
****Printed copies of this document are uncontrolled, visit the EHS website at <http://www.wright.edu/admin/ehs/> for the latest revision****

I. Purpose

Provide personnel with appropriate respiratory protection from the hazards associated with their work, related activities, or job assignment after it has been determined effective engineering controls are not feasible or are not yet instituted.

II. Scope

This policy applies to all university personnel required to wear a respirator as part of their job task, class, or university sponsored activity. This policy also addresses the voluntary use of respirators by university personnel whose risk assessments do not require the mandatory use of respirators.

III. Definitions

A. Air-purifying respirator - A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element. Unless otherwise specified, "air-purifying respirator" refers to an N95 or higher filtering face piece respirator certified by the CDC/National Institute for Occupational Safety and Health (NIOSH).

Types of air purifying respirators include:

- 1. Disposable or filtering face piece respirators** - A respirator face piece entirely composed of filter material which is discarded when it becomes unsuitable for further use. The N95 respirator is a common disposable filtering face piece respirator.
- 2. Elastomeric or reusable respirators** – A respirator with a face piece that can be cleaned, repaired and reused, and is used with cartridges that are discarded and replaced when they become unsuitable for further use. These respirators include the half-mask (covering the mouth and nose) and full-mask (covering mouth, nose, and eyes) types. The respirator cartridges for these respirators are specific to different contaminants, including gases, vapors, or specific chemical contaminants. The cartridges must be selected to the specific hazard.
- 3. Powered air purifying respirators (PAPRs)** – A respirator with a battery-powered motor that pulls contaminated air through filters, and then moves the filtered air to the wearer's face piece. Although PAPRs may be more expensive than other air purifying respirators they may provide higher levels of protection and reduce physiological burden associated with negative pressure respirators and may increase the comfort by providing a constant flow of air on the face. These respirators may also be used with canisters or

Environmental Health & Safety Respiratory Protection Policy



cartridges. The use of hooded PAPR's does not require fit testing but does require compliance with all other components of the respirator program.

4. **Surgical respirators** – A type of respiratory protection that offers the combined protective properties of both a filtering face piece respirator and a surgical mask. Surgical N95 respirators are certified by NIOSH as respirators and are also cleared by FDA as medical devices. These certifications verify these respirators have been designed and tested and shown to be equivalent to surgical masks in certain performance characteristics, i.e. resistance to blood penetration and biocompatibility.

- B. **Assigned protection factor (APF)** - The level of respiratory protection that a respirator or class of respirators is expected to provide to an individual under the respiratory program. The higher the APF number the greater the level of protection provided to the user. APFs are used to select the appropriate class of respirators that will provide the necessary level of protection against airborne contaminants. See definition of maximum use concentration (MUC) to determine how APF's are applied.

OSHA Assigned Protection Factors (OSHA 3352-02 2009)					
Type of Respirator	¼ mask	½ mask	Full facepiece	Helmet/Hood	Loose-fitting facepiece
NOTE: "comfort mask" or Non-certified Masks ARE NOT to be used for hazardous substances! Nuisance Dust Only!!!		NONE			
1. Air-purifying Respirator (elastomeric seal & ½ mask with filtering face piece)	5	10	50	-	-
2. Powered Air-purifying Respirator (PAPR)	-	50	1,000	25/1,000	25
3. Supplied-air Respirator (SAR) or Airline Respirator					
* Demand mode	-	10	50	-	-
* Continuous flow mode	-	50	1,000	25/1,000	25
* Pressure-demand or other positive-pressure mode	-	50	1,000	-	-
4. Self-contained Breathing Apparatus (SCBA)					
* Demand mode	-	10	50	50	-
* Pressure demand or other positive-pressure mode (e.g., open/closed circuit)	-	-	10,000	10,000	-

