

# Respiratory Fit Testing

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## Respiratory Exposures in Agriculture

- Respiratory exposures in many occupations including agriculture can include gases, chemicals, pesticides, organic dust, mold, exhaust from machinery, welding fumes. Selection and appropriate use of respiratory protection is key to the prevention of acute respiratory illness and long-term disease.
- Understanding respiratory hazards in agriculture and appropriate respiratory protection is key to assisting the agriculture population in the use of respirators and the prevention of short and long-term lung disease.
- Respirator Fit Testing may be required prior to using a respirator for certain occupations. Respirator fit testing determines whether a particular respirator properly fits the face of the wearer. Proper fit is required for optimal protection. This training will provide information on qualitative fit testing.

# Occupational Exposures

- Occupational exposures that affect the respiratory health of workers occur in many forms and in many different types of work settings.
- Respiratory exposures are in the form of dusts, vapors, fumes, and bioaerosols, and can include materials such as silica, asbestos, coal, pesticides, and flavorings.
- The type and severity of respiratory illness or disease depends on the type of work being performed during inhalation, the type of substance that is inhaled, how long the substance is inhaled, and the location of the lung where the substance lands.

The screenshot shows the NIOSH website interface. At the top, there is the CDC logo and the text 'Centers for Disease Control and Prevention'. A search bar is located in the top right corner. The main header reads 'The National Institute for Occupational Safety and Health (NIOSH)'. Below this, there is a navigation menu with options like 'Occupational Respiratory Health Resources', 'Respiratory Health', 'Respiratory Exposures', 'Publications & Programs', 'Respiratory Health Division Contacts', and 'Cross Sector Contacts'. The main content area features a large banner titled 'RESPIRATORY HEALTH AT WORK' with an image of a worker in a hard hat and safety gear. Below the banner, there is a paragraph of text explaining occupational respiratory exposures. At the bottom, there is a section titled 'Respiratory Exposure Topics' with a grid of links to various topics such as Asbestos, Silica, and Lead.

CDC Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives. Protecting People™

Search NIOSH

Advanced Search

The National Institute for Occupational Safety and Health (NIOSH)

Occupational Respiratory Health Resources

Occupational Respiratory Health Resources

Respiratory Health

Respiratory Exposures

Publications & Programs

Respiratory Health Division Contacts

Cross Sector Contacts

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NIOSH Homepage

NIOSH A-Z

Workplace Safety & Health Topics

Publications and Products

Programs

Contact NIOSH

Promoting productive workplaces through safety and health research

**RESPIRATORY HEALTH AT WORK**

Occupational exposures that affect the respiratory health of workers occur in many forms and in many different types of work settings. Respiratory exposures are in the form of dusts, vapors, fumes, and bioaerosols, and can include materials such as silica, asbestos, coal, pesticides, and flavorings. The type and severity of respiratory illness or disease depends on the type of work being performed during inhalation, the type of substance that is inhaled, how long the substance is inhaled, and the location of the lung where the substance lands.

**Respiratory Exposure Topics**

- [Aerogels](#)
- [Alaria](#)
- [Anthrax](#)
- [Asbestos](#)
- [Asphalt Fumes](#)
- [Beryllium](#)
- [Bloodborne Infectious Diseases](#)
- [Building Ventilation](#)
- [Chemicals](#)
- [Chemicals and Odors \(IEQ\)](#)
- [Cleaning & Custodial](#)
- [Clean-up Hazards](#)
- [Coal Workers' Health Surveillance Program](#)
- [Construction](#)
- [Dentistry](#)
- [Diesel Exhaust](#)
- [Disaster Management](#)
- [Dry Cleaning](#)
- [Dry Wall](#)
- [Dust, Respirable \(Mining\)](#)
- [Farm Safety \(Agriculture\)](#)
- [Fibrous Glass](#)
- [Fire Fighters Resources](#)
- [Flavorings](#)
- [Healthcare Workers](#)
- [Health Hazard Evaluation Program](#)
- [Indoor Environmental Quality](#)
- [Isocyanates](#)
- [Lead](#)
- [Metal Working Fluids](#)
- [Mining](#)
- [Mold, Dampness and Mold in Buildings \(IEQ\)](#)
- [Nanomaterials](#)
- [Occupational Respiratory Disease Surveillance](#)
- [Grout](#)
- [Personal Protective Equipment \(PPE\)](#)
- [Pesticides](#)
- [Silica, Crystalline](#)
- [Tobacco in the Workplace](#)
- [Vermiculite](#)
- [Veterinary Safety & Health](#)
- [Welding](#)



# OSHA's Respiratory Protection Standard 29 CFR 1910.134

The image is a screenshot of the OSHA website. At the top, there is a red header with the United States Department of Labor logo and the text "UNITED STATES DEPARTMENT OF LABOR". Below this, there is a search bar and a "SEARCH" button. The main navigation bar includes "OSHA", "OSHA QuickTakes", "RSS Feeds", "Print This Page", "Text Size", and "Was this page helpful?". The "Occupational Safety & Health Administration" logo is prominently displayed, along with the slogan "We Can Help". A secondary navigation bar lists various sections: Home, Workers, Regulations, Enforcement, Data & Statistics, Training, Publications, Newsroom, and Small Business. The "Regulations" section is highlighted with a blue box labeled "Regulations". Below this, there is a table of contents for "Regulations (Standards - 29 CFR) - Table of Contents". The table lists the following information:

• Part Number:	1910
• Part Title:	Occupational Safety and Health Standards
• Subpart:	1
• Subpart Title:	Personal Protective Equipment
• Standard Number:	1910.134
• Title:	Respiratory Protection
• Appendix:	A, B-1, B-2, C, D

Below the table, there is a paragraph stating: "This section applies to General Industry (part 1910), Shipyards (part 1915), Marine Terminals (part 1917), Longshoring (part 1918), and Construction (part 1926)." The "1910.134(a)" section is highlighted with a blue box labeled "SEARCH". The "Permissible practice." section is highlighted with a blue box labeled "A-Z INDEX". The "1910.134(a)(1)" section is highlighted with a blue box labeled "Regulations". The "1910.134(a)(2)" section is highlighted with a blue box labeled "SEARCH".



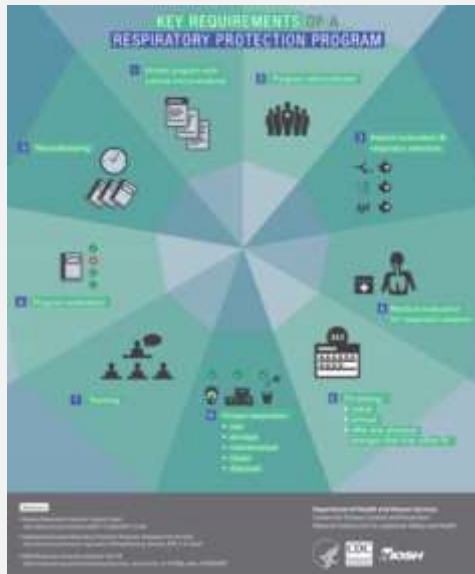
# Respiratory Protection Standard

Requires employers to establish and maintain a respiratory protection program to protect their respirator-wearing employees.

- The US Occupational Safety and Hazard Administration (OSHA) is responsible for ensuring a safe workplace for employees. Millions of workers are required to wear respirators in various workplaces throughout the United States.
- Respirators protect workers against insufficient oxygen environments, harmful dusts, fogs, smokes, mists, gases, vapors, and sprays.
- Respirators provide protection from respiratory hazards only when they are properly selected and used in compliance with the Respiratory Protection standard (29 CFR 1910.134 and 29 CFR 1926.103).
- The Respiratory Protection standard applies to general industry, construction, long shoring, shipyard, and marine terminal workplaces.

