

Risk Management
Environmental Health and Safety Office
Respiratory Protection Program



**BALL STATE
UNIVERSITY**

WE FLY

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Respiratory Protection Program

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Respiratory Protection Program

I. OBJECTIVE

The Ball State University Respiratory Protection Program is designed to protect employees by establishing accepted practices for respirator use, providing guidelines for training and respirator selection, and explaining proper storage, use and care of respirators. This program also serves to help the University and its employees comply with Occupational Safety and Health Administration (OSHA) respiratory protection requirements as found in 29 CFR 1910.134.

II. ASSIGNMENT OF RESPONSIBILITY

A. Employer

The Environmental Health and Safety (EHS) Office is responsible for providing respirators to employees when they are necessary for health protection. The EHS office will provide respirators that are applicable and suitable for the intended purpose at no charge to the affected employee(s). Any expense associated with training, medical evaluations and respiratory protection equipment will be borne by the University.

B. Program Administrator

The Program is administered through the EHS Office with the Industrial Hygienist responsible for administering the respiratory protection program as the Program Administrator. Duties of the program administrator include:

1. Identifying work areas, process or tasks that require workers to wear respirators.
2. Evaluating hazards.
3. Selecting respiratory protection options.
4. Monitoring respirator use to ensure that respirators are used in accordance with their specifications.
5. Arranging for and/or conducting training.
6. Educating participants of proper storage and maintenance of respiratory protection equipment.
7. Conducting qualitative fit testing.
8. Administering the medical surveillance program.
9. Maintaining records required by the program.
10. Evaluating the program.
11. Annual reviewing and updating the program as needed.

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C. Supervisors

Supervisors are responsible for ensuring that the respiratory protection program is implemented in their particular areas. In addition to being knowledgeable about the program requirements for their own protection, supervisors must also ensure that the program is understood and followed by the employees under their responsibility. Duties of the supervisor include:

1. Ensuring that employees under their supervision (including new hires) receive appropriate training, fit testing, and annual medical evaluation.
2. Contacting the EHS Office to ensure the availability of appropriate respirators and accessories.
3. Being aware of tasks requiring the use of respiratory protection.
4. Enforcing the proper use of respiratory protection when necessary.
5. Ensuring that respirators are properly cleaned, maintained and stored according to this program.
6. Ensuring that respirators fit well and do not cause discomfort.
7. Continually monitoring work areas and operations to identify respiratory hazards.
8. Coordinating with the EHS Office on how to address respiratory hazards or other concerns regarding this program including hazard assessments.

D. Employees

Each employee is responsible for wearing his or her respirator when and where required and in the manner in which they are trained. Employees must also:

1. Care for and maintain their respirators as instructed, guard them against damage, and store them in a clean, sanitary location.
2. Inform their supervisor if their respirator no longer fits well, and request a new one that fits properly.
3. Inform their supervisor or the EHS Office of any respiratory hazards that they feel are not adequately addressed in the workplace and of any other concerns that they have regarding this program.
4. Use the respiratory protection in accordance with the manufacturer's instructions and the training received.

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III. APPLICABILITY

This program applies to all employees who are required to wear respirators during normal work operations, as well as during some non-routine or emergency operations, such as a spill of a hazardous substance.

In addition, any employee who voluntarily wears a respirator when one is not required (i.e., in certain maintenance and other approved operations) is subject to all the requirements of this program. Employees who voluntarily wear filtering face pieces (dust masks) are not subject to the medical evaluation, cleaning, storage, and maintenance provisions of this program. A copy of Appendix D to section 1910.134 (Mandatory) Information for Employees Using Respirators When not Required Under Standard will be provided to the employee(s). If needed, initial dust mask training will be provided by either the EHS Office or the employee(s) immediate supervisor.

