

## **PURPOSE**

This policy provides requirements on the selection, use, care, and maintenance of respiratory protection. Also included is information and guidelines on training, medical evaluations, recordkeeping and responsibilities of employees and their supervisors.

## **REFERENCES**

- Occupational Safety and Health Administration (OSHA) Respiratory Protection Standard, (29 CFR 1910.134)
- Exhibit 1: Major Cleaning and Maintenance of Respirators

## **RESPONSIBILITIES**

Environmental Health & Safety (EH&S) Department

- Administer the Respiratory Protection Program.
- Evaluate the working conditions and employee exposures.
- Perform respirator selection and provide recommendations for respirator use.
- Periodically review the program, including inspections of operating areas and equipment for the purposes of ensuring compliance with these procedures.
- Coordinate training and fit testing, and maintain fit testing records.

Supervision / Appropriate Personnel

- Audit the program, on a recurring basis, not to exceed annually, to ensure compliance and enforce all aspects of this procedure including the proper use, care, and maintenance of respirators, as well as ensuring that users are cleaning their respirators and completing the required logbooks in accordance with this procedure.
- Provide employees with the appropriate respiratory protection, storage, and respirator cleaning facilities and the time to perform cleaning as required.
- Provide employees with the appropriate respiratory protection, storage, and respirator cleaning facilities and the time to perform cleaning as required.
- Ensure that departmental employees who wear respirators have been medically cleared prior to issuing a respirator to that individual.
- Enforce the use of approved and properly fit tested respiratory protection including ensuring that employees do not have any facial hair that comes between the sealing surface of the facepiece and the user's face; that interferes with the valve function; or any condition that interferes with the seal of a negative pressure or tight fitting respirators.
- Notify EH&S of any areas or conditions requiring evaluation.

Employees

- Comply with all applicable aspects of this procedure.
- Use, inspect and maintain their own individual respirator. Use only properly fitted and, if required, fit tested respirator.
- If tight-fitting respirators are worn, ensure:

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- That facial hair does not come between the sealing surface of the facepiece and the face or interferes with the valve function of the respirator; or
- That no condition exists that interferes with the face to facepiece seal or valve function of a tight-fitting respirator.
- Report any malfunctions or problems with respect to the respiratory protection program to supervisors.

**PROCEDURE**

**RESPONSIBILITY**

**ACTION**

All Personnel

**A. Selection**

1. Wear only NIOSH approved respiratory protection selected by EH&S. With the exception of SCBA masks, tight fitting respirators shall not be shared.

EH&S Department and / or  
Management

2. Identify the appropriate respiratory protection based upon the respiratory hazard(s) involved. This may be determined by reviewing material safety data sheets, specific OSHA standards or existing industrial hygiene sampling data.

EH&S, Human Resources  
or Department  
Management

**B. Medical Evaluations**

1. Prior to using respirators, personnel must pass a medical evaluation CERTIFIED by a physician or licensed health care professional in accordance with the OSHA standard.
2. Notify department management if a user cannot be assigned any work involving the use of a respirator.
3. Provide medical professionals with the respirator program information as required by OSHA.

**PROCEDURE-CONT'D**

**RESPONSIBILITY**

**ACTION**

Department Management

**D. Auditing the Program-Cont'd**

**NOTE:** This audit is to evaluate the written program and to ensure it is being properly implemented. Employees are to be consulted to ensure they are using the provided respiratory protection correctly and to allow them to provide feedback on the effectiveness of the Program.

1. Conduct evaluations of the Program.
2. Consult employees to ascertain their views on the effectiveness of the Program and to identify any problems.

**NOTE:** Any problems identified during the process shall be corrected.

3. Assess additional factors, though not limited to:
  - a. Respirator fit
  - b. Appropriate respirator selection
  - c. Proper respirator use
  - d. Proper respirator maintenance

All Personnel

**E. Respirator Fit**

1. Perform user seal checks (previously called "Fit Check").
  - a. Put on (don) respirators in accordance with the manufacturer's instructions.

**PROCEDURE-CONT'D**

**RESPONSIBILITY**

**ACTION**

All Personnel

**E. Respirator Fit -Cont'd**

- b. Immediately after donning the respirator, the user must perform a positive and/or a negative pressure user seal check to ensure that the respirator has a good seal and is functioning properly

**NOTE:** The purpose of this check is to ensure that the respirator, valves and filters/cartridges are seated properly.

**NOTE:** This can only be performed with tight fitting, negative pressure facepieces, including dust masks.

2. For regular respirators:
  - a. Close off the inlet opening of the respirator's facepiece canister(s), cartridge(s), or filter(s) by covering the inlet with the palm of the hand(s), by replacing the inlet seal on a canister(s), or by squeezing a breathing tube or blocking its inlet so that it will not allow the passage of air.
  - b. Inhale gently and hold breath. If the facepiece collapses slightly and no inward leakage of air into the facepiece is detected, then the user seal.
3. Perform negative-pressure user seal check:
  - a. A negative air-pressure user seal check can be used on air purifying and atmosphere-supplying respirators equipped with tight fitting facepieces and disposable respirators with an exhalation valve.