# Key Requirements

Respiratory Protection  
Standard  
29 CFR 1910.134



Key requirements of a respiratory protection program include the following:

1. Written Program
2. Program Administrator
3. Hazard Identification /Risk Assessment
4. Selection of Respirators
5. Medical Screening
6. Fit testing
7. Training
8. Maintenance Program
9. Evaluation
10. Record keeping

# Requirement 1:

Written Program with policies and procedures

# Requirement 2:

Program Administrator

The screenshot shows the Minnesota Department of Health website for the Respiratory Protection Program. The page includes a navigation menu, a search bar, and a main content area with the following sections:

- RESPIRATORY PROTECTION PROGRAM**
  - [Respiratory Protection Home](#)
  - [Program Administrator](#)
  - [Public Works Template](#)
  - [Public Buildings](#)
  - [OSHA Division Template](#)
  - [Small Business Template](#)
- RELATED TOPICS**
  - [Emergency Preparedness & Response](#)
- CONTACT INFO**
  - Infectious Disease Epidemiology
  - Prevention and Control Division
  - 651-201-5414
  - [IDPP Contact Form](#)

The main content area is titled "Respiratory Protection Program" and contains the following text:

The purpose of this program is to ensure that all employees required to wear respiratory protection as a condition of their employment are protected from respiratory hazards through the proper use of respirators.

- Frequently Asked Questions about Respiratory Protection**  
Answers to frequently asked questions about respiratory protection.
- Components of a Respiratory Protection Program**  
This is not meant to be a full summary of OSHA's Respiratory Protection Standard; Risk Assessment | Selection of Respirators | Safe Work Operating Procedures | Health Screening | Fit-Testing | Training | Maintenance Program | Evaluating the Program
- Respiratory Protection Program Templates**
  - [Public Health Respiratory Protection Program Template](#)  
Local Public Health may use or download this program and fill in the blank spaces to make it unique to your facility.  
[Public Administration Scope and Application](#) | [Identifying Work Hazards](#) | [Respirator Selection](#) | [Medical Evaluation](#) | [Fit-Testing](#) | [Program Maintenance](#) | [Training and Instruction](#) | [Inspection, Maintenance and Repairs](#) | [Respirator Training](#) | [Evaluating/Updating Program](#) | [Roles and Responsibilities](#) | [Documentation and Records](#) | [Marking](#) | [References](#)

## Respiratory Protection Program Templates

This is a thumbnail of a document titled "Public Health Respiratory Protection Program Template". The document is organized into several sections:

- Purpose:** To ensure that all employees required to wear respiratory protection as a condition of their employment are protected from respiratory hazards through the proper use of respirators.
- Program Objectives:**
  - 1. Identify and assess respiratory hazards in the workplace.
  - 2. Select and use appropriate respirators.
  - 3. Train and instruct employees on the proper use of respirators.
  - 4. Maintain and inspect respirators.
  - 5. Evaluate and update the program.
- Program Administration:**
  - 1. Program Administrator
  - 2. Program Manager
  - 3. Program Coordinator
  - 4. Program Supervisor
  - 5. Program Assistant
- Program Organization:**
  - 1. Program Administrator
  - 2. Program Manager
  - 3. Program Coordinator
  - 4. Program Supervisor
  - 5. Program Assistant

This is a thumbnail of a document titled "Respiratory Protection Program Template". The document is organized into several sections:

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# Requirement 3: Hazard Identification & Risk Assessment

## Respiratory Exposure Assessment

- Ensure the right respiratory protection measures and equipment are used.
- Identify potential health risks to workers.
- **Measure exposure levels to see if they're acceptable or not.**
- Develop a plan to control unacceptable exposure levels.



Respiratory Hazard Assessment and Certification Form

Department:

Date:

List Engineering or Administrative Controls:

Job Description	MSDS Product/Trade Name	Contaminant	Concentration	ppm or mg/m <sup>3</sup>	PEL/TLV	Recommended Respiratory Protection	Service Life

I have performed an evaluation of the work areas indicated above, assessed the hazards and selected the appropriate respiratory protection.

Evaluator:

Date:



# Requirement 4: Selection of respirators

## Selection of Respirators

Selected based on respiratory hazards workers is exposed

Only NIOSH certified respirators should be used

Selected from different models and sizes so it properly fits employee

If exposure cannot be identified, the atmosphere should be considered IDLH

## Types of Respirators

### Air Purifying

Filtering Face Piece

Half-mask cartridge respirator

Full-face piece

Powered Air Purifying Respirators (PAPR)

### Supplied Air

Self Contained Breathing Apparatus (SCBA)



# Agriculture Respiratory Exposures

## Respirator Selection Quick Reference Guide

In agriculture, you may encounter hazardous particles in the air while you are working. A respirator can protect you from breathing in these particles.

### To select and use the appropriate respirator:

- ✓ Identify the hazard
- ✓ Understand the hazard
- ✓ Select the appropriate respirator
- ✓ Use NIOSH approved respirators
- ✓ Have your respirator fit tested
- ✓ Do a user seal check

**NIOSH Approved:** A respirator must be certified by the National Institute for Occupational Health and Safety (NIOSH) and worn properly to provide appropriate protection. NIOSH's classification ratings describe the ability of the device to protect the wearer from dust and liquid droplets in the air.

### Disposable Respirators

Generally single use but repositing may be appropriate in some situations.

**N95 filtering facepiece respirators** are the most common types of disposable respirators. They are used in agriculture for working with hay, handling grain, in livestock housing, with infected livestock, and while welding or shop work. They are also recommended for use when working with moldy materials. Certain types of pesticide labels will recommend the use of N95 respirators.

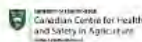
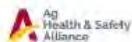
Disposable Respirator Examples	8210-N95	9211-N95	8511-N95	8271-P95	8233-N100	8515-N95
<b>Uses</b>	Organic Dust, Mold, Livestock, Poultry, Hops, Cattle, Hay, Grain, Woodworking, Pesticide Handling (see label), Zoonotic Disease Prevention					Welding, Solvent, Metal Fumes
<b>Benefits</b>	<ul style="list-style-type: none"> <li>Easy to wear</li> <li>Easy to use</li> <li>Disposable</li> </ul>	<ul style="list-style-type: none"> <li>Calculation valve</li> <li>Low leak design</li> <li>Leak-free package</li> </ul>	<ul style="list-style-type: none"> <li>Calculation valve</li> <li>Good fit for large facial shapes</li> <li>Good for large facial shapes</li> </ul>	<ul style="list-style-type: none"> <li>High quality seal</li> <li>Good for use with oil proof</li> <li>Good seal</li> <li>NIOSH approved</li> </ul>	<ul style="list-style-type: none"> <li>Good design</li> <li>Large eye lens</li> <li>Good seal</li> <li>NIOSH approved</li> </ul>	<ul style="list-style-type: none"> <li>Calculation valve</li> <li>Good design</li> <li>Large eye lens</li> <li>Good seal</li> <li>NIOSH approved</li> </ul>

**Particulate Filter Types:** NIOSH-approved filters are rated as N95, P95, P99, N99, R95, R99, F95 or F99. The number 95, 99 or 99.97 indicates the percent NIOSH-approved efficiency. **W** filters filter particulate respirators from oil aerosols. **R** filters filter the oil aerosols. **F** filters filter the oil aerosols. **NIOSH P Series:** Used for oil and non-oil particles with true use filters specified by manufacturer.

**Calculation valves** are designed to improve breathability by releasing heat, humid inhaled breath quickly, reducing condensation and moisture inside the respirator. This can help prevent fogging of glasses. An exhalation valve can also permit the exhalation of vapors and should not be worn for protection unless available.

