a negative seal check by sealing off the filters or cartridges as recommended in the instructions for the brand of respirator and inhaling gently. The mask should collapse slightly around the face without leakage of air into the facepiece.
- Make adjustments, as needed, to assure a good fit.

Working While Wearing the Equipment

Know the hazards of the airborne contaminants and the signs and symptoms of exposure. Discontinue work, leave the area, and notify your supervisor and EHS immediately if experiencing signs or symptoms of exposure. Seek medical attention, if necessary.

- While using particulate filters, if breathing becomes more difficult and the facepiece collapses slightly when inhaling, it is a sign that the filters need to be replaced. Leave the area and replace the filters and/or cartridges.
- Chemical odors indicate that protection provided by the respirator has been compromised. Stop working, leave the area, wash hands and face, and check the fit. If the fit is adequate, change the filters and/or cartridges. If the problem persists, stop work and do not resume until the problem has been identified and corrected.

- If eye irritation is experienced while wearing this equipment, it is an indication that there is not a good seal or that the filters and/or cartridges need to be changed. Leave the area and check the fit. If the fit is adequate, change the filters and/or cartridges. If the problem persists, stop work and do not resume until the problem has been identified and corrected. Report any breakthrough that occurs before the end of the required change out period to EHS.
- If the respirator becomes dirty during use, exit the area, and wash the face and hands. Clean the respirator as directed by the manufacturer.

Cleaning the Respirator

Employers must provide supplies needed to properly clean and store respiratory protection equipment. Procedures for Cleaning Respirators.

- Clean the respirator thoroughly at the end of the day. A respirator wipe may be sufficient for this daily cleaning. Replace cartridges as required. Do not share respirators with other workers.
- Monthly cleaning and decontamination of respirators:
 1. Remove filters, valves, cartridges, or canisters and any other components recommended by the manufacturer. If respirator is malfunctioning, discard the respirator and get a new one.
 2. Wash respirator in warm (110 deg F maximum) water with a mild detergent or with a cleaner recommended by manufacturer. A semi-stiff bristle (not wire) brush may be used to facilitate the removal of dirt
 3. Rinse components thoroughly in clean, warm (110 deg F maximum) preferably running water.
 4. Immerse for two minutes in
 - a. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter (one tablespoon) of laundry bleach ("Clorox") to one gallon of warm water.
 - b. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of warm water..
 - c. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer
 - d. Air dry
 5. When the respirator is clean and dry, reassemble the respirator and replace defective valves, straps, or other parts. Seal the mask in a bag or box.

Storage of the Respirator

Store respirator protection equipment in a designated location away from chemicals, dust, sunlight, or temperature extremes when not in use. Store in a manner that prevents damage and deformation of the face piece.

Adapted from Nebraska Lincoln Environmental Health and Safety



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**Appendix J - Respiratory Protection Program
Standard Operation Procedure (SOP) for
USE AND MAINTENANCE OF POWERED AIR PURIFYING
RESPIRATORS (PAPRs)**

Information provided in this Standard Operating procedure (SOP) is general in nature, and is not a substitute for respirator specific information and instructions provided by the manufacturer. Powered air purifying respirators are equipped with blowers to force air through the air-purifying elements of the respirator (e.g., filters, cartridges). This reduces stress on the user since availability of clean air is not based solely on lung capacity. PAPRs can be tight- or loose- fitting.

As with any type of respirator, if changes occur in the task/operation or concentration/type of airborne contaminants, a new assessment is needed to assure that protection provided by the PAPR is adequate. Use is subject to prior medical qualification and annual fit-testing (tight-fitting PAPRs only) and training.

Limitations

Air purifying respirators do not supply oxygen. Therefore, they must not be used in atmospheres that are oxygen deficient, or immediately dangerous to life and health (IDLH). They cannot be used to protect against contaminant concentrations that exceed the established protection factor for this type of respirator (which can vary from 25 to 1000, depending on construction-the manufacturer's package insert will indicate the applicable protection factor); and will only provide protection if the correct type of filters and/or cartridge(s) is/are used for the contaminant(s) of concern. PAPR operation is dependent on continued operation of the battery; therefore the battery must be maintained in good condition and charged before use. All respirators must be used in accordance with the manufacturer's instructions and in compliance with the conditions of the respirator's NIOSH certification.

