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I. Purpose

The purpose of the Respiratory Protection Program is to protect employees against harmful dust, fogs, fumes, mists, gasses, smokes, sprays, bioaerosols, and vapors through the use of respirators when engineering controls, substitution of materials, administrative controls, or other personal protective equipment (PPE) are not feasible. Environmental Health and Safety (EHS) shall determine the operations or conditions necessitating the use of respirators.

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 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.** 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.
- **C. Engineering Controls** the use of machinery or equipment to eliminate or reduce exposure to hazards. Examples include local exhaust systems.
- **D. 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).
- **E.** Immediately Dangerous to Life and Health (IDLH) 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.
- F. 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.
- **G.** 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.
- **H.** Quantitative fit test (QNFT) means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
- I. 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.
- **J. Self-contained breathing apparatus (SCBA)** An atmosphere-supplying respirator for which the breathing air source is carried by the user.



IV. Responsibilities

A. Personnel Required to use Respiratory Protection

- 1. Comply with department or site-specific policies on respirator use.
- 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, and clean them after use.
- 6. Wear the assigned respirator only for the identified, intended hazardous environment(s).
- **7.** Immediately notify supervisor of any new or changed hazard or any significant change of medical condition.
- **8.** Maintain a facial surface that provides a proper fit with the respirator (e.g. clean shaven).
- **9.** Immediately notify supervisor of any problem or questions about an assigned respirator or its use.

Personnel who choose to use respiratory protection shall follow the policies in section V.K. Voluntary Use.

B. Supervisors of Personnel Wearing Respiratory Protection

- 1. Be familiar and comply with this Respiratory Protection and Use Policy.
- 2. Ensure employees comply with department or site-specific policies on respirator use.
- **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.** Purchase appropriate respirators, cartridges, and approved replacement parts for employees included in the respiratory protection program with EHS assistance.
- **5.** Facilitate personnel 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, and implement a program for cleaning and inspecting 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 Appendix B 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 fittest documentation and make this documentation available to departments and supervisors with employees in the respiratory program.
- **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.** Ensure personnel in the respiratory program have obtained medical clearance prior to fit testing and use of 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.
- **8.** Assist departments in developing written respirator policies and additional responsibilities designated in this policy.

D. Human Resources

- 1. Ensure job descriptions identified for positions requiring the use of respirators include preemployment 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 in 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 ensure an initial medical questionnaire for all required personnel is performed for those with job tasks indicating respirator use. A medical questionnaire is required and reviewed by a Health Care Professional (HCP). 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. This evaluation will be repeated at intervals specified by EHS (or sooner if there is a change in the employee's medical condition or level of effort during tasks requiring respirator use). Only those employees required to wear a respirator due to exposure to formaldehyde or asbestos, and HAZWOPER personnel are required to participate in a physical medical evaluation and pulmonary function test in addition to the respirator questionnaire.
- **2.** The medical questionnaire and examination shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee.
- **3.** After initial medical examination, EHS will receive a Fit for Duty form, which simply describes the individual's ability to wear a respirator, thereby indicating the HCP's recommendation regarding any limitations on respirator use or additional follow-up. EHS will maintain the forms in the individuals occupational health file. The employee will be provided a copy of the HCP's recommendations.
- C. Respirator Selection Respirators and cartridges will be selected by EHS on the basis of hazards and the concentration of the contaminant to which an employee is exposed. A respiratory hazard evaluation shall be completed for each work site and task prior to a final respirator selection. This will document the workplace conditions, airborne contaminants, physical factors, and other protective equipment needed for the job site. This evaluation will serve as a guide for the evaluator to ensure all necessary elements are considered in the selection of respirators.
 - 1. Selection of respirators for IDLH atmospheres: All oxygen-deficient atmospheres (<19.5%) will be considered IDLH. If the employee will enter work sites where an IDLH atmosphere is present or expected, or where an unknown respiratory hazard exists, a selection will be made from among the following respirator types:
 - **a)** Full-face piece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes or;
 - **b)** Combination full-face piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
 - c) Respirators proved only for escape from IDLH atmospheres will be NIOSH-certified for escape from the atmosphere in which they will be used.