### Non-Respirator

These mask types are not certified by NIOSH for use as a respirator and will not provide protection from occupational or agricultural hazards. They are only effective for nuisance dusts and can help prevent the spread of viruses.



## Reusable Respirators

Reusable Respirators are cost effective options that offer protection from hazardous gases, vapors, and particles found in many agricultural environments.

### Half Facepiece



### Full Facepiece



### Cartridge Options

<b>P100</b> Pink or White		Organic Dust, Grain, Feed, Hops, Poultry, Welding, Mold, Woodworking, Shopwork
<b>Particulate Pre-Filter</b>		Can be used with the gas cartridges below to also filter particulates.
<b>Organic Vapor Black</b>		Pesticides, Paints Use Pre-Filter/Filter Cover
<b>Ammonia Green</b>		Anhydrous Ammonia (rescue or spill situations), Hops, Poultry Use Pre-Filter/Filter Cover
<b>Organic Vapor Acid Gas Yellow</b>		Paints, Disinfectants, Bleach Use Pre-Filter/Filter Cover
<b>Multi Gas Olive</b>		Paints, Disinfectants, Bleach Use Pre-Filter/Filter Cover

**Remember:** Schedule filters to change your Cartridge based on all the outside on the product label, as interval becomes difficult to know, or if when you can taste or smell the hazard.

### Advanced Respirators

**Powered Air Purified Respirator (PAPR):**  
Use for cleaning out grain bins, working with hay, in dusty livestock buildings, shop work (grinding, cutting), power washing, pesticide handling (with cartridges if label specified). Can be used with a beard or medical condition such as asthma, claustrophobia, heart, or lung conditions.

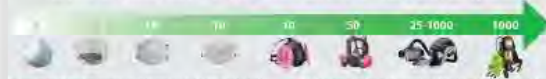


**Self Contained Breathing Apparatus (SCBA):**  
Use in confined spaces that may be low in oxygen such as storage bins, tanks, and manure pits with high levels of hydrogen sulfide. An SCBA should be used in situations where airborne hazards are immediately dangerous to life and health.



### Assigned Protection Factor

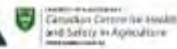
The assigned protection factor (APF) describes the decrease of harmful substances in inhaled air. It is used to describe how well a respirator can protect someone. The higher the number the higher the APF. The protection factor is only true if the respirator fits the wearer and is being used properly.



**Respirator Fit Test:** Everyone has a unique face size and shape. A fit test should be conducted by qualified personnel before an individual wears the respirator in a hazardous environment.

**User Seal Check:** Do not continue a fit test with a user seal check. Once you have identified a fitting respirator, a "seal check" should be performed each time you wear the respirator to make sure it is properly on the face and adjust as needed.

## Save Your Breath: Respiratory Health in Agriculture



# Chemical / Pesticide Exposures

## Read the Label for Respiratory Protection

**RESTRICTED USE PESTICIDE**  
(GROUND AND SURFACE WATER CONCERNS)  
 FORRESTAL SALE TO BE USED ONLY BY CERTIFIED APPLICATORS OR PERSONS KNOWN TO BE KNOWN FUNDAMENTAL AND ONLY FOR THOSE USES COVERED BY THE FEDERAL APPLICATOR CERTIFICATION.  
 THIS PRODUCT IS A RESTRICTED-USE PESTICIDE DUE TO GROUND AND SURFACE WATER CONCERNS. USERS MUST READ AND FOLLOW ALL PRECAUTIONARY STATEMENTS AND INSTRUCTIONS FOR USE IN ORDER TO MINIMIZE POTENTIAL FOR DAMAGE TO AQUATIC ORGANISMS AND BIRD LIFE.

Sale, use, and distribution of this product in Nassau and Suffolk Counties in the State of New York is prohibited.

**GROUP 1 HERBICIDE** PLANT-KILLERS



**Herbicide**  
 For seedling weed control in corn and certain other crops.

Active Ingredients	
Azinphos-methyl 4-ethylhexyl-ethylhexyl-ethylhexyl-ethylhexyl	98.2%
Related Compounds	1.8%
Other Ingredients	10.0%
Total	100.0%

Azinphos-methyl is a water-dispersible granule.

**KEEP OUT OF REACH OF CHILDREN.**  
**CAUTION**  
 See additional precautionary statements and directions for use inside the label.  
 EPA Reg. No. 100-566  
 EPA Est. 100-1A-001  
 SGP 505A-L101DD 1112  
 4021712

FIRST AID	
<b>If swallowed</b>	<ul style="list-style-type: none"> <li>Call a poison control center or doctor immediately for treatment advice.</li> <li>Have person sip a glass of water if able to swallow.</li> <li>Do not induce vomiting unless told to by a poison control center or doctor.</li> <li>Do not give anything to an unconscious person.</li> </ul>
<b>If inhaled</b>	<ul style="list-style-type: none"> <li>Remove person to fresh air.</li> <li>If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If on skin or clothing</b>	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

**HOT LINE NUMBER**  
 For 24 Hour Medical Emergency Assistance (Human or Animal) or  
 Chemical Emergency Assistance (Spill, Leak, Fire, or Accident),  
 Call  
**1-800-888-8372**

**PRECAUTIONARY STATEMENTS**

**Hazards to Humans and Domestic Animals**

**CAUTION**  
 Harmful if swallowed. Do not breathe the dust or spray mist. Avoid contact with eyes, skin, or clothing.

**Personal Protective Equipment (PPE)**  
 Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category A on an EPA Chemical-Resistant Category Selection Chart.

**Mixers, loaders, cleaners of equipment, spills and other handlers exposed to the concentrate must wear:**

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate, butyl rubber ≥14 mil, nitrile rubber ≥14 mil, neoprene rubber ≥14 mil, natural rubber ≥14 mil, polyethylene, polyvinyl chloride (PVC) ≥14 mil, or Viton® ≥14 mil
- Chemical-resistant footwear plus socks
- Chemical-resistant apron
- A NIOSH-approved dust/mist filtering respirator with any N, R, P, or HE filter or a NIOSH-approved dust/mist filtering respirator with approval number prefix TC-21C.

### CAUTION

Water dispersible granule,  
 NIOSH-approved dust/mist  
 filtering respirator with any  
 N, R, P, or HE filter,

Or

NIOSH-approved dust/mist  
 filtering respirator with  
 approval number prefix TC-  
 21C.



# Requirement 5: Medical Evaluation



## OSHA INFOSHEET

- Evaluation of employees' health to make sure they can wear a respirator.
- Before wearing a respirator, workers must first be medically evaluated using the mandatory medical questionnaire or an equivalent method.
- To facilitate these medical evaluations, this INFOSHEET includes the mandatory medical questionnaire to be used for these evaluations.

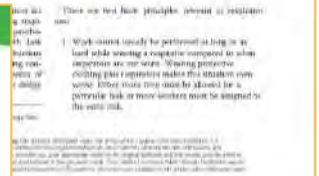


Medical certification for respirators is a very important part of the activities of the occupational physician. It not only entails the ability to decide which worker is able to tolerate the added strain of a respiratory protective device (as a matter of fact, for most people able to do the job, there is usually a respirator model which will ®t their needs).

Rather, it should be viewed as a whole decision process where fitness for work, integration of intrinsic factors related to the health of the individual and of extrinsic factors related to the characteristics of the work itself, together with the properties, type and requirements of the respiratory protective device, should be combined.

More importantly, however, medical certification for respirator use should be viewed as an element of a comprehensive respiratory protection program. This is the real key factor in affording workers' effective respiratory protection once the initial steps of the hierarchy of methods of hazard control have proven insufficient or infeasible.

