

Southern Illinois University School of Medicine

Infection Control and Safety Committee

ICSC Protocols & Procedures

Subject: Respiratory Protection Program	Protocol or Procedure #: ICSC 11.0
Cross Reference: OSHA's Respiratory Protection Standard (29 CFR 1910.134)	Issued For: <input checked="" type="checkbox"/> SIU-SOM & SIU-HealthCare <input type="checkbox"/> Springfield Campus Only <input type="checkbox"/> Other _____
Departments of SIU-SOM must comply with the following. Approved by: _____ Approved by: <u>Infection Control and Safety Committee</u> (Committee)	Review Frequency: Annual Revision Date: 10/13/2021 Replaces: Respiratory Protection Program version 01/08/2019 Effective Date: 2002

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I. Purpose

The Infection Control and Safety Committee (ICSC) has determined that employees at SIU School of Medicine (SIU-SOM) and SIU HealthCare (SIU-HC) are exposed to respiratory irritants and hazards during routine operations and during accidental spills and releases. These include chemical and physical agents such as nuisance dust, particulates, mists and vapors. Some employees have potential to be exposed to hazardous biological agents such as mold or infectious disease organisms.

The purpose of this program is to ensure employees are protected from exposure to respiratory hazards. Administrative and engineering controls are the primary means to control exposure to airborne contaminants. General and local ventilation controls, such as fume hoods, are designed to reduce airborne contaminant levels. However, these controls are not feasible for all operations or may not adequately control identified hazards. In some situations respirators must be used. Employees are provided with respirators that are applicable and suitable for the purpose intended at no cost to the employee.

In addition, some employees have requested to wear respirators during operations that do not require respiratory protection. Voluntary use of respirators is allowed on a case-by-case basis, if the use of the respirator will not jeopardize health or safety. Voluntary respirator use is subject to the requirements outlined in Section III, Respiratory Protection Program, under Scope and Application. Approved respirators used on a required and voluntary basis are listed in Section III, Respiratory Protection Program, in Table 1. Employees are provided respirator training and medical evaluation at no cost to the employee.

II. Definitions

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.

Assigned Protection Factor (APF): the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program.

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

Elastomeric respirator: a reusable half or full face respirator constructed of a polymer having the elastic properties of natural rubber that allow for repeated cleaning.

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Emergency situation: any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee exposure: exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

Filter or air purifying element: a component used in respirators to remove solid or liquid aerosols from inspired air.

Filtering facepiece: a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium (a disposable dust mask).

Fit factor: a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test: the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (Also see Qualitative fit test QLFT and Quantitative fit test QNFT.)

High efficiency particulate air (HEPA) filter: a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100 (not resistant to oil), R100 (oil resistant), and P100 (oil proof) filters.

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

Immediately dangerous to life or health (IDLH): an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Loose-fitting facepiece: a respiratory inlet covering that is designed to form a partial seal with the face.

Maximum use concentration (MUC): the maximum atmospheric concentration of a hazardous substance from which an employee 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

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hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.

N95 respirator: a respirator that is certified to be at least 95% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The N designates that the respirator is not resistant to oil particulates.

Negative pressure respirator (tight fitting): a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

NIOSH: the National Institute of Occupational Safety and Health, a U.S. federal agency that conducts research and makes recommendations to prevent worker injury and illness.

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

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

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.

Quantitative fit test (QNFT): an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

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

Tight-fitting facepiece: a respiratory inlet covering that forms a complete seal with the face.

User seal check: an action conducted by the respirator user to determine if the respirator is properly seated to the face.

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III. Respiratory Protection Program

A. Qualified Program Administrator

The Safety/Environmental Compliance Associates of the Environmental Health and Safety Office and the Office of Risk Prevention, Patient Safety & Employee Health staff are qualified to administrate the respiratory protection program with guidance from the Infection Control and Safety Committee (ICSC). The program administrative duties include:

- Implementation of the respirator program.
- Evaluating the effectiveness of the program.
- Expanding and revising the program as needed.

B. Scope and Application

This program applies to all employees. A limited number of employees are required to wear respirators to perform occasional work duties (see Table 1 below). These employees are subject to all of the elements of the respiratory protection program. In addition, employees who opt to wear respirators voluntarily may be subject to the medical evaluation, cleaning, maintenance, and storage elements of this program, and are provided with information specified in the Section X, Training and Information. The voluntary use of filtering facepieces (dust masks) is subject only to voluntary use training and informational requirements; medical evaluation is not required.

The School's Tuberculosis Control Plan and Communicable Disease Protocol provide additional guidelines and procedures for respiratory protection from specific infectious diseases.