Face to Respirator Seal

Loose-fitting (e.g., hood-type) PAPRs do not require a good face-to-facepiece seal, and therefore do not require fit-testing. However, use is still subject to prior medical qualification and annual training requirements. PAPRs with a tight-fitting facepiece require a good face-to-facepiece seal and must be fit-teste annually to ensure adequate protection.

Cartridge and Filter Replacement

A PAPR is effective only when the correct type and combination of cartridges and/or filters are used. Cartridges and filters must be specifically designed for use with the brand of mask being worn and in consideration of the type and nature of the airborne contaminants.

Cartridges and filters have a limited service life. Some cartridges are equipped with an End-of-Service-Life (ESLI) indicator. Those that are not equipped with ESLIs must be changed in accordance with a change schedule.

EHS will determine and document an appropriate change-out schedule in consideration of the conditions documented in the Respiratory Protective Equipment Hazard Assessment including manufacturer's recommendation, OSHA requirements, specific workplace parameters (e.g., humidity, contaminant concentrations, etc.), etc. A copy of the written change schedule will be provided to the employee and their supervisor. Employees must adhere to the established schedule and report to EHS if they experience breakthrough before the end of the predicted service life so that adjustments to the schedule can be made as necessary. Under no circumstances shall a user rely on breakthrough in lieu of the written change schedule.

Equipment Inspection

PAPRs must be inspected prior to each use. Inspection must follow all manufacturer's recommendations and include but not limited to the following checks:

- The respirator is clean and ready for use.
- The proper cartridges are in place, securely mounted, and are not at the end of their service life.
- The hoses leading from the cartridge to the mask are in good condition.
- There are no holes, punctures, or tears in the equipment.
- The lens is not cracked or damaged in a way that may affect performance of the respirator or visibility.
- The battery is fully charged.
- Proper airflow is achieved, as tested in accordance with the manufacturer's recommendations.

Donning the Equipment

Put on the mask before entering the hazardous environment or beginning a task that will generate an airborne hazard and check to make sure the PAPR is working properly.

- Mount the belt unit (blower and cartridges) on the waist and adjust the belt until it is comfortable. Some equipment may require that the blower be placed in a certain position to allow the breathing tube to reach the mask.
- Connect the breathing tube to the mask.

- Put on the mask. Follow the manufacturer's recommended procedures. In general, tight-fitting facepieces are donned in the same manner as half- or full-face air purifying respirators. Loose-fitting hoods are simply slipped over the head.
- If using a tight-fitting PAPR, check the facepiece fit.
 - Block off the breathing tube with the palm of the hand. Breathe in and hold breath for 10 seconds. If the seal is good, the facepiece will collapse and remain against the face. If there is leakage or the facepiece does not remain collapsed, remove and reposition to obtain a good fit. If a good seal is not obtained by repositioning the fitting straps, check other components for leaks (i.e., breathing tube). Do not use the respirator until a good fit is obtained.
- Turn on the blower.
- Attach the breathing tube to the blower.

Working While Wearing the Equipment

Know the hazards of the airborne contaminants and the signs and symptoms of exposure. Discontinue work, leave the area, and notify your supervisor and EHS immediately if experiencing signs or symptoms of exposure. Seek medical attention, if necessary.

- If chemical odors are detected while wearing a PAPR, it may be a sign that the cartridges need to be replaced or that the facepiece seal is inadequate. Stop working, leave the area, wash hands and face, and check the fit, if applicable. If the fit is adequate, change the filters and/or cartridges. If the problem persists, stop work and do not resume until the problem has been identified and corrected.
- If eye irritation is experienced while wearing a full face PAPR, this may also be an indication that the cartridge needs changing or that the facepiece seal is inadequate. Leave the area, wash hands, face, and flush eyes. If the eye irritation persists seek medical attention. If the eye irritation was slight and abates, reposition the respirator and check the fit, if applicable. If the eye irritation persists after resuming work, and the fit is adequate, repeat the steps above and change the filters and/or cartridges. If the problem still persists, stop work and do not resume until the problem has been identified and corrected. Report any breakthrough that occurs before the end of the required change out period to EHS.
- If the battery begins to fail while wearing the respirator, leave the area and install a freshly charged battery or recharge the battery before continuing use.