<https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/rpp/comp/evaluation.html>



# Requirement 6: Respirator Fit Testing

- Must be Fit Tested with same brand, model and size that will be used.
- Must be Fit Tested before first use.



**Filtering out Confusion:  
Frequently Asked Questions about Respiratory Protection**

**Fit Testing**

Over 100 million Americans wear respirators, an approximately 12 and 1/2 percent of the adult population. The Occupational Safety and Health Administration (OSHA) 1910.134 and 29 CFR 1915.101 require fit testing for respirators that protect against airborne hazards. Fit testing is a procedure that determines if a respirator fits and seals properly on an individual's face. The following are some frequently asked questions about fit testing.



**What is a Respirator Fit Test?**

A fit test is conducted to verify that a respirator fits the individual and properly filters the air. Fit test methods are divided into three qualitative or quantitative. A qualitative fit test is a pass/fail test that relies on the individual's sensory detection of a test agent, such as taste, smell, or irritation through the mouth or contact with the eyes. A quantitative fit test uses an instrument to measure the amount of air that leaks into or out of the respirator.

The results of a fit test include better protection for the wearer and verification that the respirator is used only in a clean, dry, well-ventilated environment. High concentrations of exposure to air contaminants may irritate the respiratory tract and cause the seal to leak, which can result in failure.

**How Often Must Fit Testing Be Conducted?**

In addition to wearing your respirator correctly, OSHA requires that fit testing be conducted annually and repeated whenever an employee reports, or the monitor or the physician who's issued health care professional makes visual observations, changes in the employee's physical condition that would affect respirator fit (e.g., facial scarring, dental changes, cosmetic changes, or noticeable change in body weight).

The appropriate length of time between repeat fit tests has been a topic of debate and discussion for many years due to use of workplace and community, especially in relation to the uncertainty associated with long-term exposure (BRE). In response to these concerns, OSHA completed a study that confirmed the necessity of the annual OSHA respirator fit testing requirements. Both annually and when physical changes have occurred.



# Types of fit testing

Two types of fit testing

- Qualitative
- Quantitative

# Quantitative

- Quantitative fit testing uses a machine to measure the actual amount of leakage into the facepiece and does not rely upon your sense of taste, smell, or irritation in order to detect leakage.
- The respirators used during this type of fit testing will have a probe attached to the facepiece that will be connected to the machine by a hose. There are three quantitative fit test methods accepted by OSHA:
  - Generated aerosol;
  - Ambient aerosol; and
  - Controlled Negative Pressure.





# Qualitative

- Qualitative fit testing is a pass/fail test method that uses your sense of taste or smell, or your reaction to an irritant in order to detect leakage into the respirator facepiece.
- Qualitative fit testing does not measure the actual amount of leakage. Whether the respirator passes or fails the test is based simply on you detecting leakage of the test substance into your facepiece.
- Four qualitative fit test methods accepted by OSHA:
  - Isoamyl acetate, which smells like bananas;
  - Saccharin, which leaves a sweet taste in your mouth;
  - Bitrex, which leaves a bitter taste in your mouth; and
  - Irritant smoke, which can cause coughing.



These methods use the reaction of workers to the taste or smell of a special material (if it leaks into mask) Such reactions are subjective, making this test dependent on the subject reporting results honestly.

# Fit Test Kits

Available online

Include Instructions

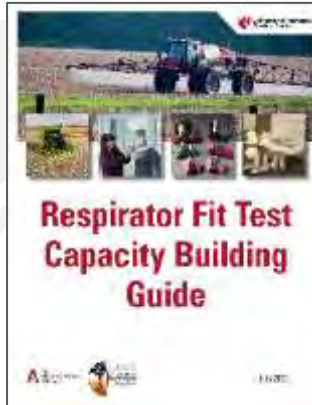


- Types
  - Recommend having bitrex and saccharin, in case someone is not sensitive to one type
- Equipment
  - Hood
  - Nebulizer
  - Sensitivity solution
  - Test solution
- Maintenance
  - Test and Sensitivity solutions expire. Make sure they have current stock.
- Cost
  - Range \$250 - \$500
- Replacement parts and solutions

# How does this work in practice?

# Roles and Responsibilities

# Scope of Practice



## Roles and Responsibilities

### What is your role in respirator fit testing based on professional capacity?

Roles and responsibilities related to respirator fit testing and medical evaluation is directly related to your scope of practice when you are a professional such as a nurse or physician. There are aspects of respirator fit testing that can be done by someone who is not a health care provider or a safety professional.

### Medical Evaluation and Questionnaire Requirements

Respirators must be used in workplaces in which employees are exposed to hazardous airborne contaminants. When respiratory protection is required, employers must have a respirator protection program as specified in OSHA's Respiratory Protection standard (29 CFR 1910.134). OSHA guidance can be found on the OSHA.gov website: <https://www.osha.gov/respiratory-protection/general>

Before wearing a respirator, workers must first be medically evaluated using the mandatory medical questionnaire or an equivalent method. The employer or individual who is required to wear a respirator must identify a physician or other **licensed health care professional (PLHCP)** to perform all medical evaluations using the **medical questionnaire** in Appendix C of the Respiratory Protection standard or a medical examination that obtains the same information. A variety of health care professionals may do this depending on the scope of practice permitted by the state's licensing, registration, or certification agencies. Each employer must check with the state licensing agency to see if other health care professionals under their state law can independently perform this evaluation or must do so under the direction of a licensed physician.

Profession	Administer Medical Questionnaire	Review Medical Questionnaire	Medical Evaluation	Fit Test
Farmer	X			X
Safety Officer or Manager	X			X
Extension Personnel	X			X
Pharmacy Tech	X			X
Pharmacist	X	X		X
Respiratory Therapist	X			X
Licensed Practical Nurse (LPN)	X	X		X
Registered Nurse	X	X		X
Physician Assistant	X	X		X
Nurse Practitioner	X	X	X	X
Chiropractor	X	X	X	X
Physician	X	X	X	X

# Important Steps

- Individual completes medical questionnaire
- Review questionnaire (*PLHCP*) physician or other licensed health care professional.  
<https://www.osha.gov/qna.pdf>
- Medical exam if needed
- Determine which respirator is needed
- Respirator types, brands, sizes
- Set up equipment
- Follow procedure based on OSHA requirements and fit test kit instructions.
- Documentation

## Roles and Responsibilities

What is your role in respirator fit testing based on professional capacity?

Roles and responsibilities related to Respirator Fit Testing and medical evaluation is directly related to your scope of practice when you are a professional such as a nurse or physician. There are aspects of Respirator Fit testing that can be done by someone who is not a health care provider.

### Medical Evaluation and Questionnaire Requirements

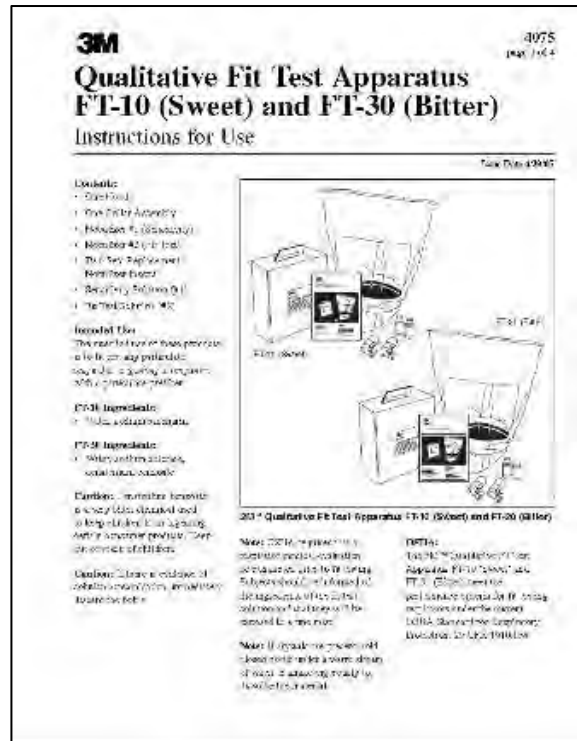
Respirators must be used in workplaces in which employees are exposed to hazardous airborne contaminants. When respiratory protection is required, employers must have a respirator protection program as specified in OSHA's Respiratory Protection standard (29 CFR 1910.134).