Table 1: Respirator Use at SIU School of Medicine and SIU HealthCare

Type of Respirator	Employee or Work Area	Respiratory Contaminant	Type of Use
Disposable Respirator	Facilities Management Building Operating Engineers	Nuisance dust	Voluntary
Disposable Respirator	Facilities Management Building Service Workers	Nuisance dust	Voluntary
Disposable Respirator	Facilities Management Groundskeepers	Nuisance dust	Voluntary
Disposable Respirator	DLAM Veterinary Technicians; Animal Care Coordinator, Technicians and Caretakers	Nuisance dust and mist	Voluntary
Disposable Respirator	Facilities Management Machinist Welder	Nuisance dust	Voluntary

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Disposable Respirator	Clinical Health Care Providers and select individuals throughout SIU-HC clinics when leading a patient to an isolation room	Care of patients with airborne spread illnesses	Voluntary
Disposable Respirator	Laboratory Researchers	Nuisance dust, mist and splash	Voluntary
Disposable Respirator	Information Resources Technicians	Nuisance dust in construction sites and lifting ceiling tile	Voluntary
Disposable Respirator	Health Care Providers of the Infusion Unit	Administration of Bacillus Calmette-Guerin (BCG) and care of isolation patients	Required
Disposable Respirator	Cancer Institute Pharmacist and Pharmacy Technicians	Formulation of BCG and hazardous drugs	Required
Disposable Respirator or PAPR with HEPA filtration	SIU Health Care Clinic Providers	Care of patients with diseases requiring airborne precautions	Required
PAPR with HEPA and multi-gas cartridges	Facilities Management Asbestos Competent and Designated Persons	Asbestos sample collection and remediation oversight	Required
Half face piece with HEPA filtration	Facilities Management selected Building Operating Engineers	mold and mildew	Required
Disposable Respirator	Laboratory Researchers	Manipulation of certain toxic chemicals	Required
PAPR with HEPA and multi-gas cartridges	Environmental Health and Safety Office Safety/Environmental Compliance Associates	Chemical and biological spills and releases	Required

C. Program Provisions Provided at No Cost to Employees

All elements of the Respiratory Protection Program including medical evaluations, fit testing and respirator training are provided at no cost to the employee and during normal work hours or at a time convenient to the employee.

IV. Selection of Respirators

A. General Requirements

1. Selection of Appropriate Respirators

Department/Unit supervisors with assistance from a Program Administrator evaluate respiratory hazards and, when indicated, identify appropriate respirators based on the respiratory hazard(s) to which the worker is exposed, as well as workplace and user factors that affect respirator performance and reliability.

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2. NIOSH Approved Respirators

Respirators approved for use at SIU-SOM and SIU-HC must be NIOSH certified respirators that are applicable and suitable for the intended purpose and ensure compliance with OSHA requirements. Approved respirators selected for identified respiratory hazards are listed in column 1 of Table 1, on pages 6 and 7.

3. Identification and Evaluation of Respiratory Hazards

With the assistance of a Program Administrator, department/unit supervisors identify and evaluate respiratory hazards in their work areas. Respiratory hazards are considered for normal work processes and foreseeable emergency situations. The basis of the evaluation for a chemical hazard is the concentration of the contaminant. The concentration is based on monitoring results or a reasonable estimate based on the quantity, physical properties and physical state of the contaminant. When potential exposure to a respiratory hazard cannot be reasonably estimated the atmosphere is considered to be IDLH and employees will not be allowed to enter the area.

4. Selection of Suitable Respirator

When respirators are indicated, various models and sizes of respirators are considered so that the respirator chosen is appropriate for the hazard, acceptable to the user, and correctly fits the user.

B. Immediately Dangerous to Life and Health (IDLH) Atmospheres

No SIU-SOM or SIU-HC employee will be allowed to enter or work in IDLH conditions.

C. Respirators for Non-IDLH Atmospheres

1. Assigned Protection Factor (APF)

The first consideration when selecting a respirator for protection against a chemical hazard is the respirator's assigned APF, which is listed in Table 1 of 29 CFR 1910.134 (d) (3) (i) (A). Filtering facepiece and half facepiece air purifying respirators have an APF of 10; full facepiece air purifying respirators have an APF of 50; and loose fitting PAPRs have an APF of 25.

2. Maximum Use Concentration (MUC)

To be approved for use, the selected respirator will have a MUC that exceeds the concentration of the contaminant in the atmosphere. The concentration of a contaminant is based on monitoring results or a reasonable estimate based on the quantity, physical properties and physical state of the contaminant. The MUC is calculated by multiplying a respirator's assigned protection factor (APF) by the chemical's NIOSH REL or OSHA PEL.

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3. Physical State of Chemical Contaminants

a. Particulates

For protection from exposure while monitoring the collection of samples of asbestos containing building materials or during remediation oversight, an air-purifying respirator or a PAPR equipped with a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter is used.

For nuisance dust and mists consisting primarily of particles with diameters of at least 2 micrometers, a filtering facepiece (dust mask), an air-purifying respirator, or a PAPR equipped with any filter certified for particulates by NIOSH is used.

For protection from chemicals that may become airborne during manipulation, laboratory staff may be required by an ICSC protocol to wear a filtering facepiece (dust mask), or may choose to voluntarily wear a disposable respirator.

b. Vapors

EHSO Safety/Environmental Compliance Associates respond to small (less than 1 gal) spills of moderately hazardous chemicals. Because of the wide range of chemicals present, each spill and the limitations of available respiratory protection are assessed before beginning clean-up operations. When manufacturer's references indicate that available respirators and/or cartridges will not provide adequate protection, an outside contractor is summoned to clean up the spill.