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

-
- D. Engineering Controls** - the use of machinery or equipment to eliminate or reduce exposure to hazards. Examples include local exhaust systems.
- E. Fit test** - A qualitative or quantitative evaluation procedure to determine the fit of a respirator on an individual. (See Qualitative Fit Test, QLFT, and Quantitative Fit Test, QNFT).
- F. Immediately Dangerous to Life and Health** – 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 situation. It is also a limit for personal exposure to a substance defined by the United States National Institute for Occupational Safety and Health (NIOSH), normally expressed in parts per million (ppm). This concentration is considered to be the limit beyond which an individual will not be capable of escaping death or permanent injury without help in less than thirty minutes.
- G. Leak Test** - A respirator check by the user to determine if the respirator is properly seated to the face. Performed prior to each use.
- H. Maximum use concentration (MUC)** - The maximum atmospheric concentration of a hazardous substance from which an individual can be expected to be protected when wearing a respirator, and 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, the MUC is determined based on the relevant available information and informed professional judgment. Whenever the exposures approach the MUC, then the next higher class of respirator is required for the individual.
- MUCs do not apply to conditions that are immediately dangerous to life or health (IDLH); instead, SCBA type respirators are used. When a calculated MUC exceeds the IDLH level for a hazardous substance, or the performance limits of the cartridge or canister, then the maximum MUC is set at the lower limit.
- I. NIOSH Certified** - OSHA requires all respirators to be tested and certified by the National Institute for Occupational Safety and Health (NIOSH). NIOSH-approved respirators are marked with the manufacturer's name, the part number, the protection provided by the filter (e.g., N-95), and "NIOSH." This information is printed on the face piece, exhalation valve cover, or head straps. If a respirator does not have these markings, it is not certified by NIOSH. Respirators that are also surgical N-95 respirators are cleared by the FDA and therefore, are appropriate when protection from airborne and body fluid contaminants are needed. However, not all FDA surgical masks are NIOSH-approved. Certifications should be verified prior to purchase and use.

- J. OSHA Permissible Exposure Limit (PEL)** – The legal limit for exposure to a chemical substance or physical agent. For chemicals, it is usually expressed in parts per million (ppm) or milligrams per cubic meter (mg/m³). PEL's are established by the Occupational Safety and Health Administration (OSHA) and are usually given as a time-weighted average (TWA), although some are Short Term Exposure Limits (STEL) or Ceiling Limits (CL). A TWA is the average exposure over a specified period of time, usually defined at eight hours. This means that, for a defined period of time, an individual may be exposed to concentrations higher than the PEL, as long as the average concentration over the defined time period remains lower and the STEL or CL is never reached.

STEL is the average exposure over a 15-30 minute period of maximum exposure and a CL is the concentration that may not be exceeded. These limits are applied to irritants and other materials that have immediate effects.

- K. Qualitative fit test (QLFT)** - A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
- L. Quantitative fit test (QNFT)** - means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
- M. Respirator Risk Assessment** - A review of a process, activity, and/or equipment for hazardous substances generated that may create unsafe exposure levels. This usually requires Material Safety Data Sheet (MSDS) review, air sampling, and technical data to calculate a Maximum Use Concentration that is used for respirator selection.
- N. Self-contained breathing apparatus (SCBA)** - An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.
- O. Seal check** – See Leak Test

IV. Responsibilities

A. Personnel Wearing Respirators

1. Be familiar and comply with this Respirator Protection and Use Policy.
2. Obtain written medical clearance specifically for respirator use prior to initial use, annually, upon a significant change in tasks or medical condition, or as specified in writing by a physician.
3. Attend respirator training prior to use and at least annually.
4. Obtain a fit-test for each assigned respirator prior to use and at least annually.
5. Inspect each assigned respirator prior to and after each use and at least monthly if not used.
6. Perform leak tests or seal checks prior to use.
7. Wear the assigned respirator only for the identified, intended hazardous environment(s).