Before wearing a respirator, workers must first be medically evaluated using the mandatory medical questionnaire or an equivalent method. The employer or individual who is required to wear a respirator must identify a physician or other licensed health care professional (PLHCP) to perform all medical evaluations using the medical questionnaire in Appendix C of the Respiratory Protection standard or a medical examination that obtains the same information.

Profession	Administer Medical Questionnaire	Review Medical Questionnaire	Medical Evaluation	Fit Test
Farmer	X			X
Safety Officer	X			X
Manager	X			X
Pharmacy Tech	X			X
Pharmacist	X	X		X
LPN	X	X		X
RN	X	X		X
Physician Assistant	X	X		X
Nurse Practitioner	X	X	X	X
Chiropractor	X	X	X	X
Physician	X	X	X	X



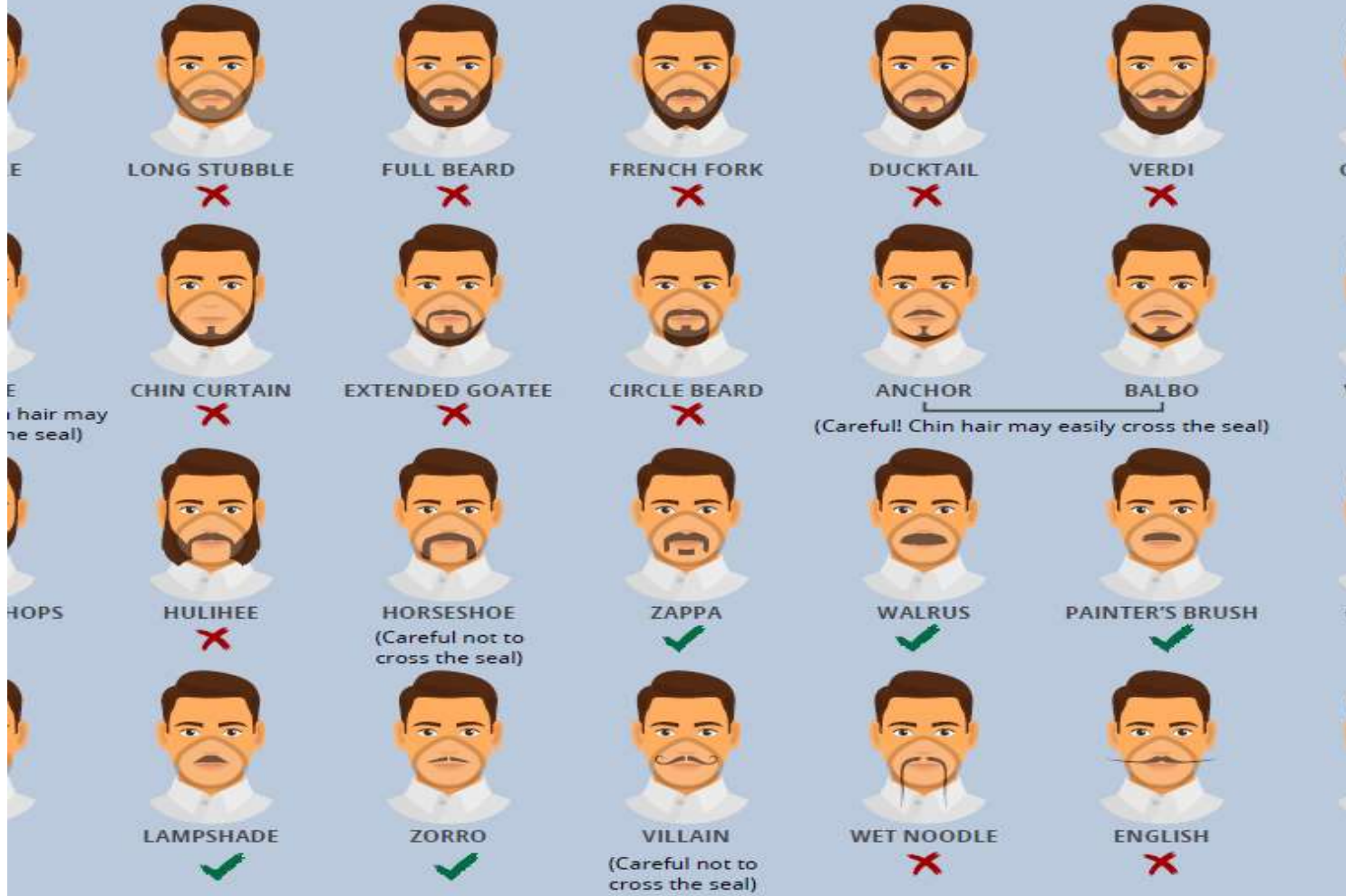
# Fit Test Procedure



- Select mask for testing
  - This may not be your expertise
  - Person may bring mask along
  - Need different models and sizes
  
- Inspect Respirator
  
- Taste threshold (sensitivity test)
  
- User seal check
  
- Actual fit test
  - Exercises/movement
  - Reading rainbow paragraph
  
- What to do if respirator/user doesn't pass
  - Adjust and repeat from User seal check.
  - Go back to Select mask for testing.

Intended for workers who wear tight-fitting respirators

...LING SURFACE



# Facial Hair

# Respirator size

## Protecting Your Lungs is Important for Everyone

Using a respirator is easier than you think!

**Young adults in agriculture are wearing respirators.**

- Are in high-dust working conditions.
- Report more respiratory symptoms related to their work.
- Are more likely to wear personal protective equipment on their work.
- Young adults can benefit from and use more personal protective equipment in agriculture with a good fit.

**Women agricultural producers.**

- Are growing a market for labor force of women workers and the industry is more likely to provide them with PPE to female agricultural workers.
- Are more likely to report injuries and illness related to their work.
- Are better suited to production agriculture and have good access to PPE that is suitable to their job and needs.

**3-Ply N95 Respirator**

- PROTECTS AGAINST ORGANIC DUST, MOULD, PESTICIDES, DISINFECTANTS, AND CLEANERS WITH APPROXIMATELY 95% EFFICIENCY.
- SEAMLESS DESIGN.
- AVAILABLE.
- DISPOSABLE.
- OFTEN MOST PREFERRED DUE TO COMFORT AND LIGHT-TOUCH COST-SAVING.
- FIT TESTING AND COMFORT EVALUATION SHOULD BE CONSIDERED.

**Cartridge Style Respirator**

- PROTECTS AGAINST ORGANIC DUST, MOULD, PESTICIDES, DISINFECTANTS, AND CLEANERS WITH APPROXIMATELY 95% EFFICIENCY.
- SEAMLESS DESIGN.
- AVAILABLE.
- DISPOSABLE.
- OFTEN MOST PREFERRED DUE TO COMFORT AND LIGHT-TOUCH COST-SAVING.
- FIT TESTING AND COMFORT EVALUATION SHOULD BE CONSIDERED.