The approved respirator for spill response is a tight fitting, elastomeric respirator or a PAPR equipped with multi-gas cartridges. This allows for protection from a wide variety of hazardous vapors. A defined change-out schedule is in place for these cartridges. The change-out schedule is based on manufacturer's references and ensures that a cartridge is changed well before the end of its service life. The cartridge change-out schedule is defined in Section IX, Filters and Cartridges.

D. Biological Respiratory Contaminants

In some instances respirator use is mandated by OSHA or guided by the Centers for Disease Control (CDC) for protection against exposure to infectious diseases and other biological hazards. Diseases assigned to airborne precautions require, at a minimum, use of N95 respirators to protect health care providers from exposure. The CDC assigns the airborne precautions to the following diseases and pathogens (Figure 3 of the 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Health Care Settings):

- Aerosolizable spore-containing powders such as Anthrax/Bacillus anthracis

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- Aspergillosis (massive soft tissue infection with copious drainage requiring repeated irrigations)
- Varicella (chickenpox) and herpes zoster (disseminated or in immunocompromised host)/Varicella zoster virus
- Measles (rubeola)/Measles virus
- Monkeypox/Monkeypox virus
- Severe acute respiratory syndrome (SARS)/SARS-associated coronavirus (SARS-CoV)
- Smallpox (variola)/Variola virus
- Tuberculosis (TB)/Mycobacterium tuberculosis
- Novel or emerging pathogens and any other disease for which public health recommends airborne infection isolation

V. Medical Evaluations

A. Determination of Ability to Use a Respirator

Employees identified as candidates to wear a required respirator must first successfully complete a medical evaluation coordinated by the Employee Health Nurse. Medical evaluations are coordinated internally, so all records generated during an evaluation remain in the employee's health file if needed for future evaluations. The medical evaluation determines the employee's physical ability to use a respirator. Medical evaluations are offered to employees free of charge. Any candidate who refuses to complete the medical evaluation process or whose medical determination restricts/disapproves respirator use is not fit tested or allowed to wear a respirator at work.

B. Medical Evaluation Procedures

The Employee Health Nurse coordinates medical evaluations. The Employee Health Nurse may make the medical determination for an employee independently or after consultation with an SIU-HC Infectious Diseases Physician. The medical evaluation (i.e. medical questionnaire and necessary follow-up medical examinations) is administered confidentially during the employee's normal working hours or at a time convenient to the employee.

C. Medical Questionnaires

Two medical questionnaires are used (see Appendix A). A questionnaire submitted by employees who will use a disposable respirator or loose fitting PAPR; another questionnaire submitted by employees who will use a half or full face, elastomeric respirator. The questionnaires are available on the ICSC HIVE site. An employee must complete and submit the appropriate medical questionnaire directly to the Employee Health Nurse at mail code 9639. Assistance with completing the questionnaires is available by contacting the Employee Health Nurse at 545-8970.

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D. Follow-Up Medical Examinations

Employees who respond “yes” to medical questionnaire questions 1 through 8 or whose completed questionnaire demonstrates need, undergo follow-up medical examinations (e.g. medical tests, consultations, diagnostic procedures) as deemed necessary by the Employee Health Nurse or consulting SIU-HC physician.

E. Medical Determination

The final determination is not made until all necessary follow-up medical examinations are complete. The employee and, when necessary, the EHSO are notified in writing of the final determination, which includes the following information:

- whether the employee is approved to wear a respirator;
- any restrictions for respirator use; and
- whether more frequent medical evaluations are needed.

The Employee Health Nurse documents the notification and stores it in the employee’s health file.

Employees may contact the Employee Health Nurse at 545-8970 to arrange an opportunity to discuss the results of their medical questionnaire, follow-up examination and medical determination.

F. Additional Medical Evaluation

Medical evaluation is repeated on an annual basis, and when the Employee Health Nurse, Supervisor, or a Respirator Program Administrator determines that an employee needs to be reevaluated because:

- medical determinations state that medical evaluations must be repeated more frequently;
- an employee experiences a medical condition that may influence his or her physical fitness to wear a respirator (e.g. heart attack, asthma, emphysema);
- an employee reports medical signs or symptoms that are related to physical ability to use a respirator (e.g. dizziness, lightheaded, tightness in chest);
- observations made during fit testing and program evaluation indicate the need for medical reevaluation; or
- a change occurs in workplace conditions (e.g. physical effort, protective clothing, temperature, etc.) that may increase in the physiological burden placed on an employee.

VI. Fit Testing

A. General Requirements

A successful qualitative or quantitative fit test is necessary before employees are allowed to wear a required, negative pressure, tight-fitting respirator, and is available upon request to employees voluntarily using negative pressure respirators. The fit test is conducted in the respirator assigned to the employee or the exact model of

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disposable respirator to be worn. Fit testing is not required for positive pressure, loose fitting, powered air-purifying respirators (PAPRs).

Fit testing is not performed until the employee's medical determination is complete and allows unrestricted use of the intended respirator. Employees are not allowed to wear a required tight-fitting respirator at work until a successful fit test is achieved. Should the employee be unable to achieve a successful fit test, they will be excluded from work activities that would require the respirator.