IV. PROGRAM

A. Hazard Assessment and Respirator Selection

The EHS Office will select respirators to be used on-site, based on the hazards to which workers are exposed and in accordance with the OSHA Respiratory Protection Standard. The EHS Office will conduct a hazard evaluation for each operation, process, or work area where airborne contaminants may be present in routine operations or during an emergency. Hazard evaluations will be maintained by the EHS Office. The hazard evaluations shall include but not limited to:

1. Identification and development of a list of hazardous substances used in the workplace by department or work process.
2. Review of work processes to determine where potential exposures to hazardous substances may occur. This review shall be conducted by surveying the workplace, reviewing the process records, and talking with employees and supervisors.
3. Exposure monitoring to quantify potential hazardous exposures.

The proper type of respirator for the specific hazard involved will be selected in accordance with the manufacturer's instructions. A list of employees and appropriate respiratory protection will be maintained by the EHS Office.

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B. Updating the Hazard Assessment

The EHS Office will update the hazard assessment(s) as needed (i.e., any time work process changes may potentially affect exposure). If an employee feels that respiratory protection is needed during a particular activity, they are to contact their supervisor and then contact the EHS Office. The EHS Office will evaluate the potential hazard and communicate the results of that assessment to the supervisor and employee(s). If it is determined that respiratory protection is necessary, all other elements of the respiratory protection program will be in effect for those tasks, and the respiratory program will be updated accordingly.

C. Training

The EHS Office will provide training to respirator users and their supervisors on the contents of the Respiratory Protection Program and their responsibilities under it, and on the OSHA Respiratory Protection Standard. All affected employees and their supervisors will be trained prior to using a respirator in the workplace. Supervisors will also be trained prior to supervising employees that must wear respirators.

The training course will cover the following topics:

1. The general applications of the Respiratory Protection Program;
2. OSHA Respiratory Protection Standard (29 CFR 1910.134);
3. Potential respiratory hazards encountered in the work areas;
4. Proper selection and use of respirators;
5. Limitations of respirators;
6. Respirator donning and user seal (fit) checks;
7. Fit testing;
8. Emergency use procedures;
9. Maintenance and storage; and
10. Medical signs and symptoms limiting the effective use of respirators.

Employees will be re-trained annually as part of the fit testing requirement or as needed (e.g., if they change departments or work processes and need to use a different respirator). Employees must demonstrate their understanding of the topics covered in the training before being cleared to wear a respirator. Respirator training will be documented by the EHS Office and the documentation will include the type, model, and size of respirator for which each employee has been trained and fit tested.

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D. 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. Also, all filters, cartridges, and canisters must be labeled with the appropriate NIOSH approval label. The label must not be removed or defaced while the respirator is in use.

E. Voluntary Respirator Use

The EHS Office shall authorize voluntary use of respiratory protective equipment as requested by all other workers on a case-by-case basis, depending on specific workplace conditions and the results of medical evaluations.

The EHS Office will provide all employees who voluntarily choose to wear filtering face-piece respirator (dust mask) with a copy of Appendix D of the OSHA Respiratory Protection Standard. (Appendix D details the requirements for voluntary use of respirators by employees). Employees who choose to wear a half face piece APR must comply with the procedures required by this program.

F. Medical Evaluation

Employees who are either required to wear respirators, or who choose to wear a half face piece APR voluntarily, must pass a medical exam provided by the University 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.

A licensed physician at the University Health Center or other pre-approved medical facility will provide the medical evaluations. Medical evaluation procedures are as follows:

1. The medical evaluation will be conducted using the questionnaire of the OSHA Respiratory Protection Standard. The EHS Office will provide a copy of this questionnaire to all employees requiring medical evaluations.
2. To the extent feasible, the EHS Office will provide assistance to employees who are unable to read the questionnaire. When this is

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not possible, the employee will be sent directly to the physician for medical evaluation.