Cleaning the Respirator

Follow the manufacturer's cleaning and disinfection recommendations. This generally involves washing the hood and helmet (if respirator has these items) with mild soap and water, followed by disinfection; wiping of the exterior surfaces of the battery pack and breathing tube; changing cartridges as needed; inspecting equipment for problems; and charging the battery.

- Clean the respirator thoroughly at the end of the day. A respirator wipe may be sufficient for this daily cleaning. Replace cartridges as required. Do not share respirators with other workers.
- Monthly cleaning and decontamination of respirators:
 1. Remove filters, valves, cartridges, or canisters and any other components recommended by the manufacturer. If respirator is malfunctioning, discard the respirator and get a new one.

2. Wash respirator in warm (110 deg F maximum) water with a mild detergent or with a cleaner recommended by manufacturer. A semi-stiff bristle (not wire) brush may be used to facilitate the removal of dirt
3. Rinse components thoroughly in clean, warm (110 deg F maximum) preferably running water.
4. Immerse for two minutes in
 - a. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter (one tablespoon) of laundry bleach ("Clorox") to one gallon of warm water.
 - b. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of warm water..
 - c. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use if recommend or approved by the respirator manufacturer
 - d. Air dry
5. When the respirator is clean and dry, reassemble the respirator and replace defective valves, straps, or other parts. Seal the mask in a bag or box.

Storage of the Respirator

Store the equipment as directed by the manufacturer. The respirator should be stored in a designated clean location away from chemicals, dusts, sunlight, and extreme temperatures. Store in a manner that will prevent the respirator from becoming damaged or deformed.

Adapted from the University of Nebraska Lincoln Environmental Health and Safety



Environmental Health & Safety Department, Campus Box 8106, Pocatello, ID 83209
Phone: 208-282-2310 FAX 208-282-4649

Appendix K - Respiratory Protection Program
Respiratory Program Evaluation Form

Auditor Name: _____ Date: _____

Department: _____ Title: _____

Checks in the left side of form indicate that the University has satisfactorily shown compliance in related topic. Comments include people interviewed, location reviewed, etc. and any deficiency noted. If the item does not apply it should be noted in the comment section.

Table with 2 columns: Checkboxes and text descriptions. Row 1: [] 1. A written respiratory protection program that is specific to the workplace and covers the following: [List of 9 bullet points]. Row 2: [] Comments: Row 3: [] 2. Procedures for ensuring that workers who voluntarily wear respirators (excluding filtering facepieces) comply with the medical evaluation, and cleaning, storing and maintenance requirements of the standard. Row 4: [] Comments: Row 5: [] 3. A designated program administrator who is qualified to administer the program. Row 6: [] Comments

<input type="checkbox"/>	4. Updated the written program as necessary to account for changes in the workplace affecting respirator use.
	Comments:
<input type="checkbox"/>	5. Provided equipment, training, and medical evaluations at no cost to employees
	Comments:
<input type="checkbox"/>	6. Reported respiratory hazards in ISU workplaces have been evaluated to the best extent possible.
	Comments:
<input type="checkbox"/>	7. Respirators are NIOSH certified, and used under the conditions of certification
	Comments:
<input type="checkbox"/>	8. Respirators are selected based on the workplace hazards evaluated and workplace and user factors affecting respirator performance and reliability.
	Comments:
<input type="checkbox"/>	9. A sufficient number of respirator sizes and models are provided to be acceptable and correctly fit the users.
	Comments:
<input type="checkbox"/>	10. For IDLH atmospheres: <ul style="list-style-type: none"> • Full facepiece pressure demand SARs with auxiliary SCBA unit or full facepiece pressure demand SCBAs, with a minimum service life of 30 minutes, are provided. • Respirators used for escape only are NIOSH certified for the atmosphere in which they will be used. • Oxygen deficient atmospheres are considered IDLH.
	Comments:
<input type="checkbox"/>	11. For Non-IDLH atmospheres: <ul style="list-style-type: none"> • Respirators selected are appropriate for the chemical state and physical form of the contaminant. • Air-purifying respirators used for protection against gases and vapors are equipped with ESLIs or a change schedule has been implemented. • Air-purifying respirators used for protection against particulates are equipped with