**PROCEDURE-CONT'D**

**RESPONSIBILITY**

All Personnel

**ACTION**

**E. Respirator Fit -Cont'd**

- b. For disposable (e.g., filtering facepiece, dust mask) respirators: Place both hands completely over the respirator. Sharply inhale. A slight negative pressure should be felt inside the respirator with no noticeable air leakage from around the sealing surface. If air leaks in around the nose and/or exterior edge of the disposable respirator, adjust the position of the facepiece, adjust the position/tension of the straps, and/or readjust the nosepiece as directed by the manufacturer.

**NOTE: DO NOT** enter the contaminated area if you cannot obtain a good seal.

4. Positive-pressure user seal check.

**NOTE:** A positive air-pressure user seal check can be used on respirators equipped with tight-fitting respiratory-inlet coverings that contain both inhalation and exhalation valves and disposable respirators with no exhalation valve.

5. For regular respirators, close off the exhalation valve or breathing tube, or both, and then exhale gently. The fit of a respirator is considered to be satisfactory if a slight positive pressure can be built up inside the facepiece without the detection of any outward leakage of air between the sealing surface of the facepiece and the respirator wearer's face.

**PROCEDURE-CONT'D**

**RESPONSIBILITY**

All Personnel

**ACTION**

**E. Respirator Fit -Cont'd**

6. For disposable (e.g., filtering facepiece, dust mask) respirators: Place both hands completely over the respirator. Exhale sharply. A positive pressure should be felt inside the respirator. If air leaks out around the nose and/or exterior edge of the disposable respirator, adjust the position of the facepiece, adjust the position/tension of the straps, and/or readjust the nosepiece as directed by the manufacturer.

**NOTE: DO NOT** enter the contaminated area if you cannot obtain a good seal.

**NOTE:** Facial hair, glasses, head coverings (such as hard hats or other protective covers) must not pass between the sealing surface of a tight fitting respirator and the user's face. A respirator, either positive or negative pressure, equipped with a tight fitting facepiece shall not be worn if facial hair comes between the sealing surface of the facepiece or if facial hair interferes with the valve function. All users shall be clean-shaven in areas between the user's face and the sealing surface of the respirator. A recognized healthcare provider must document additional medical conditions, which prohibit respirator use.

**PROCEDURE-CONT'D**

**RESPONSIBILITY**

**ACTION**

All Personnel

**F. Vision**

1. When a respirator user must wear corrective lenses, a protective spectacle or goggle, a face shield, a welding helmet, or other eye and face protective devices, the item shall be fitted to provide good vision and shall be worn in such a manner as to not interfere with the seal of the respirator. In some cases, the respirator user may be unable to wear spectacles under a full-face respirator. OSHA permits the use of contact lenses with respirators provided the user has previously demonstrated successful experience wearing contact lenses. The contact lens user shall practice wearing the contact lenses while wearing a respirator **PRIOR TO ENTERING THE HAZARDOUS ATMOSPHERE**. Personnel should not wear contact lenses in place of eye protection and must still wear the appropriate eye protection consistent with the hazard present.

EH&S Department of Site  
Specific Personnel

**G. Fit Testing**

1. Fit tests all personnel who have been medically cleared and trained prior to allowing them to wear a tight fitting respirator (excluding training), using an OSHA approved protocol.

All Personnel

2. Fit tests will be conducted at least on an annual basis.
3. Once an employee has passed a fit tested for a particular respirator, the user may only wear that specific make, model and size of respirator without having a new fit test conducted. Fit testing need not be repeated for replacement of a respirator if the identical make, model, and size is used.



**PROCEDURE-CONT'D**

**RESPONSIBILITY**

All Personnel

**ACTION**

**H. Care & Maintenance**

1. Reusable respirators shared by different individuals (e.g., half-mask, full-face) must go through a “major” cleaning and be sanitized after each use. See **Exhibit 1** for these directions.
2. Half-masks and Full-face masks issued to individuals are required to be cleaned after each use. The type of cleaning needed is defined as a “minor” cleaning. To perform a “minor” cleaning, follow the steps outlined below:
  - a. Remove the filters/cartridges and head strap. Using wet wipes or a cloth dampened in a cleaning solution; wipe off the outside of the filters/cartridges and head straps to remove any contamination. Store the filters/cartridges in a clean, sealed bag
  - b. Wash the facepiece and valves in warm water with a mild detergent or wipe the entire respirator with wet wipes. Rinse the facepiece in clean, warm water or with a clean wet wipe.