3. All affected employees will be given a copy of the medical questionnaire to complete, along with an envelope that will be addressed to the University Health Center. Employees will be permitted to complete the questionnaire on University time.
4. Follow-up medical exams will be granted to employees as required by the Standard, and/or as deemed necessary by the evaluating physician.
5. All employees will be granted the opportunity to speak with the physician about their medical evaluation, if they so request.
6. The EHS Office shall provide the evaluating physician with a copy of this Program, a copy of the OSHA Respiratory Protection Standard, the list of hazardous substances by work area, and the following information about each employee requiring evaluation:
 - a. His or her work area or job title;
 - b. Proposed respirator type and weight;
 - c. Length of time required to wear respirator;
 - d. Expected physical work load (light, moderate or heavy);
 - e. Potential temperature and humidity extremes; and
 - f. Any additional protective clothing required.
7. Positive pressure air purifying respirators will be provided to employees as required by medical necessity.
8. After an employee has received clearance to wear his or her respirator, additional medical evaluations will be provided under the following circumstances:
 - a. The employee reports signs and/or symptoms related to their ability to use the respirator, such as shortness of breath, dizziness, chest pains or wheezing.
 - b. The evaluating physician or supervisor informs the EHS Office that the employee needs to be reevaluated.
 - c. Information found during the implementation of this program, including observations made during the fit testing and program evaluation, indicates a need for reevaluation.
 - d. A change occurs in workplace conditions that may result in an increased physiological burden on the employee.

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All examinations and questionnaires are to remain confidential between the employee and the physician. The EHS Office will only retain the physicians written recommendations regarding each employee's ability to wear a respirator.

G. Fit Testing

Employees who are required to or who voluntarily wear half-face piece APRs will be fit tested:

1. Prior to being allowed to wear any respirator with a tight-fitting face piece;
2. Annually; or
3. When there are changes in the employee's physical condition that could affect respiratory fit (e.g., obvious change in body weight, facial scarring, etc.).

Employees will be fit tested with the make, model, and size of respirator that they will actually wear. Employees will be provided with several models and sizes of respirators so that they may find an optimal fit. Fit testing of powered air purifying respirators will be conducted in the negative pressure mode.

The EHS Office will conduct fit tests in accordance with the OSHA Respiratory Protection Standard.

H. General Respirator Use Procedures

1. Employees will use their respirators under conditions specified in this program, and in accordance with the training they receive on the use of each particular model. In addition, the respirator shall not be used in a manner for which it is not certified by NIOSH or by its manufacturer.
2. All employees shall conduct user seal checks each time they wear their respirators. Employees shall use either the positive or negative pressure check (depending on which test works best for them) as specified in the OSHA Respiratory Protection Standard.
 - a. Positive Pressure Test: This test is performed by closing off the exhalation valve with your hand. Breathe air into the mask. The face fit is satisfactory if some pressure can be built up

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inside the mask without any air leaking out between the mask and the face of the wearer.

- b. Negative Pressure Test: This test is performed by closing of the inlet openings of the cartridge with the palm of your hand. Some masks may require that the filter holder be removed to seal off the intake valve. Inhale gently so that a vacuum occurs within the face piece. Hold your breath for ten (10) seconds. If the vacuum remains, and no inward leakage is detected, the respirator is fit properly.
3. All employees shall be permitted to:
 - a. Clean their respirator if it is impeding their ability to work;
 - b. Change filters or cartridges;
 - c. Replace parts; or
 - d. Inspect respirator if it stops functioning as intended.
 4. Employees are not permitted to wear tight-fitting respirators if they have any condition, such as facial scars, facial hair, or missing dentures that would prevent a proper seal. Employees are not permitted to wear headphones, jewelry, or other items that may interfere with the seal between the face and the face piece.
 5. Before and after each use of a respirator, an employee or immediate supervisor must make an inspection of tightness or connections and the condition of the face piece, headbands, valves, filter holders and filters. Questionable items must be addressed immediately by the supervisor and/or EHS Office.