ISU RESPIRATORY PROTECTION PROGRAM – EVALUATION FORM

	NIOSH-certified HEPA filters or other filters certified by NIOSH for particulates under 42 CFR Part 84.
	Comments:
<input type="checkbox"/>	12. All employees have been evaluated to determine their ability to wear a respirator prior to being fit tested for or wearing a respirator for the first time in your workplace.
	Comments:
<input type="checkbox"/>	13. A physician or other licensed health care professional (PLHCP) has been identified to perform the medical evaluations
	Comments:
<input type="checkbox"/>	14. The medical evaluations obtain the information requested in Sections 1 and 2, Part A of Appendix C of the standard, 29 CFR 1910.134
	Comments:
<input type="checkbox"/>	15. Employees are provided follow-up medical exams if they answer positively to any of questions 1 through 8 in Section 2, Part A of Appendix C, or if their initial medical evaluation reveals that a follow-up exam is needed
	Comments:
<input type="checkbox"/>	16. Medical evaluations are administered confidentially during normal work hours, and in a manner that is understandable to employees.
	Comments:
<input type="checkbox"/>	17. Employees are provided the opportunity to discuss the medical evaluation results with the PLHCP.
	Comments:
<input type="checkbox"/>	18. Written recommendations are obtained from the PLHCP regarding each employee's ability to wear a respirator, and that the PLHCP has given the employee a copy of these recommendations.
	Comments:
<input type="checkbox"/>	19. Employees who are required to wear a power air-purifying respirator (PAPR) for medical reasons will have an independent determination made.
	Comments:

ISU RESPIRATORY PROTECTION PROGRAM – EVALUATION FORM

<input type="checkbox"/>	
<input type="checkbox"/>	<p>20. Employees are given additional medical evaluations when:</p> <ul style="list-style-type: none"> • The employee reports symptoms related to his or her ability to use a respirator. • The PLHCP, respiratory protection program administrator, or supervisor determines that a medical reevaluation is necessary. • <input type="checkbox"/> Information from the respiratory protection program suggests a need for reevaluation. • Workplace conditions have changed in a way that could potentially place an increased burden on the employee's health.
	Comments:
<input type="checkbox"/>	<p>21. Employees who are using tight fitting respirator facepieces have passed an appropriate fit test prior to being required to use a respirator.</p>
	Comments:
<input type="checkbox"/>	<p>22. Fit testing is conducted with the same make, model, and size that the employee will be expected to use at the worksite</p>
	Comments:
<input type="checkbox"/>	<p>23. Fit tests are conducted annually and when different respirator facepieces are to be used.</p>
	Comments:
<input type="checkbox"/>	<p>24. Provisions are made to conduct additional fit tests in the event of physical changes in the employee that may affect respirator fit.</p>
	Comments:
<input type="checkbox"/>	<p>25. Employees are given the opportunity to select a different respirator facepiece, and be retested, if their respirator fit is unacceptable to them.</p>
	Comments:
<input type="checkbox"/>	<p>26. Fit tests are administered using OSHA-accepted QNFT or QLFT protocols</p>
	Comments:
<input type="checkbox"/>	<p>27. QLFT is only used to fit test respirators that must achieve a fit factor of 100 or less.</p>
	Comments:

<input type="checkbox"/>	28. QNFT is used in all situations where a negative pressure respirator is intended to protect workers from contaminant concentrations greater than 10 times the PEL.
	Comments:
<input type="checkbox"/>	29. When QNFT is used to fit negative pressure respirators, a minimum fit factor of 100 is achieved for tight-fitting half-facepieces and 500 for full-facepieces
	Comments:
<input type="checkbox"/>	30. For tight-fitting atmosphere-supplying respirators and powered air-purifying respirators: <ul style="list-style-type: none"> • Fit tests are conducted in the negative pressure mode. • QLFT is achieved by temporarily converting the facepiece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure APR • QNFT is achieved by modifying the facepiece to allow for sampling inside the mask midway between the nose and mouth. The facepiece is restored to its NIOSH approved configuration before being used in the workplace.
	Comments:
<input type="checkbox"/>	31. Workers using tight-fitting respirators have no conditions, such as facial hair, that would interfere with a face-to-facepiece seal or valve function.
	Comments:
<input type="checkbox"/>	32. Workers wear corrective glasses, goggles, or other protective equipment in a manner that does not interfere with the face-to-facepiece seal or valve function.
	Comments:
<input type="checkbox"/>	33. Workers perform user seal checks prior to each use of a tight-fitting respirator
	Comments:
<input type="checkbox"/>	34. There are procedures for conducting ongoing surveillance of the work area for conditions that affect respirator effectiveness, and that, when such conditions exist, you take steps to address those situations
	Comments:
<input type="checkbox"/>	35. Employees are permitted to leave their work area to conduct respirator maintenance, such as washing the facepiece, or to replace respirator parts

	Comments:
<input type="checkbox"/>	36. Employees do not return to their work area until their respirator has been repaired or replaced in the event of breakthrough, a leak in the facepiece, or a change in breathing resistance
	Comments:
<input type="checkbox"/>	37. There are procedures for respirator use in IDLH atmospheres and during interior structural firefighting to ensure that: the appropriate number of standby personnel are deployed; standby personnel and employees in the IDLH environment maintain communication; standby personnel are properly trained, equipped, and prepared; you will be notified when standby personnel enter an IDLH atmosphere; and you will respond to this notification
	Comments:
<input type="checkbox"/>	38. Standby personnel are equipped with a pressure demand or other positive pressure SCBA, or a positive pressure supplied air respirator with an escape SCBA, and appropriate retrieval equipment or other means for rescue.
	Comments:
<input type="checkbox"/>	39. Procedures for interior structural firefighting require that: at least two employees enter the IDLH atmosphere and remain in contact with one another at all times; at least two standby personnel are used; and all firefighting employees use SCBAs.
	Comments:
<input type="checkbox"/>	40. Respirators are provided that are clean, sanitary, and in good working order.
	Comments:
<input type="checkbox"/>	41. Respirators are cleaned and disinfected using the procedures specified in Appendix B-2 of the standard.
	Comments:
<input type="checkbox"/>	42. Respirators are cleaned and disinfected: <ul style="list-style-type: none"> • As often as necessary when issued for the exclusive use of one employee. • Before being worn by different individuals. • After each use for emergency use respirators. • After each use for respirators used for fit testing and training.
	Comments:

<input type="checkbox"/>	
<input type="checkbox"/>	43. Respirators are stored to protect them from damage from the elements, and from becoming deformed.
	Comments:
<input type="checkbox"/>	44. Emergency respirators are stored: <ul style="list-style-type: none"> • To be accessible to the work area. • In compartments marked as such. • In accordance with manufacturer's recommendations
	Comments:
<input type="checkbox"/>	45. Routine-use respirators are inspected before each use and during cleaning.
	Comments:
<input type="checkbox"/>	46. SCBAs and emergency respirators are inspected monthly and checked for proper function before and after each use.
	Comments:
<input type="checkbox"/>	47. Emergency escape-only respirators are inspected before being carried into the workplace for use.
	Comments:
<input type="checkbox"/>	48. Inspections include: <ul style="list-style-type: none"> • Check of respirator function • Tightness of connections • Condition of the facepiece, head straps, valves, and cartridges. • Condition of elastomeric parts
	Comments:
<input type="checkbox"/>	49. For SCBAs, inspection includes checking that cylinders are fully charged, and that regulators and warning devices function properly
	Comments:
<input type="checkbox"/>	50. Emergency use respirators are certified by documenting the inspection, and by tagging the information either to the respirator or its compartment, or storing it with inspection reports