**NOTE:** If warm water with a mild detergent is used to clean the facepiece and valves, wipe down the head cradle assembly and elastic straps with wet wipes to remove any potential contamination. **DO NOT** immerse the head cradle assembly in the mild detergent solution.

- c. Allow all parts to air dry, or towel dry if necessary, before re-assembly. Inspect each part for serviceability prior to reassembly. Replace worn or deteriorated parts.
  - d. Reassemble the respirator. Store the respirator in a sealed plastic bag. Position the respirator so that the parts are not creased or stretched out of shape. Store in designated areas only.
3. Inspect the respirator immediately prior to each use or prior to donning the respirator and during cleaning. The following should be inspected on air purifying respirators (half-mask and full-face respirators):

PROCEDURE-CONT'D

**RESPONSIBILITY**

**ACTION**

All Personnel

**H. Care & Maintenance-Cont'd**

- a. Verify the respirator is clean and not distorted; there are no cracks or holes in the mask; there are no cracks, scratches or distortion in the lens. Report any deficiency to your supervisor.
- b. Check the filters/cartridges for serviceability; Check for any cracks, dents, or tears in the filter/cartridge. Ensure the filter/cartridge is approved for the respiratory hazard(s) involved. If a filter, ensure there is not an excessive build-up of contaminant on the filter medium. If a cartridge, ensure the Drew imposed monthly expiration date has not been exceeded. Replace filters/cartridges as necessary. Verify the threads on the filters/cartridges are tight and secure.
- c. Check the head cradle assembly for serviceability. Check for any broken or missing buckles. Ensure the elastomeric straps have retained their elasticity. Ensure the plastic portion of the head cradle assembly is not cracked. Replace head cradle assembly as necessary.
- d. Verify the valve seats are clean and the mounting threads for the filter/cartridge are not stripped. Verify the valve is clean and pliable (retains its elasticity and is not distorted) and that the valve sits properly on the valve seat. Replace the valve and/or valve seat as necessary.
- e. Verify the respirator fits snugly and comfortably. Perform the required user seal check(s) before entering the work area.

## PROCEDURE-CONT'D

### RESPONSIBILITY

All Personnel

### ACTION

#### **H. Care & Maintenance-Cont'd**

**NOTE: DO NOT** enter the contaminated area if you cannot obtain a good user seal check.

4. Inspect the following on Powered Air Purifying Respirators prior to each use or prior to donning the respirator and during cleaning.
5. Inspect the breathing tube assembly for damage. Replace all damaged parts before proceeding.
6. Inspect the outside of the unit (filter housing) for damage. Inspect the inside of the blower assembly for contamination by looking inside where the filters/cartridges attach to the housing. If contamination is present or suspected, do not use the PAPR. Immediately notify your supervisor.
7. Ensure the battery is fully charged, if possible.
8. Check the filters/cartridges for serviceability; Check for any cracks, dents, or tears in the filter/cartridge. Ensure the filter/cartridge is approved for the respiratory hazard(s) involved. If a filter, ensure there is not an excessive build-up of contaminant on the filter medium. If a cartridge, ensure the Drew imposed monthly expiration date has not been exceeded. Replace filters/cartridges as necessary. Verify the threads on the filters/cartridges are tight and secure.
9. Check and determine the airflow is sufficient.

**PROCEDURE-CONT'D**

**RESPONSIBILITY**

All Personnel

**ACTION**

**H. Care & Maintenance-Cont'd**

10. Disconnect the Breathing Tube Assembly from the Turbo Unit, unless an approved adapter is available for attaching the airflow indicator into the end of the Breathing Tube.
11. Plug the power lead from the Turbo Unit into a charged battery pack and turn on the battery pack.
12. Insert the base of the Airflow Indicator into the Turbo Unit's Outlet port (or end of the breathing tube assembly, as applicable).
13. Ensure the center of the float rests at or above the 6cfm indicator.

**NOTE:** If the airflow is insufficient (below 6cfm), replace the battery and check the airflow again, as indicated above. If the indicator float is still not at an acceptable level, install new filters/cartridges.

**NOTE:** Temperature and humidity may also affect the life of a cartridge. Replace any cartridges that may have been subjected to intense heat or prolonged humidity. During normal operations, this condition will not exist.

14. Replace any filters/cartridges that become wet during processing / cleaning.

**NOTE:** Filters/cartridges, which become wet via the water mist showers, do not need to be replaced.

**PROCEDURE-CONT'D**

**RESPONSIBILITY**

**ACTION**

All Personnel

**H. Care & Maintenance-Cont'd**

15. Immediately notify EH&S personnel and/or your supervisor if your respirator does not function properly. A new respirator will be issued to you to utilize if repairs cannot be made. Modifications and/or using one manufacturer's parts on another manufacturer's respirator is not permitted.
  