2. Selection of respirators for Non-IDLH atmospheres:

The respirators selected for non-IDLH work sites shall be adequate to protect the health of the employee and ensure compliance with OSHA regulatory requirements under routine and reasonably foreseeable emergency situations. Respirators selected shall be appropriate for the chemical state and physical form of the contaminant(s) present.

For protection against gases and vapors, the respirator selected shall be:

- a) An atmosphere-supplying respirator; or
- **b)** An air-purifying respirator, provided that:
- c) The respirator is equipped with an end-of-life indicator (ESLI) certified by NIOSH for the contaminant; or
- d) If there is no ESLI appropriate for the work site conditions, a change-out schedule to be implemented for canisters and cartridges based on objective information or data that will ensure canisters and cartridges are changed before the end of their service life. This information shall be documented in a department-specific respiratory protection policy.

For protection against particulates, the respirator selected shall be:

- a) A filtering facepeice (dust mask) with filter rating of at least 95% to 99.97% rating, in removing monodisperse particles of 0.3 micrometers and larger in diameter, with a P (oil <u>Proof</u>), N (<u>Not resistant to oil</u>), or R (<u>Resistant to oil prefix depending upon application; or,</u>
- b) An atmosphere-supplying respirator; or,
- c) An air-purifying respirator equipped with a filter certified by NIOSH as a high efficiency particulate air (HEPA) filter; or,
- d) An air-purifying respirator equipped with a filter certified for particulates by NIOSH; or,
- e) For contaminants consisting primarily of particles with diameters of a least 2 micrometers and larger, an air-purifying respirator equipped with any filter certified for particulates by NIOSH.
- **3.** Procedures for IDLH atmospheres The following procedures apply to all IDLH atmospheres:
 - **a)** At least one employee will be located outside the IDLH atmosphere with a line of communication for emergency services.
 - **b)** Visual, voice, or signal line communication will be maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere.
 - c) The employee(s) located outside the IDLH atmosphere will be trained and equipped to provide effective emergency rescue.
 - **d)** Supervisors shall be notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue.
 - e) EHS may be contacted to provide necessary assistance in emergency situations.
 - f) Employee(s) located outside the IDLH atmospheres will be equipped with:



- **g)** Pressure demand or other positive pressure SCBA or supplied-air respirator with auxiliary SCBA; and
- h) Appropriate retrieval and/or rescue equipment for removing the employee(s) who enter hazardous atmospheres. Equipment shall not create an additional hazard to personnel in an IDLH environment.

D. Fit Testing and Training

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). The employee will be fit tested with the same make, model, style, and size of respirator that will be used.

E. Preventive Conditions

Tight-fitting respirators shall not be worn when conditions prevent a good face seal. Such conditions include, but are not limited to, facial hair, any piece of clothing, personal protective equipment, or glasses that interfere with the seal of the facepiece to the face of the user. Only loose-fitting respirators are acceptable under these conditions.

F. Issuance

When a respirator is required, all respirators, cartridges, and approved replacement parts will be purchased by the department of the respirator wearer under the guidance of EHS. Respirators will be issued to an employee for his or her exclusive use when feasible.

G. Respirator Use

Respirators will be used in accordance with specific procedures described in the manual provided by the manufacturer. Prior to each use in a contaminated atmosphere, the user of a tight-fitting respirator will perform a positive and negative pressure fit check and adjust the mask until a good fit is achieved. Users of loose-fitting respirators will assure adequate airflow to the respirator facepiece before entering a contaminated atmosphere.

1. Breathing air quality and use:

Respirator users required to utilize supplied air and SCBA respirators shall be provided breathing gases of high purity as follows:

- a) Compressed and liquid oxygen will meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and,
- b) Compressed breathing air will meet at least the requirement for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
 - (i) Oxygen content (v/v) of 19.5-23.5%;



- (ii) Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
- (iii) Carbon monoxide (CO) content of 10 ppm or less;
- (iv) Carbon dioxide content of 1,000 ppm or less; and
- (v) Lack of noticeable odor.

H. Maintenance

Each respirator user will have the responsibility for maintaining his/her own respirator. Parts should be replaced when needed. Respirators intended for non-routine use, a designated competent person within the owning department will maintain general use.

