



County of Henrico
Department of Emergency
Management &
Workplace Safety

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Initials	EMWS	EMWS	EMWS
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Safety Manual
Chapter 14 Respiratory Protection

Area of Application:	County of Henrico General Government & Schools	
Document Location:	http://employees.henrico.us/info/safety-manual/	
Revisions:		
Rev. No.	Date	Description
001	02/02/17	Respiratory Protection Program templates added to Chapter 14
002	07/28/2022	Added information on voluntary employee use of N-95-type respirators for communicable disease mitigation. Aligned EMWS titles and terminology. Other non-substantive changes.

Purpose:

This chapter helps to ensure County of Henrico employees who are required to wear respirators for protection from airborne contaminants, or who wear a respirator voluntarily, in the workplace comply with the Occupational Safety and Health Administration and Virginia Occupational Safety and Health program (OSHA /VOSH) Standard for Respiratory Protection (29 CFR 1910.134). OSHA /VOSH requires employers to develop and implement a written respiratory protection program in the workplace where permissible exposure limits (PELs) of airborne contaminants are exceeded, or whenever the employer requires employees to wear respirators.

Scope:

This chapter applies to all affected County of Henrico employees and authorized contractors. The Respiratory Protection Program template is available on the County of Henrico web page on the Employee Portal under "safety". To avoid duplication, this chapter provides an overview of the Respiratory Protection standard for employees covered by it, and for informational purposes. For affected departments who have employees working under 29 CFR 1910.134, a site-specific RPP must be implemented and maintained on an annual basis. Note: The template may be modified to meet the needs of each department. For assistance, contact the Department of Emergency Management & Workplace Safety (EMWS) at 804-501-5162.

Program Administration:

With guidance from EMWS, each affected department will establish a written Respiratory Protection Program using the template, or maintain an established RPP that complies with the OSHA /VOSH respiratory protection standard.



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Before Implementing a Respiratory Protection Program:

Departments where a respiratory protection program may be necessary shall evaluate workplace contaminants before implementing a program. Air contaminants include harmful dusts, fogs, fumes, mists, gases, smoke, sprays, micro-organisms, and vapors. Generally, air monitoring by a qualified person or industrial hygienist is necessary to identify and quantify the concentration of airborne contaminants. The data will be used to determine the level of worker protection needed. Ideally, it will be feasible to install engineering controls (i.e., mechanical ventilation) that will eliminate or reduce the airborne contaminants to a permissible level so respirator wear is not necessary. In areas with mechanical ventilation, air sampling shall be done prior to beginning work to ensure airborne contaminants are below the Permissible Exposure Limit (PEL).

Respiratory Protection Program (RPP):

The written RPP must include the designation of a program administrator; the respirator-selection process; medical evaluations; fit testing; procedures for respirator use; procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing and discarding respirators; training in respirator limitations and maintenance; and procedures for regularly evaluating the effectiveness of the RPP. Voluntary use of respiratory protection means that an employee chooses to wear a respirator, even though a respirator is not required by the employer or by any respiratory standard. Departments that allow voluntary respirator use must make sure that the respirator itself does not create a hazard.

For departments and agencies that need to implement a written Respiratory Protection Program, or update an existing one, use the link on the Safety Manual Page of the Employee Portal to download the Respiratory Protection Program template.

Selection of respirators:

Respirators must be National Institute for Occupational Safety and Health (NIOSH) certified. **No County employee is authorized to enter a known or unknown Immediately Dangerous to Life and Health (IDLH) atmosphere. For tasks that require entering an IDLH atmosphere, a qualified contractor shall be hired to do the work.** For County employees who need protection from gases and vapors in areas that are not IDLH, an atmosphere-supplying respirator or an air-purifying respirator (APR) with an end-of-service-life indicator or on a replacement schedule shall be used. Note: Cartridges are specialized to protect against specific airborne hazards. For example, cartridges designed for organic vapors will not necessarily protect against particulates, or fumes produced from welding operations. The Program Administrator for the Department, or work area, shall ensure the appropriate cartridges are used.