8. Leave the exposure area in the event of respiratory equipment malfunction, physical or psychological distress, or other unsafe conditions that require relief.
9. Immediately notify supervisor of any new or changed hazard or any significant change of medical condition.
10. Maintain a facial surface that provides a proper fit with the respirator (e.g. clean shaven).
11. Never perform a task or be present at any location that requires respirator use unless all provisions of this policy are observed.
12. Immediately notify supervisor of any problem or questions about an assigned respirator or its use.

B. Supervisors of Personnel Wearing Respirators

1. Be familiar and comply with this Respirator Protection and Use Policy.
2. Limit exposure to hazardous material by implementing engineering controls or by limiting the time an individual is exposed to a hazard.
3. Identify potential activities or environments that may require respirator use or changes in tasks, chemicals or other hazardous material usage to Environmental Health and Safety (EHS) so a current exposure assessment is performed.
4. Provide individuals exposed to airborne contaminants that exceed regulatory limits an approved respirator appropriate for tasks that expose them to those contaminants.
5. Ensure personnel have received medical clearance, fit-testing, and respirator use training prior to being assigned a task requiring respirator use and annually thereafter.
6. Maintain a current list of all personnel under their supervision who use respirators.
7. Provide a convenient, sanitary storage area for respiratory protection equipment and a means to clean and disinfect reusable equipment.
8. Monitor conditions, exposures, and physical stress to minimize detrimental conditions.
9. Ensure personnel voluntarily wearing respirators comply with Section V.E. of this policy.
10. Refer to EHS any questions or problems regarding respiratory protection.

C. Environmental Health and Safety

1. Develop, implement, and maintain the WSU Respirator Protection and Use Policy.
2. Maintain occupational health records, medical clearance documentation, training, and fit-test documentation.
3. Evaluate hazards, provide assessments of exposure to airborne contaminants, and make appropriate recommendations for respiratory protection.
4. Provide training for proper respirator use and care.
5. Schedule medical exams or services with the Occupational Health Physician or other designated practitioner for personnel required to wear respirators.

6. Provide for annual fit testing for personnel required to wear respirators.
7. Provide Human Resources with the job position titles that require the use of a respirator.

D. Human Resources

1. Ensure job descriptions identified for positions requiring the use of respirators include pre-employment conditions for respirator use, including, but not limited to the requirement to be deemed medically fit to wear a respirator and to pass a qualitative or quantitative fit test (depending on the type of respirator required) prior to employment.
2. Provide guidance if/when personnel fail medical clearance or fit testing.

V. Procedures

When effective engineering controls are not feasible, or while they are being instituted, and when respiratory protection is required, respirators must be used in the context of a comprehensive respiratory protection program (this policy) as required under OSHA's Respiratory Protection standard (OSHA 29CFR 1910.134). This policy includes procedures for respirator selection, fit testing, medical evaluation, proper use and maintenance of the respirator, procedures to ensure adequate air quality, and training of the respiratory hazards to personnel. The policy also includes procedures where respirator use is not required but respirators are being worn on a voluntary basis. The following steps ensure the compliance with the OSHA standard.

A. Respirator Risk Assessment

1. Any job task, class, or university sponsored activity that results in university personnel potentially being exposed to a hazardous substance (dust, vapor, mist, etc.) must be evaluated for the need to wear respiratory protection. University personnel aware of such task, class, or activity are to contact Environmental Health and Safety (EHS) to initiate a respirator risk assessment.
2. Any individual who performs a job task or participates in a class or a university sponsored activity that has been identified through a respirator risk assessment as having to wear a respirator shall be covered under this policy through the following steps.

B. Medical Evaluation

1. EHS will schedule an initial medical examination for all required personnel. A medical questionnaire is required and reviewed by a Health Care Professional. Some responses may require a respiratory physical and pulmonary function test to determine the individual's ability to wear a respirator. The respirator program requires the individual to pass a medical evaluation annually by completing a medical questionnaire and receiving clearance from the Health Care Professional. EHS will schedule this annual evaluation.