B. Fit Test Procedure

1. Fit Test Frequency

At a minimum fit testing is repeated on an annual basis. A fit test is also required when an employee:

- experiences physical changes that may interfere with the respirator seal (e.g. weight change \pm 20 lb., significant dental changes, facial scarring, facial cosmetic surgery);
- is unable to achieve a successful seal-check;
- obtains a new model of respirator; and
- indicates that the respirator fit is unacceptable, and a replacement respirator has been selected.

2. Qualitative Fit Test (QLFT)

QLFTs compliant with 1910.134 Appendix A are provided using saccharine or bitrex as the challenge agent. A QLFT is used to test negative pressure air-purifying respirators required to achieve a fit factor of 100 or less (i.e., contaminant levels do not exceed 10 times the PEL). Program Administrators conduct QLFT or approves other qualified individuals to conduct a fit test. Fit tests conducted at SIU-SOM and SIU-HC are documented on the Qualitative Fit Test Record (Appendix C).

3. Quantitative Fit Test (QNFT)

A QNFT is required when respirators will be used in atmospheres with contaminant levels that exceed 10 times the PEL and when an employee is unable to detect the challenge agents used for QLFT. The employee's supervisor must make arrangements for the test to be conducted at the Midwest Occupational Health Associates (MOHA), located at 775 Engineering Avenue Springfield, IL (217-522-4300). The employee's department must cover the costs of the QNFT.

VII. Use of Respirators

Proper respirator use and emergency procedures are necessary to prevent employee exposure to respiratory hazards. Employees follow established conditions of use to ensure the effectiveness of the respirator.

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A. Facepiece Seal Protection

1. Facial Hair and Interference with Facepiece Seal

Tight-fitting facepieces are not worn by employees who have facial hair or any other condition that interferes with the face-to-facepiece seal or valve function.

2. Prescription Glasses and Personal Protective Equipment

Prescription glasses and goggles or other personal protective equipment worn in addition to a respirator are allowed if worn in a manner that does not interfere with the face-to-facepiece seal or valve function.

3. Facepiece Seal Check

A facepiece seal check is conducted each time an employee dons a tight-fitting respirator. The hazardous environment is not entered until a successful seal check is achieved.

- a. Elastomeric respirator users complete a positive and/or negative pressure check as described below, in accordance with 1910.134 Appendix B-1.

Positive Pressure Check

Close off the exhalation valve and exhale gently into the facepiece. This process may require the wearer to first remove the exhalation valve cover and then carefully replacing it after the test. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal.

Negative Pressure Check

Close off the inlet opening of the cartridges by covering with the palm of the hands, inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The test can be performed by covering the inlet opening of the cartridges with a thin latex or nitrile glove. If the facepiece remains slightly collapsed and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

- b. Filtering Facepieces (Disposable Respirators)

Filtering facepiece (disposable respirator) users follow the manufacturer's procedure for performing a seal check.

4. Respirator Modification

Respirators are worn as directed by the manufacturer; not altered or modified in any manner that is not described in the manufacturer's instructions.

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B. Continuing Respirator Effectiveness

Supervisors monitor work areas for changes that affect employee exposure or stress. When a change that may impact respirator effectiveness is detected, the employer shall evaluate the continued effectiveness of the respirator.

1. Respirator Failure and Emergencies

Employees leave the hazardous area when:

- they detect breakthrough, changes in breathing resistance, or leakage of the facepiece;
- the respirator filter, cartridge or PAPR battery needs to be replaced; or
- they experience symptoms of distress, such as dizziness, shortness of breath or chest pain.

2. Failed Respirators

Any respirator that fails is taken out of service immediately. Follow the procedures for respirator inspection and repair (Section VIII, letters C and D) before returning the respirator to service.

3. Extended Use

During periods of extended use employees are allowed to leave the hazardous area periodically to wash their face and respirator facepiece to prevent eye or skin irritation associated with prolonged respirator use.

C. IDLH Atmospheres and Firefighting Operations

No employee at SIU-SOM or SIU-HC encounters IDLH atmospheres or engages in firefighting operations during normal work activities or foreseeable emergencies.

VIII. Maintenance and Care of Respirators

This section pertains to the maintenance and care of reusable elastomeric respirators assigned to employees while performing specific tasks. There are no emergency use respirators, escape respirators or self-contained breathing apparatus at SIU-SOM and SIU-HC.

A. Cleaning and Disinfecting

Employees are responsible for maintaining their assigned respirator in a clean, sanitary and good working condition. Respirators are cleaned and disinfected using the procedure below or the respirator manufacturer's procedure that is of equivalent effectiveness.