**N95 or N99 Respirator**

- PROTECTS AGAINST ORGANIC DUST, MOULD, PESTICIDES, DISINFECTANTS, AND CLEANERS WITH APPROXIMATELY 95% EFFICIENCY.
- SEAMLESS DESIGN.
- AVAILABLE.
- DISPOSABLE.
- OFTEN MOST PREFERRED DUE TO COMFORT AND LIGHT-TOUCH COST-SAVING.
- FIT TESTING AND COMFORT EVALUATION SHOULD BE CONSIDERED.

**POTENTIALS SHOULD BE CONSIDERED WITH RESPIRATOR USE AND PLACEMENT.**

**WASH AND DISINFECT OR REUSE RESPIRATORS WITH CARE AND FOLLOW MANUFACTURER'S INSTRUCTIONS.**

## Respirator Fit is Important

What size are you?

SMALL (WOMEN'S SIZE)

MEDIUM SIZE

LARGE SIZE

LENGTH

WIDTH

**Fit = Protection and Comfort**

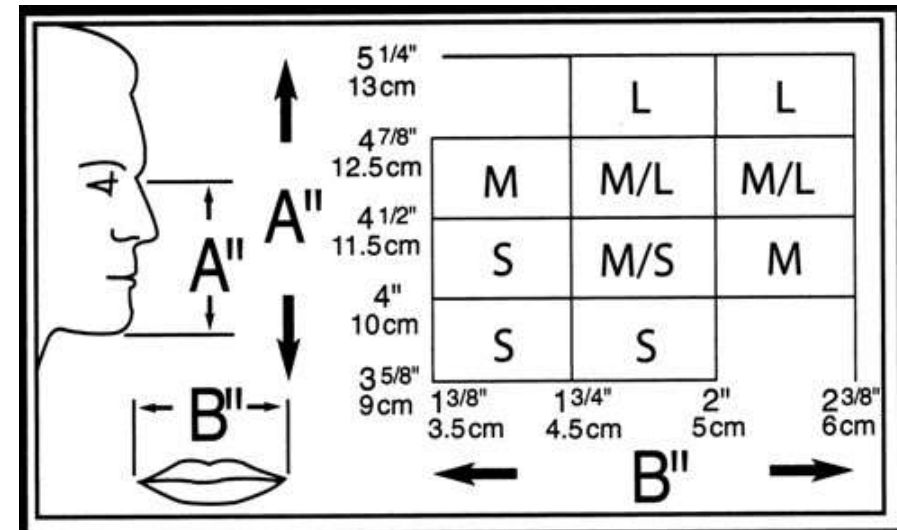
GET AN "A" FIT TO MAKE SURE YOU ARE GETTING THE BEST PROTECTION.

**Know when to wear a respirator in agriculture:**

- MOVING LIVESTOCK/LOAD OUTS
- WORKING WITH WET FEED OR FEED STUFFS
- WORKING WITH MECHANIZED FEED SYSTEMS
- CLEANING PENS AND HOUSING, ESPECIALLY WITH DISINFECTANTS
- DISPOSAL OF CARCASSES OR PLACENTAL INTERVALS
- POWERWASHING
- WORKING IN DUSTY BARN, SUCH AS PREGNANCY
- KNOWING OR SUSPECTED DISEASE OUTBREAKS (HUMAN AND/OR ANIMAL)
- PESTICIDES OR PEST TREATMENTS (SUCH AS DISINFECTANTS, FLU CONTROL)
- CLEANING GEAR AND/OR WASHING

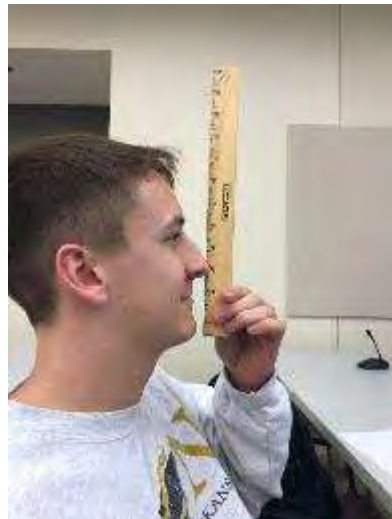
**Tips for wearing your respirator:**

- USE THE RIGHT RESPIRATOR FOR THE JOB, WITH THE CORRECT FIT.
- DO NOT USE OTHER PEOPLE'S RESPIRATORS.
- KEEP RESPIRATORS CLEAN AND STORE CORRECTLY.
- STORE THE RESPIRATOR IN A BREATHABLE BAG WITH YOUR NAME.
- PULL LONG HAIR INTO A PONYTAIL AND PLACE BEHIND THE RESPIRATOR STRAPS.
- TO COMMUNICATE WITH OTHERS, PULL THE STRAP DOWN OR USE THE "TALK RELEASE" ON CERTAIN RESPIRATORS.
- DISCARD DISPOSABLE RESPIRATORS IF IT BECOMES SOILED, WET OR HARD TO BREATHE THROUGH.
- REPLACE OR DISCARD CARTRIDGES IF YOU SMELL OR TASTE GASES OR IF IT BECOMES DIFFICULT TO BREATHE.
- DO NOT USE RESPIRATORS WITH EXHAUSTION VALVES IF YOU ARE WORKING IN CLOSE QUARTERS WITH FEED SICK.
- SCHEDULE TIME FOR BREAKS WHEN USING A RESPIRATOR.

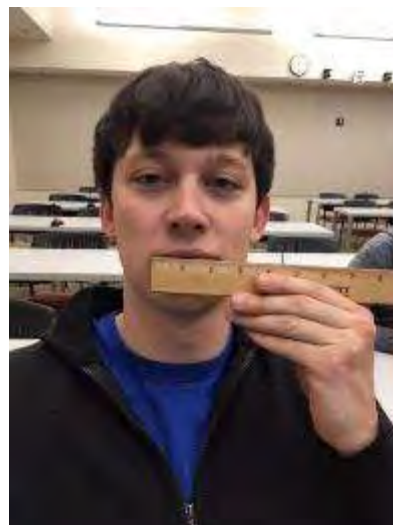




# Large



# Medium





# Medium



Idk-???



Small



# User Seal Check versus Fit Test

## User Seal Check

- A user seal check is a quick check performed by the wearer each time the respirator is put on.
- It determines if the respirator is properly seated to the face or needs adjustment.



## Fit Test

- A “fit test” tests the seal between the respirator's facepiece and your face. It takes about 15 to 20 minutes to complete and is performed at least annually.
- After passing a fit test with a respirator, you must use the exact same make, model, style, and size respirator on the job.
- Fit Test is done by introducing an agent around the respirator to determine if an individual can smell or taste while wearing the respirator.









# Inspection Checklist

<b>Respirator Inspection Checklist</b>	
<b>Facepiece</b>	<input type="checkbox"/> No cracks, tears, or holes <input type="checkbox"/> No facemask distortion <input type="checkbox"/> No cracked or loose lenses or face shields
<b>Head straps</b>	<input type="checkbox"/> No breaks or tears <input type="checkbox"/> No broken buckles
<b>Valves</b>	<input type="checkbox"/> No residue or dirt, cracks, or tears in valve material
<b>Filters and cartridges</b>	<input type="checkbox"/> NIOSH approved <input type="checkbox"/> Gaskets seat properly <input type="checkbox"/> No cracks or dents in housing <input type="checkbox"/> Proper cartridge for hazards
<b>Air supply systems</b>	<input type="checkbox"/> Breathing-quality air is used <input type="checkbox"/> Supply hoses are in good condition <input type="checkbox"/> Hoses are properly connected <input type="checkbox"/> Settings on regulators and valves are correct

\*This checklist represents a general overview of respirator inspection requirements. Always refer to the manufacturer's user manual for more detailed information.

Source: Oregon OSHA, found at Pesticide Educational Resources Collaborative.

# Documentation Fit Test Record

The following record sheet was adapted from Oregon OSHA's materials found at the Pesticide Education Resources Collaborative (PERC).