2. For new employees the initial exam will be part of the pre-employment physical arranged through Human Resources.

C. Fit for Duty Form

1. After initial medical examination, EHS will receive a Fit for Duty form which simply describes the individual's ability to wear a respirator. EHS will maintain the forms in the individuals occupational health file.

D. Fit Testing and Training

1. After receipt of a Fit for Duty form identifying an individual medically fit to wear a respirator EHS will arrange for the individual to be fit tested. The type of respirator required will determine the type of fit testing (QLFT or QNFT). During fit testing the individual will receive initial respirator use training.

E. Voluntary Use

1. If an individual chooses to wear a respirator after a risk assessment has determined it is not required the university will implement those elements of this policy necessary to ensure that the individual using the respirator voluntarily is medically able to use that respirator, and that the respirator is cleaned, stored, and maintained so its use does not present a health hazard to the user. Also, the individual must sign and be provided a copy of the Wright State University Voluntary Respirator Form D.

An individual wearing only a filtering face piece respirator (i.e. N95) is not required to be covered under this policy except for the signing and submission of the Wright State University Voluntary Respirator Form D.

F. Miscellaneous

1. Any employee required to wear a respirator who is not deemed fit for duty or cannot be successfully fit tested will be referred to Human Resources for guidance.
2. EHS will notify Human Resources of any job positions that require respirator use for inclusion of medical clearance into the pre-employment physical.

VI. Regulatory Limits

A. Occupational Exposure Limits

1. Occupational exposure limits that are used during a respirator risk assessment to determine the need and type of respirator, include, but are not limited to those found in 29 CFR 1910 Subpart Z.

VII. Training and Recordkeeping

- A. Respirator Training on the proper use and daily care of the respirator, exposure levels, and when to wear a respirator shall be required. EHS will provide the training on campus in conjunction with initial and annual fit testing.
- B. EHS will ensure the following recordkeeping requirements are maintained. Retention of records will be consistent with EHS's Records Retention Schedule.
 - 1. Name of the individual
 - 2. Type of test performed (QLFT or QNFT);
 - 3. Specific respirator tested
 - 4. When to wear the respirator
 - 5. Cartridge change out frequency where necessary
 - 6. Date of the test
 - 7. Test results

VIII. Information

A. Respirator Examples



NIOSH-Certified 1/2 mask
(N95) or Dust mask
APF = 10
Needs to be fit tested



Half mask (Elastomeric)
APF = 10
Needs to be fit tested



Full face-piece (Elastomeric)
APF=50
Needs to be fit tested



Self-contained breathing apparatus (SCBA)
Pressure-demand mode APF = 10,000
Needs to be fit tested

B. Non-respirator Examples

“Comfort Mask” below left, a.k.a, Face Mask and Dust Mask. Folded Surgical Mask below right. These types are not NIOSH certified respirators.



IX. References

- A.** 29 CFR 1910.134 Respiratory Protection
- B.** EHS Records Retention Schedule