16. Store respirators in a manner to protect them against physical and chemical agents, such as vibration, shocks, sunlight, heat, extreme cold, excessive moisture or damaging chemicals. Respirators shall be stored to prevent distortion of the rubber or elastomeric parts. Respirators shall not be stored in places such as toolboxes unless they are protected from contamination, distortion or damage. Individual users should place their names on their own respirator.

### **Exhibit 1: Major Cleaning and Maintenance of Respirators**

**NOTE:** Masks shared by different individuals must go through a “major” cleaning as described below. To clean masks issued to individuals, follow the manufacturers instructions.

Respirators issued to a specific individual shall be cleaned and sanitized as frequently as necessary to ensure that proper protection is provided to the user. Cleaning procedures may vary slightly in accordance with manufacturer’s instructions. Respirators (SCBA/PAPR) shared (worn by different individuals) must be cleaned and sanitized after each use. Some areas, such as Pharmaceutical Production) may require more frequent cleaning (e.g., daily) while laboratory workers who use respirators infrequently may require a full cleaning every week.

Respirators may become contaminated with chemicals, products, and / or perspiration. If the contamination is light (i.e., no visible dust, etc) then prepackaged respirator cleaning wipes or equivalent may be used to wipe down the respirator. Otherwise, the following decontamination steps must be followed.

#### ***Suggested ANSI procedures for decontamination for cleaning and sanitizing respirators***

Remove, when necessary, any of the following components of the respiratory inlet covering assemblies before cleaning and sanitizing.

**NOTE: Do not remove any pieces that require the use of a tool to remove.**

1. Filters, cartridges, canisters;
2. Speaking diaphragms;
3. Valve assemblies;
4. Any components recommended by the respirator manufacturers.

A) Wash the respiratory inlet covering assemblies in warm (43C or 110F maximum temperature) cleaner/sanitizer solution. A stiff bristle (not wire) brush may be used to facilitate removal of dirt or other foreign material;

#### **EXHIBIT 1: Major Cleaning and Maintenance of Respirators – Cont’d**

B) Rinse the respiratory inlet coverings assemblies in clean, warm (43C or 110F maximum temperature) water;

C) Drain all water, and air dry, or towel dry if necessary, the respiratory inlet covering assemblies;

D) Clean and sanitize all parts removed from the respiratory inlet covering as recommended by the manufacturer;

E) Air dry, or towel dry if necessary, all parts. If necessary to remove foreign material, hand wipe the respiratory inlet covering assemblies, all parts, all gasket- and valve- sealing surfaces with damp, lint-free cloth;

- F) Inspect parts and replace any that are defective;
- G) Reassemble parts on the respiratory inlet covering assemblies;
- H) Place used filters/cartridges in a sealable plastic bag. Can be stored in the same location as the respirator.
- I) Visually inspect and, when possible, test parts and respirator assemblies for proper function.
- J) Place respirator in an approved container for storage.

Machines may be used to expedite the cleaning, sanitizing, rinsing and drying of large numbers of respirators. Extreme care shall be taken to ensure against tumbling, agitation, or exposure to temperatures above those recommended by the manufacturer (normally 43C or 110 F maximum) as these conditions are likely to result in damage to the respirators. Ultrasonic cleaners, clothes washing machines, dishwashers, and clothes dryers have been specifically adapted and successfully used for cleaning and drying respirators.

Cleaner / sanitizers that effectively clean the respirator and contain a bactericidal agent are commonly available. The bactericidal agent frequently used is a quaternary ammonium compound.

Strong cleaning and sanitizing agents and many solvents can damage rubber and elastomeric respirator parts. These materials must be used with caution.

#### **EXHIBIT 1: Major Cleaning and Maintenance of Respirators – Cont'd**

Alternatively, respirators may be washed in a detergent solution and then sanitized by immersion in a sanitizing solution. Some sanitizing solutions that have proven effective are: (a) a hypochlorite (bleach) solution (50 parts per million chlorine), 2-minute immersion; (b) and aqueous iodine solution (50 parts per million iodine), 2-minute immersion; or (c) a quaternary ammonium solution (200 parts per million of quaternary ammonium compounds in water with less than 500 parts per million total hardness), 2-minute immersion.

Different concentrations of quaternary ammonium salts are required to achieve a sanitizing solution with waters of varying hardness. Inflammation of the skin of the respirator user (dermatitis) may occur if the quaternary ammonium compounds are not completely rinsed from the respirator. The hypochlorite and iodine solutions are unstable and break down with time. They may cause deterioration of rubber or other elastomeric parts and may be corrosive to metallic parts. Immersion times should not be extended beyond the mentioned time periods, and the sanitizers shall be thoroughly rinsed from the respirator parts.