I. Air Quality

For Emergency Escape Breathing Apparatus (EEBA) and Self Contained Breathing Apparatus (SCBA) respirators, only Grade D breathing air shall be used in the cylinders. The EHS Office will coordinate deliveries of compressed air with the company's vendor and will require the vendor to certify that the air in the cylinders meets the specifications of Grade D breathing air. EEBA and SCBA units provide the user a supply of safe breathing air regardless of the ambient air contamination, including IDLH atmospheres. All employees using EEBA's and SCBA's must receive specialized training. Inspections of the SCBA and EEBA

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units will be performed by the EHS Office on a monthly and quarterly basis. The EEBA and SCBA units will be serviced by qualified technicians when needed. All required service to the air supply tanks will be done in accordance with the manufacturers recommended maintenance schedule.

J. Change Schedules

Respirator cartridges shall be replaced as determined by the EHS Office, supervisor(s), and manufacturers recommendations. Additional change out information is below:

Respirators with vapor or gas cartridges will be regularly replaced on the following schedule (unless otherwise dictated by manufacturer):

Type of respirator cartridge	Work Location	Chemicals in use	Replacement schedule
Organic, acid mists	University	Varies – solvents, particulates, metals, acids, semi-volatiles	Following each daily use or when break through is detected by user or when end-of-service-life indicator (ESLI) dictates.
Particulates (P100 or HEPA)	University	Dusts, other particulates	When clogging or difficulty on air intake is noticed (resistance)

Change schedules for all other gases/vapors will be established and implemented by the EHS Office. At the current time the change schedule is being based upon the hazard assessments survey results and manufactures recommendations.

Employees wearing air purifying respirators (APRs) or powdered air purifying respirators (PAPRs) with approved filters (i.e. P100, N100, R100, HEPA) for protection against dust/fume/mist and other particulates shall change the cartridges on their respirators when they first begin to experience difficulty breathing (i.e. resistance) while wearing their masks. APRs for protection against gases and vapors must have cartridges/canisters with an end of service life indicator (ESLI) or if cartridges/canisters with an ESLI are not available, a change

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out schedule (see table above) must be implemented based upon objective information, which will ensure the cartridge/canisters are changed before the end of their service life. OSHA provides guidance on a change out schedule for the following chemicals:

- Acrylonitrile-1910.1045(h)(2)(ii).
- Benzene-1910.1028(g)(2)(ii).
- Butadiene-1910.1051(h)(2)(ii).
- Formaldehyde-1910.1048(g)(2)(ii).
- Vinyl chloride-1910.1017(g)(3)(ii).
- Methylene chloride-1910.1051(g)(2)(ii). Note: Canisters may only be used for emergency escape and must be replaced after use.

K. Cleaning

Respirators are to be regularly cleaned and disinfected. Respirators issued for the exclusive use of an employee shall be cleaned as often as necessary. Atmosphere-supplying and emergency use respirators are to be cleaned and disinfected after each use.

The following procedure is to be used when cleaning and disinfecting reusable respirators:

1. Disassemble respirator, removing any filters, canisters, or cartridges.
2. Wash the face piece and all associated parts (except cartridges and elastic headbands) in an approved cleaner-disinfectant solution in warm water (about 120 degrees Fahrenheit). Do not use organic solvents. Use a hand brush to remove dirt.
3. Rinse completely in clean, warm water.
4. Disinfect all facial contact areas by spraying the respirator with an approved disinfectant.
5. Air-dry in a clean area.
6. Reassemble the respirator and replace any defective parts. Insert new filters or cartridges and make sure the seal is tight.
7. Place respirator in a clean, dry plastic bag or other airtight container.

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L. Maintenance

Respirators are to be properly maintained at all times in order to ensure that they function properly and protect employees adequately. Maintenance involves a thorough visual inspection for cleanliness and defects. Worn or deteriorated parts will be replaced prior to use. No components will be replaced or repairs made beyond those recommended by the manufacturer. Repairs to regulators or alarms to the SCBA will be conducted by the manufacturer or approved technician.

1. All respirators shall be inspected routinely before and after each use.
2. Respirators kept for emergency use shall be inspected after each use, and at least monthly by the EHS Office to assure that they are in satisfactory working order.
3. The Respirator Inspection Checklist will be used when inspecting respirators.
4. A record shall be kept of inspection dates and findings for respirators maintained for EEBAs and SCBAs.