Cleaning and disinfecting procedure in accordance with 1910.134 Appendix B-2:

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- 1) Remove filters, cartridges, or canisters. Disassemble facepieces by removing any components recommended by the manufacturer. Discard or repair any defective parts.
- 2) Wash components in warm (110 deg. F maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- 3) Rinse components thoroughly in clean, warm, preferably running water. Drain.
- 4) When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
 - hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry chlorine bleach to one liter of warm water (110 deg. F);
 - aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of warm water (110 deg. F); or,
 - other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
- 5) Rinse components thoroughly in clean, warm, running water. Drain. Thorough rinsing is extremely important. Detergents or disinfectants that dry on facepieces may result in dermatitis, and may cause deterioration of rubber or corrosion of metal parts if not completely removed.
- 6) Components should be hand-dried with a clean lint-free cloth or air-dried.
- 7) Reassemble the facepiece, replacing filters, cartridges, and canisters where necessary.
- 8) Test the respirator to ensure that all components work properly.

B. Storage

Employees store their assigned respirators in accordance with manufacturer instructions; protected from physical damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. Respirators are positioned during storage to prevent deformation of the facepiece and exhalation valve. Cartridges are removed from the respirator and stored in plastic zip-lock bags to preserve chemical absorbing elements.

C. Inspection

Employees inspect their assigned respirators before each use and during cleaning. At a minimum an inspection includes a check of respirator function, tightness of connections, and the condition of the various parts (e.g. the facepiece, head straps, valves, cartridges or filters); and a check of elastomeric parts for pliability and signs of deterioration.

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D. Repairs

The employee must report to their supervisor or EHSO when their respirator fails inspection or is otherwise found to be defective. Defective respirators are removed from service until discarded or repaired in accordance with the following:

1. Repairs or adjustments to elastomeric respirators are made only by the employee assigned to use the respirator, the employee's supervisor or the EHSO; using only the manufacturer's NIOSH-approved parts designed for the respirator.
2. Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed.

IX. Filters and Cartridges

SIU-SOM and SIU-HC primarily use filtering face pieces. Some tight-fitting respirators with particulate and chemical cartridges are used occasionally; specifically, P100 particulate filters and multi-gas cartridges.

A. Identification

1. Filtering Facepieces

Disposable respirators display permanent markings that indicate NIOSH approval, filter efficiency (N95), and facepiece size.

2. Cartridges and Filters

Manufacturers use color codes for NIOSH approved filter and cartridge attachments on their tight-fitting, elastomeric respirators. These also display a permanent NIOSH approval label and markings that indicate the rating(s) of the filter and/or cartridge.

B. Change-Out Schedule

1. Particulate Filters (N95, P100)

Particulate filters must be changed when physical damage, contamination, or increased breathing resistance is noted.

2. Cartridges for Protection from Gas or Vapor

EHSO uses [3M Service Life Software Version: 3.3](#) to determine when a chemical cartridge needs to be changed. This software allows a respirator user to calculate the amount of cartridge service life spent during a spill response. A cartridge is changed when the software indicates that one half of its service life is spent or after 2 years of service, whichever occurs first. The date a cartridge was put into service is written on the cartridge.

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X. Training and Information

A. Elements of Training

Training is provided to respirator users and their supervisors on the contents of the written respiratory protection program and the OSHA Respiratory Protection Standard. Supervisors instruct their staff on departmental procedures for respirator use and maintenance.

Upon completing respirator training employees are able to demonstrate knowledge of:

1. why the respirator is necessary and how improper fit, usage, or maintenance can compromise the respirator;
2. the limitations and capabilities of the respirator;
3. what to do in emergency situations, including situations in which the respirator leaks or malfunctions;
4. how to inspect, put on and remove, use, and check the seals of the respirator;
5. procedures for maintenance and storage of the respirator;
6. medical signs and symptoms that may limit or prevent the effective use of respirators;
7. general requirements of the OSHA Respiratory Protection Standard and this program; and
8. applicable departmental procedures for using the respirator.

B. Training Format

Training is provided as video and personal instruction.

C. Timing of Training

Training is provided and the employee demonstrates proper use of his or her respirator prior to use of the respirator in the hazardous environment.

D. Frequency of Retraining

Employees are retrained when:

1. changes in the workplace or the type of respirator render previous training obsolete;
2. inadequacies are noted in the employee's knowledge or use of the respirator indicating that the elements of training have not been retained or understood; or
3. any other situation arises that indicates retraining is necessary to ensure safe respirator use.

E. Voluntary Use Training

In addition to the training elements listed above, a copy of the information presented in 1910.134 Appendix D, is provided to and reviewed with employees who wear

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respirators on a voluntary basis. A copy of the document is included in Appendix D of this program.

XI. Workplace Evaluation and Implementation

The respirator Program Administrators and the ICSC conduct annual and ongoing evaluation to ensure proper implementation of the Respiratory Protection Program. Employees required to wear respirators are consulted to assess employees' views on program effectiveness and to identify problems with the program.

A. Workplace Evaluation

Supervisors evaluate their work areas to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective. Workplace evaluation includes:

- Monitoring employees for proper respirator use and maintenance.
- Evaluating the workplace to ensure that the respirators are still effective for the hazard present.
- Notifying a respirator Program Administrator of problems and violations with the program.

B. Program Effectiveness

1. Employee Health Nurse

- Notifies the respirator Program Administrators and ICSC of respiratory exposures due to noncompliance with this respiratory protection program.