Environmental Health & Safety Respiratory Protection Policy



X. Forms

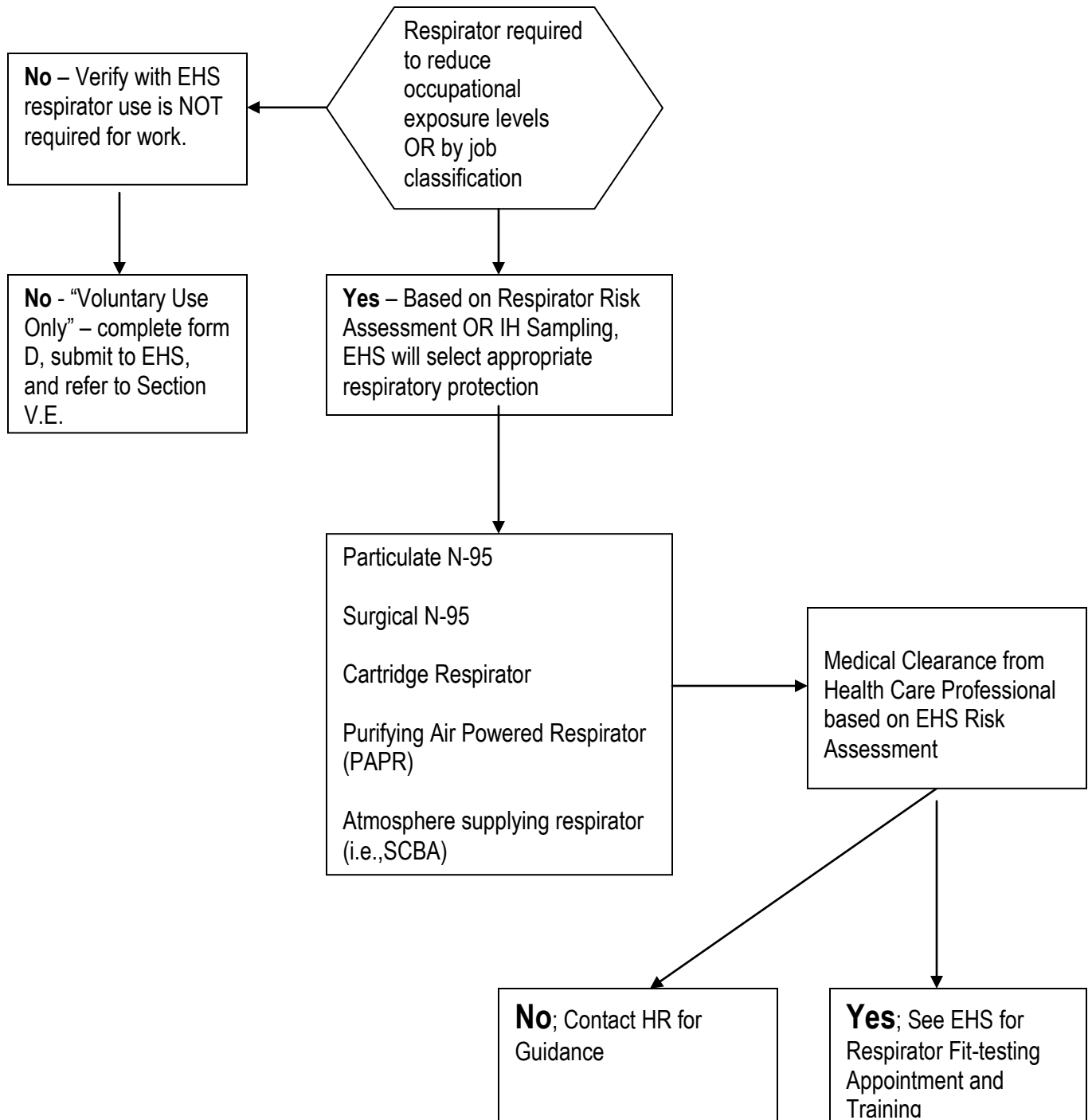
- A. Wright State University Respirator Decision Flow Chart (see Appendix A)
- B. Wright State University Voluntary Respirator Form D (see Appendix B)

XI. Approval

Implementation Date:	Approval:	Signature:
Last Reviewed:	Stephen Farrell Director, EHS	_____ Stephen Farrell
Last Revision Date:		

APPENDIX A

Wright State University Respirator Decision Flow Chart



Appendix B

Wright State University Voluntary Respirator Form D.

Taken from Appendix D to Sec. 29 CFR 1910.134 (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard:

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9784

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Understand all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

I have read and received a copy of the above information regarding voluntary use of respirators. I also understand Wright State University does not require me to wear a respirator and that there are no known hazards in my work area or occupational tasks that would require the wearing of a respirator. I have been provided a copy, or the location, of the Wright State University Respiratory Protection Program (available from the EHS website at <http://www.wright.edu/admin/ehs/> or by contacting EHS at ehs@wright.edu or ext. 2215) and will forward this signed copy to the EHS Office, located in 047 BSII.

Printed Name

Date

Signature