1. Inspection

Respirators used routinely will be inspected before each use by the respirator wearer and during cleaning. Emergency use respirators must be inspected before and after each use and at least monthly. An EHS representative will occasionally review departmental records of the monthly inspection of emergency use shared respirators. Documentation of the inspection will be provided to the EHS representative at the time of the inspection.

The manual supplied by the manufacturer with each respirator will provide specific inspection procedures.

The respirators will be inspected as follows:

- a) All respirators used in routine situations will be inspected before each use and during cleaning;
- b) All respirators maintained for use in emergency situations will be inspected at least monthly and in accordance with the manufacturer's recommendations, and will be checked for proper function before and after each use; and,
- **c)** Emergency escape-only respirators will be inspected before being carried into the workplace for use.

2. Cleaning, Disinfection, and Storage

Respirators will be cleaned and disinfected after each use according to the procedures for specific respirators. OSHA has published Respirator Cleaning Procedures (29 CFR 1910.134 Appendix B-2). After cleaning and drying, respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. They shall be packed or stored to prevent deformation of the facepiece and exhalation valve. It is not acceptable to hang a respirator by its straps.



3. Repair

The designated competent person using manufacturer-approved replacements parts only will repair respirators needing repair. Repairs must be made in a manner that maintains the respirator's NIOSH approval.

I. Emergency Use

The only respirator approved for entry into all contaminated atmospheres is a Self-Contained Breathing Apparatus (SCBA) used in the pressure-demand mode. All individuals who will be required to wear an SCBA must be trained, tested, and approved by EHS. Other types of respirators may be used for escape from contaminated atmospheres and for tasks performed in atmospheres that are not IDLH (immediately dangerous to life or health). Use of these respirators for emergencies shall be approved by EHS.

J. Worksite Specific Policies

All work areas where respirators are used must have site- or task-specific respirator policies. These policies must outline when respirators will be used, the types of respirators for each application, provisions for employees with beards or other preventive conditions, cartridge change schedules for air purifying respirators, storage locations for respirators, and inspection/maintenance schedules for respirators that are not used routinely. They must also specify the responsibilities of respirator users, their supervisors, and others who may be involved in respirator or cartridge ordering, recordkeeping, and notification of responsible EHS personnel about new employees who will be required to wear respirators.

K. Voluntary Use

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 (Appendix B).

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 (Appendix B).

L. Program Evaluation

At the direction and guidance of the EHS respiratory program administrator, departmental representatives will conduct evaluations of the workplace to ensure this written Respiratory Protection Program and the work site-specific programs are being properly implemented.



During the evaluations, the departmental representative will consult with employees to ensure they are using the respirators properly.

Evaluations of the workplace will be conducted as necessary to ensure the provisions of the current written programs are being effectively implemented and continue to be effective. Employees required to use respirators will be regularly consulted to assess the employees' views on program effectiveness and to identify any problems. Any problems identified during the assessment will be corrected. Factors to be assessed include, but are not limited to:

- 1. Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
- **2.** Appropriate respirator selection for the hazards the employee is exposed;
- 3. Proper respirator use under the workplace conditions the employee encounters; and,
- **4.** Proper respirator maintenance.

M. Miscellaneous

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.

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

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

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. Training will include the respiratory hazards to which employees are potentially exposed during routine and emergency situations. Employees shall receive specific instructions related to the respirator they use and, when possible, the training will include practice in donning the respirator. The training will consist of instruction of selection, inspection, use, and maintenance of respirators. Employees must be able to demonstrate knowledge of why the respirator is necessary, how to care for and use the respirator properly, how to recognize when the respirator is not functioning properly, and general requirements of this respiratory protection policy.



EHS will ensure the following recordkeeping requirements are maintained. Retention of records will be consistent with EHS's Records Retention Schedule.