2. Program Administrators

- Reports respiratory hazard issues as they arise to the ICSC.
- Consults with employees to assess program effectiveness and to identify problems. This is accomplished by verbal survey of employees required to wear a respirator.

3. ICSC

- Reviews reported problems and violations and revises the program as needed.
- Reviews the written program on an annual basis and revises as needed.

XII. Recordkeeping

A. Medical Evaluation

Medical records generated during implementation of this program are maintained in employee health files and are accessible through the Employee Health Nurse. The School complies with Section 1910.1020 of the regulation by allowing employees, their designated representatives, and regulatory agencies the right of access to records when requested.

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B. Fit Test Record

The Employee Health Nurse retains the most current fit test record for employees required to wear a respirator. The fit test record contains: the employee name; type of fit test; the respirator tested (i.e. make, model, style, and size); date of test; and test results (i.e. pass/fail results for QLFTs, or the fit factor and recorded results for QNFTs).

C. Retention of Respiratory Protection Program

The EHSO retains a copy of the current Respiratory Protection Program and posts the program on the ICSC HIVE page to facilitate employee involvement.

D. Respiratory Protection Program Documents

Other than medical records, the written materials required to be retained under this program are available upon request to affected employees and representatives of appropriate regulatory agencies for examination and copying at the EHSO.

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Appendix A

Medical Questionnaire Loose-Fitting PAPR or Disposable Respirator

The individual completing this questionnaire will be wearing a powered air purifying respirator (PAPR) or a disposable respirator for protection against airborne diseases. Complete this questionnaire during normal working hours, or at a time and place that is convenient to you. Maintain your confidentiality; do not show your completed questionnaire to your supervisor or co-workers. Send your completed questionnaire to the Employee Health Nurse, mail code 9639. You can call the Employee Health Nurse at 545-8970 if you have questions about completing this form.

Part A. Section 1: The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: _____
2. Your name: _____
3. Your age (to nearest year): _____
4. Sex (circle one): Male / Female
5. Your height: _____ ft. _____ in.
6. Your weight: _____ lbs.
7. Your job title: _____
8. A phone number where the health care professional who reviews this questionnaire can reach you (include the Area Code): _____
9. The best time to phone you at this number: _____
10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes / No
11. Have you worn a respirator (circle one): Yes / No
If "yes," what type(s): _____
12. Supplemental Information (required under 29 CFR 1910.134(e)(5))

The type and weight of the respirator to be used (circle one or both below).

Disposable (weight negligible) PAPR (5-8 lb.)

The duration and frequency of respirator use (circle one below).

Daily Weekly Monthly Less Than Monthly

The expected physical work effort (circle one below).

Light Moderate Heavy

Additional protective equipment to be worn, such as safety glasses, goggles or face shield.

Temperature and humidity extremes that may be encountered during respirator use.

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Part A. Section 2: Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you *currently* smoke tobacco, or have you smoked tobacco in the last month: Yes / No
2. Have you *ever had* any of the following conditions:
 - a. Seizures (fits)? Yes / No
 - b. Diabetes (sugar disease)? Yes / No
 - c. Allergic reactions that interfere with your breathing? Yes / No
 - d. Claustrophobia (fear of closed-in places)? Yes / No
 - e. Trouble smelling odors? Yes / No
3. Have you *ever had* any of the following pulmonary or lung problems:
 - a. Asbestosis? Yes / No
 - b. Asthma? Yes / No
 - c. Chronic bronchitis? Yes / No
 - d. Emphysema? Yes / No
 - e. Pneumonia? Yes / No
 - f. Tuberculosis? Yes / No
 - g. Silicosis? Yes / No
 - h. Pneumothorax (collapsed lung)? Yes / No
 - i. Lung cancer? Yes / No
 - j. Broken ribs? Yes / No
 - k. Any chest injuries or surgeries? Yes / No
 - l. Any other lung problem that you've been told about? Yes / No
4. Do you *currently* have any of the following symptoms of pulmonary or lung illness:
 - a. Shortness of breath? Yes / No
 - b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline? Yes / No
 - c. Shortness of breath when walking with other people at an ordinary pace on level ground? Yes / No
 - d. Have to stop for breath when walking at your own pace on level ground? Yes / No
 - e. Shortness of breath when washing or dressing yourself? Yes / No
 - f. Shortness of breath that interferes with your job? Yes / No
 - g. Coughing that produces phlegm (thick sputum)? Yes / No
 - h. Coughing that wakes you early in the morning? Yes / No
 - i. Coughing that occurs mostly when you are lying down? Yes / No
 - j. Coughing up blood in the last month? Yes / No
 - k. Wheezing? Yes / No
 - l. Wheezing that interferes with your job? Yes / No
 - m. Chest pain when you breathe deeply? Yes / No
 - n. Any other symptoms that you think may be related to lung problems? Yes / No
5. Have you *ever had* any of the following cardiovascular or heart problems:
 - a. Heart attack? Yes / No
 - b. Stroke? Yes / No
 - c. Angina? Yes / No
 - d. Heart failure? Yes / No
 - e. Swelling in your legs or feet (not caused by walking)? Yes / No
 - f. Heart arrhythmia (heart beating irregularly)? Yes / No