M. Storage

After inspection, cleaning, and necessary repairs, respirators shall be stored appropriately to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals.

1. Respirators must be stored in a clean, dry area, and in accordance with the manufacturer's recommendations. 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 plastic bag in the designated area. Each employee will have their name on the bag and that bag will only be used to store that employee's respirator.
2. Respirators shall be packed or stored so that the face piece and exhalation valve will rest in a near normal position.
3. Respirators shall not be placed in places such as lockers or toolboxes unless they are in carrying cartons.

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4. Respirators maintained at stations and work areas for emergency use shall be stored in compartments built specifically for that purpose, be quickly accessible at all times, and be clearly marked.
5. The Program Administrator will store a supply of respirators and respirator components in their original manufacturer's packaging in the EHS Office.

N. Respirator Malfunctions and Defects

1. For any malfunction such as breakthrough, face piece leakage, or improperly working valve, the respirator wearer should inform their supervisor that the respirator no longer functions as intended. The supervisor must ensure that the employee either receives the needed parts to repair the respirator or is provided with a new respirator by the EHS Office.
2. 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, they are to bring the defect to the attention of their supervisor. Supervisors will give all defective respirators to the EHS Office. The EHS Office will decide whether to:
 - a. Temporarily take the respirator out of service until it can be repaired;
 - b. Perform a simple fix on the spot, such as replacing a head strap; or
 - c. Dispose of the respirator due to an irreparable problem or defect.

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

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O. Emergency Procedures

In emergency situations where an atmosphere exists in which the wearer of the respirator could be overcome by a toxic or oxygen-deficient atmosphere, the following procedure should be followed. The North and South Energy Centers have the potential for a dangerous atmosphere. A combined sixteen (16) EEBA's are located throughout each energy center along with a functioning alarm system with a fresh air evacuation system. Three (3) SCBA's are maintained by the EHS Office for emergencies.

1. When the alarm sounds, employees must immediately evacuate the building. Refer to the Emergency Action Plan that describes these procedures (including proper evacuation routes and rally points) in greater detail.
2. Only in an emergency situation don the emergency EEBA or SCBA (for EHS Office only), and exit the work area.
3. Respiratory protection is for escape purposes only. University employees are not trained as emergency responders, and are not authorized to act in such a manner. Emergency personnel (Fire Department) should be called immediately to any emergency.

P. Program Evaluation

The EHS Office will conduct periodic evaluations of the workplace to ensure that the provisions of this program are being implemented. The evaluations will include regular consultations with employees who use respirators and their supervisors, site inspections, air monitoring and a review of records. Items to be considered will include:

1. Comfort;
2. Ability to breathe without objectionable effort;
3. Adequate visibility under all conditions
4. Provisions for wearing prescription glasses;
5. Ability to perform all tasks without undue interference; and
6. Confidence in the face piece fit.

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Identified problems will be noted in an Inspection Checklist and addressed by the EHS Office. All findings will be listed and plans will be implemented to correct deficiencies in the respirator program along with target dates for the implementation of those corrections. Monthly inspections of the three (3) SCBAs will be performed by the EHS Office. Additionally, quarterly inspections of the EEBA's will be performed by the EHS Office. Inspection sheets will be maintained by the EHS Office.

Q. Documentation and Recordkeeping

1. A written copy of this program and the OSHA Respiratory Protection Standard shall be kept in the EHS Office and made available to all employees who wish to review it.
2. Copies of training and fit test records will be maintained by the EHS Office. These records will be updated as new employees are trained, as existing employees receive refresher training, and as new fit tests are conducted
3. For employees covered under the Respiratory Protection Program, the EHS Office shall maintain copies of the physician's written recommendation regarding each employee's ability to wear a respirator. The completed medical questionnaires and evaluating physician's documented findings will remain confidential in the employee's medical records at the location of the evaluating physician's practice.