- A. Name of the individual
- **B.** Type of test performed (QLFT or QNFT);
- C. Specific respirator tested
- **D.** When to wear the respirator
- E. Cartridge change out frequency where necessary
- **F.** Date of the test
- **G.** Test results

VIII. Information

A. Respirator Examples



NIOSH-Certified ½ 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

X. Forms

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



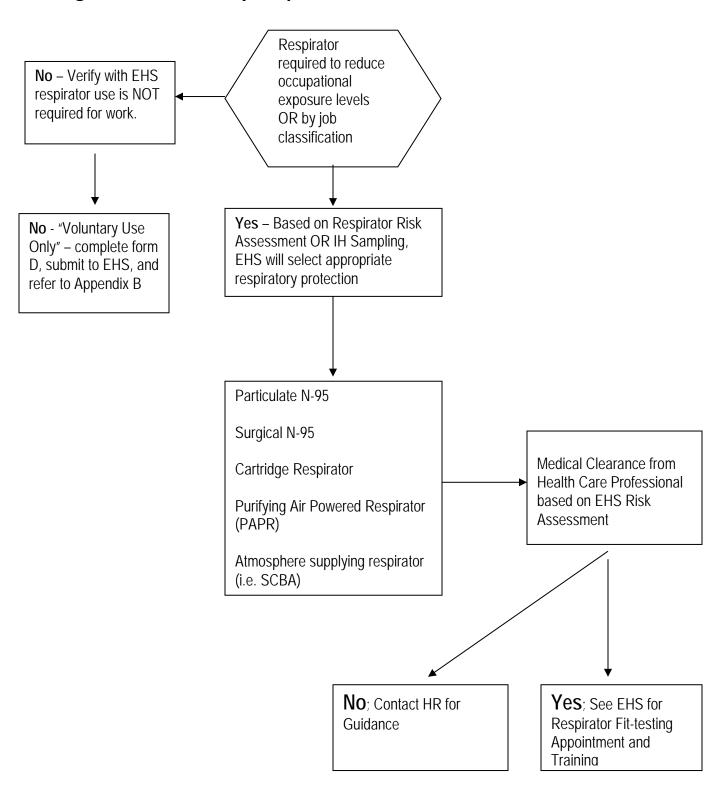
XI. Approval

Implementation Date: 9-30-09	Approval:	Signature:
Last Reviewed: 06-30-16	Stephen Farrell Director, EHS	(signature on file)
Last Revision Date: 06-30-16		Stephen Farrell



APPENDIX A

Wright State University Respirator Decision Flow Chart





Appendix B

Wright State University Voluntary Respirator Form

An employer may permit the voluntary use of respirators. This form must be completed and filed prior to respirator use.

1. OSHA's 1910.134 Appendix D Mandatory Information for Employees Using Respirators When Not Required Under Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. 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:

- Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
- 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.
- 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.
- Keep track of your respirator so that you do not mistakenly use someone else's respirator. [63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998]
- 2. Do not reuse filtering face pieces (e.g. N95, dust masks). They are designed for single use only.

3. Medical Evaluations

The purpose of a medical evaluation is to determine if an individual can safely tolerate the physiological burden associated with respirator use by identifying general medical conditions that can compromise an individual's ability to wear a respirator. Specific medical conditions that can compromise an individual's ability to safely wear a respirator include: cardiovascular and respiratory diseases, reduced pulmonary function, neurological or musculoskeletal disorders,



impaired sensory function, psychological disorders, and pregnancy. See below for medical evaluation requirements.

4. Requirements for voluntary respirator use:

Requirements for voluntary use of filtering face pieces (e.g. N95, dust masks)

- Completed WSU Voluntary Respirator Form D submitted to ehs@wright.edu
- Completion of WSU Occupational Health Risk Assessment at Contact ehs@wright.edu
- Medical evaluation and fit testing are NOT required for voluntary use of N95 respirators.

Requirements for voluntary use of negative air purifying full or half face respirators

- Completed WSU Voluntary Respirator Form D submitted to ehs@wright.edu
- Completion of WSU Occupational Health Risk Assessment at Contact ehs@wright.edu
- Medical evaluation and clearance for respirator use by a licensed health care professional before being using negative air purifying full or half face respirators.
- Completion of online Respirator Initial Training
- Fit testing is NOT required for voluntary use of negative air purifying full or half face respirators.

Date:	
Employee Name (Print):	
Department:	
Supervisor	
Proposed voluntary use of	
respirator:	
By signing this document I acknowledge that I have read and understand the above information are have been medically evaluated by a licensed healthcare professional prior to respirator use (if applicable).	nd
Employee Signature	