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- g. High blood pressure? Yes / No
- h. Any other heart problem that you've been told about? Yes / No
6. Have you *ever had* any of the following cardiovascular or heart symptoms:
- a. Frequent pain or tightness in your chest? Yes / No
 - b. Pain or tightness in your chest during physical activity? Yes / No
 - c. Pain or tightness in your chest that interferes with your job? Yes / No
 - d. In the past two years, have you noticed your heart skipping or missing a beat? Yes / No
 - e. Heartburn or indigestion that is not related to eating? Yes / No
 - f. Other symptoms that you think may be related to heart or circulation problems? Yes / No
7. Do you *currently* take medication for any of the following problems:
- a. Breathing or lung problems? Yes / No
 - b. Heart trouble? Yes / No
 - c. Blood pressure? Yes / No
 - d. Seizures (fits)? Yes / No
8. If you've used a respirator, have you *ever had* any of the following problems? **(If you've never used a respirator, go to question 9.)**
- a. Eye irritation? Yes / No
 - b. Skin allergies or rashes? Yes / No
 - c. Anxiety? Yes / No
 - d. General weakness or fatigue? Yes / No
 - e. Any other problem that interferes with your use of a respirator? Yes / No
9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire? Yes / No

Employee Signature _____

Date _____

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Appendix B

Medical Questionnaire for Tight-Fitting Full or Half Mask Respirators

The individual completing this questionnaire will be wearing a tight-fitting, full or half mask respirator. Complete this questionnaire during normal working hours, or at a time and place that is convenient to you. Maintain your confidentiality; do not show your completed questionnaire to your supervisor or co-workers. Send your completed questionnaire to the Employee Health Nurse, mail code 9639. You can call the Employee Health Nurse at 545-8970 if you have questions about completing this form.

Part A. Section 1: The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: _____
2. Your name: _____
3. Your age (to nearest year): _____
4. Sex (circle one): Male / Female
5. Your height: _____ ft. _____ in.
6. Your weight: _____ lbs.
7. Your job title: _____
8. A phone number where the health care professional who reviews this questionnaire can reach you (include the Area Code): _____
9. The best time to phone you at this number: _____
10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes / No
11. Have you worn a respirator (circle one): Yes / No
12. If "yes," what type(s): _____
13. Supplemental Information (required under 29 CFR 1910.134(e)(5))

The type (full or half facepiece) and approximate weight of the respirator to be used.

The duration and frequency of respirator use (circle one below).

Daily Weekly Monthly Less Than Monthly

The expected physical work effort (circle one below).

Light Moderate Heavy

Additional protective equipment to be worn, such as safety glasses, goggles or face shield.

Temperature and humidity extremes that may be encountered during respirator use.

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Part A. Section 2: Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you *currently* smoke tobacco, or have you smoked tobacco in the last month: Yes / No
2. Have you *ever had* any of the following conditions:
 - f. Seizures (fits)? Yes / No
 - g. Diabetes (sugar disease)? Yes / No
 - h. Allergic reactions that interfere with your breathing? Yes / No
 - i. Claustrophobia (fear of closed-in places)? Yes / No
 - j. Trouble smelling odors? Yes / No
3. Have you *ever had* any of the following pulmonary or lung problems:
 - m. Asbestosis? Yes / No
 - n. Asthma? Yes / No
 - o. Chronic bronchitis? Yes / No
 - p. Emphysema? Yes / No
 - q. Pneumonia? Yes / No
 - r. Tuberculosis? Yes / No
 - s. Silicosis? Yes / No
 - t. Pneumothorax (collapsed lung)? Yes / No
 - u. Lung cancer? Yes / No
 - v. Broken ribs? Yes / No
 - w. Any chest injuries or surgeries? Yes / No
 - x. Any other lung problem that you've been told about? Yes / No
4. Do you *currently* have any of the following symptoms of pulmonary or lung illness:
 - o. Shortness of breath? Yes / No
 - p. Shortness of breath when walking fast on level ground or walking up a slight hill or incline? Yes / No
 - q. Shortness of breath when walking with other people at an ordinary pace on level ground? Yes / No
 - r. Have to stop for breath when walking at your own pace on level ground? Yes / No
 - s. Shortness of breath when washing or dressing yourself? Yes / No
 - t. Shortness of breath that interferes with your job? Yes / No
 - u. Coughing that produces phlegm (thick sputum)? Yes / No
 - v. Coughing that wakes you early in the morning? Yes / No
 - w. Coughing that occurs mostly when you are lying down? Yes / No
 - x. Coughing up blood in the last month? Yes / No
 - y. Wheezing? Yes / No
 - z. Wheezing that interferes with your job? Yes / No
 - aa. Chest pain when you breathe deeply? Yes / No
 - bb. Any other symptoms that you think may be related to lung problems? Yes / No
5. Have you *ever had* any of the following cardiovascular or heart problems:
 - i. Heart attack? Yes / No
 - j. Stroke? Yes / No
 - k. Angina? Yes / No
 - l. Heart failure? Yes / No
 - m. Swelling in your legs or feet (not caused by walking)? Yes / No
 - n. Heart arrhythmia (heart beating irregularly)? Yes / No