Voluntary use of Filtering Facepiece respirators (“dust mask” or “N-95 /KN-95”) for communicable disease mitigation:

Any employee who voluntarily chooses to wear a filtering facepiece respirator (“dust mask,” “N-95” or “KN-95”) for the *sole purpose* of mitigating perceived risk of communicable disease transmission is exempt from medical evaluation and fit testing requirements. Employees whose work procedures



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require the use of this type of respirator are not exempt from medical evaluation and fit testing requirements.

Medical evaluations:

A medical evaluation will determine an employee's eligibility for respirator use. Employees will complete evaluations in private during normal work hours. A physician or licensed health care professional (PLHCP) will evaluate the employee's answers to ensure that wearing a respirator will not itself cause a hazard. If medical conditions prevent an employee from using a negative-pressure respirator, a powered air-purifying respirator (PAPR) may be appropriate if no other employee can be assigned the work, or if the affected employee chooses to have facial hair that compromises the integrity of the face seal.

Additional medical evaluations might be necessary if:

1. The employee reports symptoms of any kind;
2. The PLHCP, supervisor or program administrator recommends them;
3. Observations or information from employees indicate new evaluations are necessary; or
4. A change in the workplace where a different, or new, physical burden has been placed on the wearer.

Fit testing:

Employees must be fit tested with the same make, model, style and size of respirator that will be worn to perform work. Fit tests may be qualitative or quantitative (definitions are on page six). Fit tests shall be done prior to first use, and annually thereafter; or when there is a change in the type of respirator used, or when a change in an employee's physical condition, such as body weight, or facial structure has occurred.

Use of respirators:

Employers must establish rules and procedures for respirator use. See the RPP template for those rules and procedures.

Maintenance and care:

A means to clean, disinfect, store, inspect and repair respirators will be provided to all affected employees. Emergency respirators must be accessible and clearly marked. Regularly worn respirators must be inspected before each use, and during routine cleaning. Emergency respirators must be inspected monthly, before and after each use, and in accordance with the manufacturer's recommendations. Emergency respirators should include a certification of inspection, name, date, etc. Only appropriately trained employees should perform repairs or adjustments, and only NIOSH-approved parts should be used.

Filters, cartridges and canisters:



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All filters, cartridges and canisters used in the workplace must be labeled and color-coded with NIOSH-approved labels. Labels shall remain legible and will not be removed.

Training:

Departments shall provide training to all employees who wear respirators. The training must be comprehensive and understandable. Refresher training shall be held no less than annually, and more often if necessary. Training records will be maintained and filed on annual basis by each affected department.

Program evaluation:

An annual evaluation of the workplace to ensure that the RPP has been properly implemented and continues to be effective will be conducted, or more often if necessary. Department Heads, or designees, will consult with employees during the annual evaluation regarding respirator fit, selection, use and maintenance.

Record keeping:

Departments shall file medical evaluations and fit test records to comply with the Respiratory Protection Standard. Annual fit test records shall be retained until the next fit test, or whenever an employee is retested. Affected departments must also keep a written copy of the current RPP on file.

Conclusion:

It is important to remember that respiratory protection is the last option for employers addressing airborne contaminants in the workplace. In the hierarchy of hazard controls, all engineering control and administrative control measures must be exhausted before implementing a respiratory protection program. For guidance, contact EMWS.

Definitions:

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 as specified by this chapter and the Respiratory Protection Standard.

Air-purifying respirator - a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants as the wearer breathes ambient air through the air-purifying element.

Atmosphere-supplying respirator - a respirator that supplies the wearer with fresh air from a source independent of the ambient atmosphere. This includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA).

Canister or cartridge - a container with a filter, sorbent, or catalyst, or combination, which removes specific contaminants as air passes through it.



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Demand respirator - an air-supplying respirator that admits air to the face piece only when a negative pressure is created inside the face piece by inhalation.