	Comments:
<input type="checkbox"/>	51. Respirators that have failed inspection are taken out of service
	Comments:
<input type="checkbox"/>	52. Repairs are made only by trained personnel.
	Comments:
<input type="checkbox"/>	53. Only NIOSH-approved parts are used.
	Comments
<input type="checkbox"/>	54. Reducing and admission valves, regulators and alarms are adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.
	Comments:
<input type="checkbox"/>	55. Compressed breathing air meets the requirements for Grade D breathing air.
	Comments:
<input type="checkbox"/>	56. Compressed oxygen is not used in respirators that have previously used compressed air.
	Comments:
<input type="checkbox"/>	57. Oxygen concentrations greater than 23.5 percent are used only in equipment designed for oxygen service or distribution
	Comments:
<input type="checkbox"/>	58. Breathing air couplings are incompatible with outlets for other gas systems.
	Comments:
<input type="checkbox"/>	59. Breathing gas containers are marked with appropriate NIOSH certification
	Comments:

<input type="checkbox"/>	60. Cylinders are tested and maintained according to DOT 49 CFR Part 173 and 178.
	Comments:
<input type="checkbox"/>	61. A certificate of analysis for breathing air has been obtained from the supplier
	Comments:
<input type="checkbox"/>	62. Moisture content in the cylinder does not exceed a dew point of -50 o F at 1 atmosphere pressure.
	Comments:
<input type="checkbox"/>	63. Compressors are constructed and situated to prevent contaminated air from getting into the system. <ul style="list-style-type: none"> • Are set up to minimize the moisture content. • Are equipped with in-line air-purifying sorbent beds and/or filters that are maintained or replaced following manufacturer's instructions. • Are tagged with information on the most recent change date of the filter and an authorizing signature. • Carbon monoxide does not exceed 10 ppm in the breathing air from compressors that are not oil-lubricated. • High-temperature and carbon monoxide alarms are used on oil-lubricated compressors, or that the air is monitored often enough to ensure that carbon monoxide does not exceed 10 ppm if only a high-temperature alarm is used.
	Comments:
<input type="checkbox"/>	Training and information 64. Employees can demonstrate knowledge of: <ul style="list-style-type: none"> • Why the respirator is necessary and the consequences of improper fit, use, or maintenance. • Limitations and capabilities of the respirator. • How to effectively use the respirator in emergency situations. • How to inspect, put on, remove, use, and check the seals of the respirator. • Maintenance and storage procedures. • The general requirements of the respirator standard.
	Comments:
<input type="checkbox"/>	65. Training is understandable to employees.
	Comments:

<input type="checkbox"/>	66. Training is provided prior to employee use of a respirator
	Comments:
<input type="checkbox"/>	67. Retraining is provided: <ul style="list-style-type: none"> • Upon changes in workplace conditions that affect respirator use. • Whenever retraining appears necessary to ensure safe respirator use.
	Comments:
<input type="checkbox"/>	68. Appendix D of the standard is provided to voluntary users.
	Comments:
<input type="checkbox"/>	69. Workplace evaluations are being conducted as necessary to ensure that the written respiratory protection program is being effectively implemented.
	Comments:
<input type="checkbox"/>	70. Employees required to wear respirators are being regularly consulted to assess the employees' views and to identify problems with respirator fit, selection, use and maintenance.
	Comments:
<input type="checkbox"/>	71. Any problems identified during assessments are corrected
	Comments:
<input type="checkbox"/>	72. Records of medical evaluations have been retained
	Comments:
<input type="checkbox"/>	73. Fit testing records have been retained.
	Comments:
<input type="checkbox"/>	74. A copy of the current respiratory protection program has been retained
	Comments:
<input type="checkbox"/>	75. Access to these records is provided to affected employees.