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- o. High blood pressure? Yes / No
- p. Any other heart problem that you've been told about? Yes / No
- 6. Have you *ever had* any of the following cardiovascular or heart symptoms:
 - g. Frequent pain or tightness in your chest? Yes / No
 - h. Pain or tightness in your chest during physical activity? Yes / No
 - i. Pain or tightness in your chest that interferes with your job? Yes / No
 - j. In the past two years, have you noticed your heart skipping or missing a beat? Yes / No
 - k. Heartburn or indigestion that is not related to eating? Yes / No
 - l. Other symptoms that you think may be related to heart or circulation problems? Yes / No
- 7. Do you *currently* take medication for any of the following problems:
 - e. Breathing or lung problems? Yes / No
 - f. Heart trouble? Yes / No
 - g. Blood pressure? Yes / No
 - h. Seizures (fits)? Yes / No
- 8. If you've used a respirator, have you *ever had* any of the following problems? **(If you've never used a respirator, go to question 9.)**
 - f. Eye irritation? Yes / No
 - g. Skin allergies or rashes? Yes / No
 - h. Anxiety? Yes / No
 - i. General weakness or fatigue? Yes / No
 - j. Any other problem that interferes with your use of a respirator? Yes / No
- 9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire? Yes / No

Questions 1 to 5 below must be answered by every employee who has been selected to use a full-facepiece respirator. For employees who have been selected to use other types of respirators, answering these questions is voluntary.

- 1. Have you ever lost vision in either eye (temporarily or permanently): Yes /No
- 2. Do you currently have any of the following vision problems?
 - a. Wear contact lenses: Yes /No
 - b. Wear glasses: Yes /No
 - c. Color blind: Yes /No
 - d. Any other eye or vision problem: Yes /No
- 3. Have you ever had an injury to your ears, including a broken ear drum: Yes /No
- 4. Do you currently have any of the following hearing problems?
 - a. Difficulty hearing: Yes /No
 - b. Wear a hearing aid: Yes /No
 - c. Any other hearing or ear problem: Yes /No
 - d. Have you ever had a back injury: Yes /No
- 5. Do you currently have any of the following musculoskeletal problems?
 - a. Weakness in any of your arms, hands, legs, or feet: Yes /No
 - b. Back pain: Yes /No
 - c. Difficulty fully moving your arms and legs: Yes /No
 - d. Pain or stiffness when you lean forward or backward at the waist: Yes /No

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|--|---------|
| e. Difficulty fully moving your head up or down: | Yes /No |
| f. Difficulty fully moving your head side to side: | Yes /No |
| g. Difficulty bending at your knees: | Yes /No |
| h. Difficulty squatting to the ground: | Yes /No |
| i. Climbing a flight of stairs or a ladder carrying more than 25 lbs.: | Yes /No |
| j. Any other muscle or skeletal problem that interferes with using a respirator: | Yes /No |

The Health Care Provider evaluating this questionnaire may contact you for additional information on your medical condition.

Employee Signature _____

Date _____

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Appendix C

Qualitative Fit Test Record

Test Subject & Fit Tester Information (Print)			
Subject Name: _____		Title: _____ Dept: _____	
Test Administrator: _____		Title: _____ Dept: _____	
Pre-Test Information			
Yes	No	The test subject has refrained from eating, drinking (except water), smoking, or chewing gum for 15 min?	
Yes	No	The respirator fit is generally acceptable to the test subject?	
Yes	No	The test subject has completed a successful fit-check of the respirator seal?	
Yes	No	The test subject is without facial hair or conditions that would interfere with respirator fit?	
Yes	No	The test subject has donned and worn the respirator at least 5 minutes prior to test?	
Test Agent Screening			
Test Agent Used: _____			
Yes	No	Does the test subject report having a known allergy to the test agent?	
Yes	No	The test subject can detect the test agent?	
Indicate the number of sprays required to detected the agent: 10 20 30			
Fit Test Challenges			
Yes	No	Is the test agent detected during normal breathing?	
Yes	No	Is the test agent detected during deep breathing?	
Yes	No	Is test agent detected while turning head from side to side or nodding up and down?	
Yes	No	Is test agent detected while talking?	
Yes	No	Is the test agent detected while smiling or grimacing?	
Yes	No	Is the test agent detected while bending at the waist?	
Yes	No	Is the test agent detected during normal breathing at the termination of activities?	
Fit Test Results			
Test Outcome		_____	
Respirator Type		_____	
Make and Model		_____	
Respirator Size		_____	
Certification			
By signing this form the test subject confirms that the test agent was not detected during the fit test, and the fit tester confirms that the test was conducted according to OSHA fit testing specifications.			
Test Subject signature: _____		Date: _____	
Test Administrator signature: _____		Date: _____	

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Appendix D

Southern Illinois University School of Medicine Voluntary Respiratory Protection (29 CFR 1910.134 Appendix D)

Respirator(s) used on a voluntary basis: _____

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

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. Read and heed 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.
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