It is meant to serve as a model for a form that can be used during the fit test to record data (sensitivity and fit test results), and then kept on file to satisfy WPS recordkeeping requirements.

**Fit Test Record**

Date: \_\_\_\_\_

Employee name: \_\_\_\_\_

Job/Classification: \_\_\_\_\_

Firm/Company: \_\_\_\_\_

**Fit test method** (circle one): Qualitative saccharin    Qualitative *lyt*tex. (for either of these, the respirator must have particulate filters)  
 Qualitative IAA (respirator must have organic vapor cartridges)

**Taste Threshold Results** (Circle one):

10 squeezes ..... 20 squeezes ..... 50 squeezes  
 1/4 to be administered every 30 seconds during Fit Test Exercises (Circle one):  
 5 squeezes ..... 10 squeezes ..... 15 squeezes

Type of respirator	Make/model/size (Must include all three)	Fit factor/results (Circle one)	
		Pass	Fail
		Pass	Fail
		Pass	Fail
		Pass	Fail

Person conducting the fit test: \_\_\_\_\_

**Fit Test Record**

According to the PERC Worker Protection Standard (WPS) Respirator Guide:

A written record of the fit test must be maintained for two years from the date conducted and must contain the following information at a minimum:

- Name of handler tested,
- Type of fit-test performed,
- Make, model, and size of the respirator tested,
- Date of the fit-test, and
- Results of the fit-test:
  - Pass/fail for qualitative fit-test
  - Fit factor determined, strip chart recording or other record of the test results for a quantitative fit-test.

The following record sheet was adapted from Oregon OSHA's materials found at the Pesticide Education Resources Collaborative (PERC). It is meant to serve as a model for a form that can be used during the fit test to record data (sensitivity and fit test results), and then kept on file to satisfy WPS recordkeeping requirements.

# Requirement: 7. Training

- Requires employer to provide effective training to employees who are required to use respirators.
- The training must be comprehensive, understandable, and recur annually, and more often if necessary.
- Retraining shall be administered annually, and when the following situations occur:
  - Changes in the workplace or the type of respirator render previous training obsolete;
  - Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or
  - Any other situation arises in which retraining appears necessary to ensure safe respirator use.



Department of Labor OSHA Respiratory Protection Training Requirements Video



# Requirement 8. Maintenance

- The employer must provide for the cleaning and disinfecting, storage, inspection, and repair of respirators used by employees.
- Conscientious respirator maintenance should be an integral part of an overall respirator program.
- This maintenance applies both to respirators with replaceable filters and respirators that are classified as disposable but that are reused.
- Manufacturers' instructions for inspecting, cleaning, and maintaining respirators should be followed to ensure that the respirator continues to function properly.

Respirator Inspection Checklist	
<b>Facepiece</b>	<input type="checkbox"/> No cracks, tears, or holes <input type="checkbox"/> No facemask distortion <input type="checkbox"/> No cracked or loose lenses or face shields
<b>Head straps</b>	<input type="checkbox"/> No breaks or tears <input type="checkbox"/> No broken buckles
<b>Valves</b>	<input type="checkbox"/> No residue or dirt, cracks, or tears in valve material
<b>Filters and cartridges</b>	<input type="checkbox"/> NIOSH approved <input type="checkbox"/> Gaskets seat properly <input type="checkbox"/> No cracks or dents in housing <input type="checkbox"/> Proper cartridge for hazards
<b>Air supply systems</b>	<input type="checkbox"/> Breathing-quality air is used <input type="checkbox"/> Supply hoses are in good condition <input type="checkbox"/> Hoses are properly connected <input type="checkbox"/> Settings on regulators and valves are correct





# Requirement 9: Evaluation

- Evaluations of the workplace must be conducted annually or as necessary to ensure effective implementation of the program - - review of the program periodically to make sure it's being run properly
- Employees required to use respirators must be consulted regularly to assess their views on program effectiveness and to identify and correct any problems
  - factors to be assessed include, but are not limited to:
    - respirator fit (including effect on workplace performance)
    - appropriate selection
    - proper use
    - proper maintenance



# Requirement 10: Record keeping

- Records of medical evaluations must be retained.
- A record of fit tests must be established and retained until the next fit test is administered.
- A written copy of the current program must be retained.
- Written materials required to be retained must be made available upon request to affected employees and OSHA.

## Documentation and Record-keeping

- A written copy of this program can be found in \_\_\_\_\_ (example: policy and procedure manual).
- \_\_\_\_\_ (example: RPA, clinic supervisor, employer's name, human resources person) maintains the medical information for all employees covered under the respiratory program.
- The completed medical forms and documented medical recommendations are confidential and will remain with/in \_\_\_\_\_ (example: RPA, the healthcare provider conducting the evaluation, clinic supervisor, employer's name, human resources person).
- All relevant medical information must be maintained for the duration of the employment of the individual plus thirty years.

**Public Health Respiratory Protection Program Template**

**Policy**  
The purpose of this program is to ensure that all employees exposed to respirable particulates in a condition of their employment are provided with respiratory protection through the proper use of equipment.

**Program Objectives**

- Program Administration
- Program Scope/Application
- Identifying Work Hazards
- Respirator Selection
- Medical Evaluation
- Fit Testing
- Proper Respirator Use
- Cleaning and Disinfecting
- Inspection, Maintenance and Repair
- Emergency Training
- Employee Training Program
- Roles and Responsibilities
- Documentation and Record-keeping

**Program Administration**

- \_\_\_\_\_ (example: Public Health Supervisor, employer's name, human resources person) will be responsible for the administration of the respiratory protection program and this is called the Respiratory Program Administrator (RPA).
- \_\_\_\_\_ (example: Public Health Supervisor, employer's name, human resources person) will be responsible for monitoring the ongoing and changing needs for respiratory protection.

**Program Scope and Application**  
This program applies to all employees who are occupationally exposed to respirable particulates during normal work operations, and during non-normal or emergency situations. Areas of the types of work activities required to wear respirators are outlined in the table below:

Work Process	Location	Type of Respirator
Contact Spraying (except for agricultural applications)	Commercial Buildings	N95 - Respirator
Highly Infectious	Health Care Areas	N95 - Respirator
Airborne Infections		ORAP

# Demonstration

Science.  
Applied to Life.™

## Quick Reference Guide: Qualitative Fit Testing

and 3M™ FT-30 (bitter) fit test kits are suitable for disposable respirators, and with particulate filters, and full facepieces fitted with particulate filters.†

be clean-  
a proper fit  
tor.

**!** Please note, in order to carry out a full fit test, all the steps detailed below must be followed (Parts 1 & 2).

### Sensitivity Testing (The "Taste Test")

on of sensitivity  
abeled bottle) into  
bulbizer (marked in  
firm that the  
es a cloud of  
e bulb is squeezed.  
on participant. A  
l not be worn during  
st.



ant to breathe  
uth with their  
xtended and ask  
immediately when  
lution.

ulb completely and  
izer to the side  
tly at the subject,  
into the hood and  
er of squeezes it  
ation to be tasted.

ipant may drink

**If solution is not tasted after 30  
an alternative solution from below.**

3M-FT11 (sensitivity solution)  
3M-FT12 (test solution)

3M-FT31 (sensitivity solution)  
3M-FT32 (test solution)

se used when an assigned protection factor higher than 10  
used in negative pressure mode, per 29 CFR 1910.134

### Part 2 - Fit Testing

1. Add 1/2 teaspoon of test solution (in black labeled bottle) into the test nebulizer (marked in black). Visually confirm that the nebulizer produces a cloud of aerosol when the bulb is squeezed.
2. Don the respirator and make sure respirator is fitted correctly. Refer to the 3M fitting instructions or poster for correct procedure. After the respirator is correctly donned, wait five minutes before beginning the next step.
3. Place test hood on participant.