Emergency - an unforeseen occurrence such as, but not limited to, equipment failure, a ruptured cartridge or container, or failure of equipment or a container that results or may result, in the release of harmful levels of air contaminants.

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

Escape-only respirator - a respirator used by personnel during emergency evacuations of a specified area.

End-of-service-life indicator (ESLI) - a method, such as a colored bar, that warns the wearer that the respirator cartridge or canister is about to lose its ability to provide respiratory protection. For example, the sorbent within a canister is approaching saturation and is no longer effective.

Filter or air-purifying element - a component or substance used in respirator canisters or cartridges to remove solid or liquid aerosols from ambient air.

Filtering face piece (dust mask) - a negative pressure air-purifying particulate respirator that differs from other respirators because the filtering media itself makes up the mask.

Fit factor - a number that is the direct result of a quantitative respirator fit test. It is a measurement made by a fit testing device while simulating typical workplace activities (bending over, speaking, etc.).

Fit test - a procedure that qualitatively or quantitatively evaluates the fit on the respirator wearer.

Gas Mask - a mask-like device containing or attached to a component that filters air inhaled by the wearer through charcoal and/or filters, that protects the face and lungs from noxious gases and fumes, such as during warfare, or in certain industrial processes.

High-efficiency particulate air (HEPA) filter - a filter that is at least 99.97% effective in removing monodisperse particles of 0.3 microns or larger in diameter. NIOSH equivalent filters are 42 CFR 84 N100, R100, and P100.

Hazardous area - any department, laboratory, or work area where toxic materials are used. Through a spill, mechanical malfunction, process glitch, or explosion, harmful concentrations of vapors, dusts, or fumes, could enter the atmosphere.

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. The MUC 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 by multiplying the assigned protection factor specified for a respirator by the required permissible exposure limit (PEL), short-term exposure limit (STEL), or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC based on relevant and available information as well as informed professional judgment.

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

Oxygen deficient atmosphere - an atmosphere with an oxygen concentration below 19.5% by volume.

Positive pressure respirator - a respirator in which the pressure inside the facepiece exceeds the ambient air pressure outside the respirator. **Powered air-purifying respirator (PAPR)** – a battery operated, full or half facepiece with a breathing tube, blower, and HEPA filter. The PAPR's blower passes contaminated air through the HEPA filter to remove the contaminants and supply purified air to



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the facepiece. An employee wearing a PAPR does not require an annual fit test. Wearers who are male may have full facial hair.

Pressure demand respirator - a positive pressure air-supplying respirator that provides breathing air to the face piece when the positive pressure is reduced inside the face piece by inhalation.

Qualitative fit test (QLFT) - a pass/fail fit test that assesses the respirator fit that relies on the individual's response to the test agent such as smoke, saccharine or Bitrex (a bitter aerosol).

Quantitative fit test (QNFT) - an assessment of a respirator fit by numerically measuring the leakage into the respirator. A modified respirator worn by the person being tested is connected to a device such as a Portacount, or similar device. The wearer performs certain movements and speaks during the test period. The numeric readings recorded by the Portacount will pass or fail the wearer. If readings show the selected respirator does not fit properly, the wearer tries other respirator sizes or tightens the straps until the Portacount readings show which respirator fits properly.

Respirator - a device worn over the mouth and nose, or entire face, that protects the wearer from breathing in harmful or toxic vapors, fumes, gasses, micro-organisms, or dust. Certain respirators are designed to be air-supplied, and air filtration is not needed.

Respiratory inlet covering - that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a face piece, helmet, hood, suit, or a mouthpiece respirator with nose clamp, and it forms a complete seal with the face.

Self-contained breathing apparatus (SCBA) - an air-supplying respirator for which the breathing air source is designed to be carried by the user.

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

Supplied-air respirator (SAR) or airline respirator - an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Disclaimer:

Although every effort has been made to ensure this Chapter addresses all applicable regulations, it is the responsibility of each department to maintain compliance.