Number of Squeezes Needed in Part 1	Number of Squeezes for Initial Dose	Number of Squeezes for a Replenishing Dose Every 30 Seconds
1-10	10	5
11-20	20	10
21-30	30	15

4. Introduce solution in an initial exercise. Add a replenishing second per the table below.
5. After the initial dose, ask the the 7 exercises shown in turn indicate immediately if soluto to add a replenishing dose e Throughout the test, remind breathe through their mouth that the nebulizer is not clo
6. Record all results.  
If solution is not tasted after have passed the test with the solution is tasted, stop the t and hands, refit respirator a Sensitivity Testing.  
If solution is still tasted on th the test, rinse hands, mouth, trying an alternative 3M resp
7. Discard all unused solution.

### 7 Exercises



This product is part of a system that helps reduce exposures to certain airborne contaminants. Before use, and understand these User Instructions. Follow all local regulations. In the U.S., a written respiratory protection program meeting all the requirements of 29 CFR 1910.134, including training, fit testing and medical evaluation. In Canada, all applicable requirements must be met and/or requirements of the applicable jurisdiction, as appropriate. For correct use, consult supervisor and User Instructions, or call 3M Technical Service at 1-800-243-4630 and in Canada at 1-800-267-4414.

In United States of America  
Technical Service: 1-800-243-4630  
Customer Service: 1-800-328-1667  
3M.com/workersafety

In Canada  
Technical Service: 1-800-267-4414  
Customer Service: 1-800-364-3577  
3M.ca/Safety

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Please recycle. February 2019



For a demo  
video, visit  
go.3M.com

3M Science.  
Applied to Life.™

### Rainbow Passage\*

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

### Pasaje Arcoiris (Española)\*

Cuando la luz del sol ilumina a las gotas de lluvia en el aire, estas actúan como un prisma y forman un arco iris. El arco iris es una división de luz blanca dentro de muchos colores bellos. Estos toman la forma de un arco largo redondeado con su paso alto arriba, y sus dos extremos aparentemente están más allá del horizonte. Hay, de acuerdo con la leyenda, un recipiente con oro hirviendo en un extremo. La gente mira, pero nadie nunca lo encuentra. Cuando un hombre busca algo más allá del alcance, sus amigos dicen que el está buscando el recipiente de oro en el extremo del arco iris.

\*Occupational Safety and Health Administration (OSHA). Occupational Safety and Health Standards, 1910.134, Appendix A. Fit Testing Procedures (Mandatory). [https://www.osha.gov/cslhweb/owadisp/show\\_document?p\\_table=STAN&AFCOSSp\\_id=0780](https://www.osha.gov/cslhweb/owadisp/show_document?p_table=STAN&AFCOSSp_id=0780)

Personal Safety Division  
3M Center, Building 200 (200-77)  
St. Paul, MN 55944-1000

In United States of America  
Technical Service: 1-800-348-4630  
Customer Service: 1-800-328-1667  
3M.com/workersafety

In Canada  
Technical Service: 1-800-267-4414  
Customer Service: 1-800-364-3577  
3M.ca/Safety

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# Resources

OSHA Resources:

<https://www.osha.gov/respiratory-protection>

CDC /NIOSH Resources:

<https://www.cdc.gov/niosh/topics/respirators/>

<https://www.cdc.gov/niosh/npptl/FactSheets.html>

Minnesota Department of Public Health

<https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/rpp/index.html>

Ag Health and Safety Alliance Respiratory Resources:

<https://aghealthandsafety.com/respiratory/>



# New Resource Pesticide Focus

## Respirator Fit Test Guide

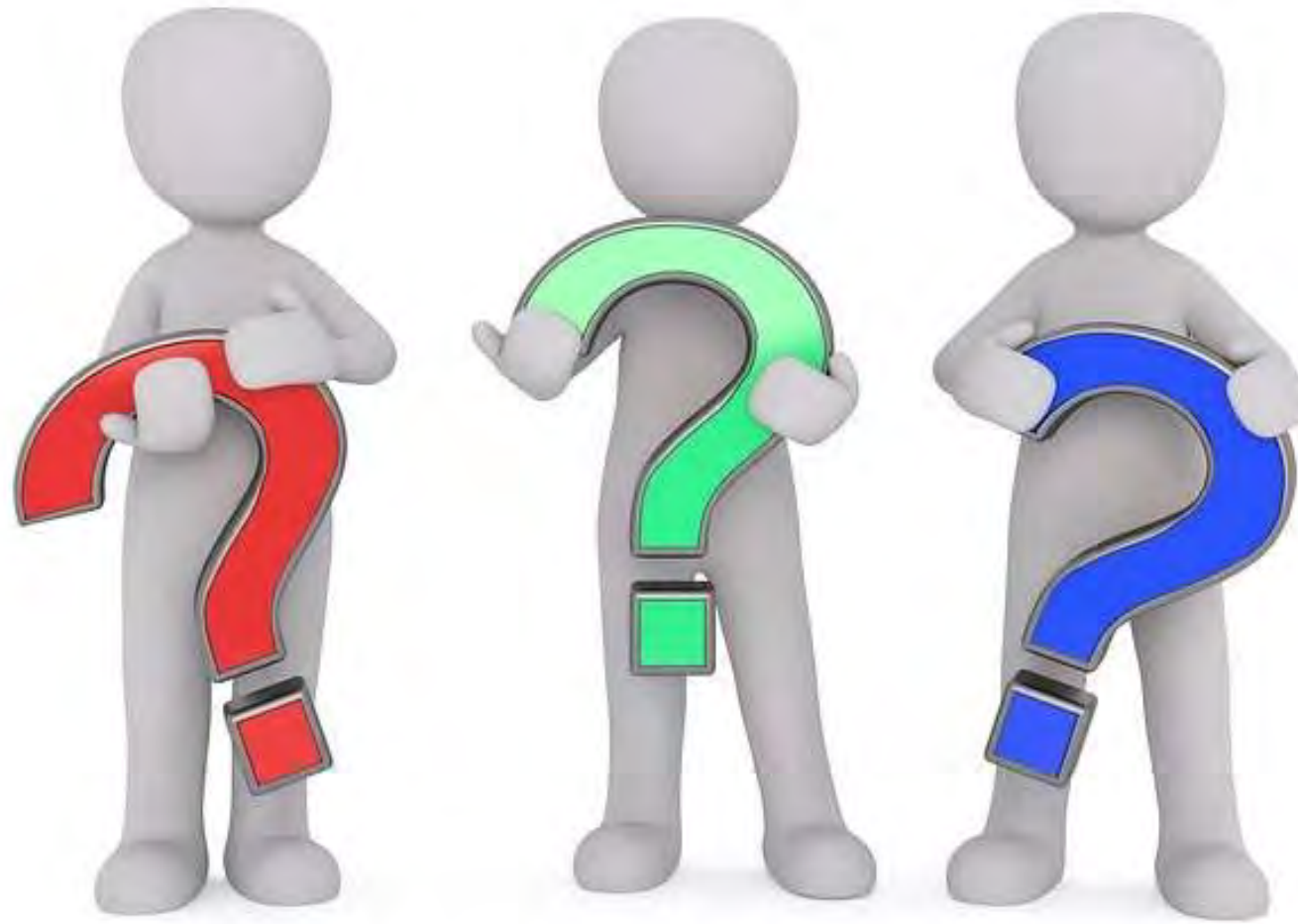
Agricultural Pesticides Handling



Ag  
Health & Safety  
Alliance

GREAT PLAINS  
Center for Agricultural Health





# Contact Information

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