



# Respirator Fit Test Capacity Building Guide



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## Introduction

Respiratory exposures in agriculture and other occupations may include pesticides, grain dust, livestock, mold, hay, exhaust from machinery, welding fumes and other types of organic dusts. Selection and appropriate use of respiratory protection is key to prevention of acute respiratory illness and long-term disease. A respirator must form an adequate seal with the wearer's face to protect against inhaling materials that could cause harm.

**Respirator Fit Testing** determines whether a particular respirator properly fits the face of the wearer. Fit testing may need to be completed prior to completing a job that requires the use of a respirator, such as pesticide application.

### When is a respirator fit test required?

The U.S. 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 U.S. Respirators protect workers against insufficient oxygen environments, harmful dusts, fogs, smokes, mists, gases, vapors, and sprays.

## Respiratory Protection Standard

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.

The **Respiratory Protection Standard** requires employers to establish and maintain a respiratory protection program to protect their respirator-wearing employees. Key elements of a respiratory protection program include the following:

- Respirator selection
- Medical evaluations
- **Respirator fit testing**
- Use of respirators
- Maintenance and care
- Assuring adequate air quality
- Identification of filters, cartridges, and canisters
- Training and information
- Program evaluation
- Record keeping

*This guidebook will provide information on **qualitative fit testing** and understanding roles and responsibilities for respirator fit testing based on professional capacity. This guidebook does not provide information on how to administer a Respiratory Protection Program.*

This OSHA website page (<https://www.osha.gov/respiratory-protection/general>) provides links to a variety of guidance documents, web pages, and online tools related to respiratory protection. Most have been created by the Occupational Safety & Health Administration (OSHA), but some have been prepared by other federal government agencies, such as the National Institute for Occupational Safety & Health (NIOSH). Some of the guidance materials were written primarily for employers and respirator program administrators, while others are geared more for workers.

## Respirator Fit Testing in Agriculture

Many respiratory exposures in agriculture can cause acute respiratory illness and long-term disease. OSHA can conduct enforcement activities on any person engaged in a farming operation with more than ten non-family employees or has maintained a temporary labor camp within the preceding 12 months.

These farms must follow OSHA requirements regarding the use of respirators including following the Respiratory Protection Standard. Most state plans have adopted Federal OSHA regulations and standards verbatim. Some states have plans that differ significantly from Federal OSHA. These states have standards that are more stringent than Federal OSHA standards or address hazards not covered by Federal OSHA.

Learn more about state standards at [osha.gov/SLTC/respiratoryprotection/standards](https://www.osha.gov/SLTC/respiratoryprotection/standards). It is highly recommended that all people exposed to respiratory hazards in agriculture wear a respirator and obtain a respirator fit test to ensure a proper fit.

More information is available on the OSHA Respiratory Protection eTool page: [osha.gov/SLTC/etools/respiratory/respirator\\_basics](https://www.osha.gov/SLTC/etools/respiratory/respirator_basics)



## 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.

Respiratory exposures in agriculture vary depending on the region and the type of farming. 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.

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# Labels

Anyone working with a pesticide must follow all personal protective equipment (PPE) requirements listed on the label. This is for safety and is a legal requirement for using pesticides. Pesticides that carry a risk of inhalation exposure require the use of a respirator.

Pesticide labels contain detailed information on how to use the product correctly and legally. Labels also contain information on potential hazards associated with the product and instructions you should follow in the event of a poisoning or spill. Following label instructions will allow you to minimize the risks and maximize the benefits.

Protect your Health Read the Label information is from the National Pesticide Information Center <http://npic.orst.edu/health/readlabel.html>

## Protect Your Health Read the Label

**Top three pesticide safety tips:**

- 1) Read the entire label
- 2) Only apply where the label says it should be applied
- 3) Keep all pesticides in their original containers

**MOSQUITO REPELLENT**

KEEP OUT OF REACH OF CHILDREN  
**WARNING:** Read cautions on back.

Active Ingredient: DEET 7.0%  
Other Ingredients: 93.0%  
NET 7.5 FL OZ (222 mL)

**ACTIVE INGREDIENTS**  
What is in the product?

**STORAGE & DISPOSAL**  
How does this product have to be stored? What should I do with the leftovers I don't need?

**EPA REGISTRATION NUMBER**  
What is the unique product number showing that the EPA has approved it?

**SIGNAL WORDS**  
How toxic is the product?  
**Caution** = mildly toxic  
**Warning** = moderately toxic  
**Danger** = highly toxic

Repels Mosquitoes, Ticks, Biting Flies, Gnats, No-see-ums, Chiggers & Fleas  
STOP: Read and Follow all directions and precautions on this product label.

**DIRECTIONS FOR USE**  
It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

**NOTICE:** To the extent consistent with applicable law, buyer assumes all responsibility for safety and use not in accordance with directions.

**STORAGE AND DISPOSAL**  
Storage: Store in a cool, dry place, out of reach of children.  
Container Disposal: If empty: \_\_\_\_\_  
If partly filled: \_\_\_\_\_

**PRECAUTIONARY STATEMENTS**  
Hazards to Humans and Domestic Animals.

First Aid. If in Eyes: \_\_\_\_\_

If Swallowed: Call a Poison Control Center or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by a Poison Control Center or doctor.

IF YOU SUSPECT A REACTION TO THIS PRODUCT: Discontinue use. Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a Poison Control Center or doctor for treatment advice.

**QUESTIONS:** For non-emergency information concerning this product, call the National Pesticide Information Center (NPIC) at 1-800-858-7378. For emergencies, call the Poison Control Center 1-800-222-1222. Have the product container or label with you when calling a Poison Control Center or doctor, or going for treatment.

EPA Reg. No. XXX-XX-XX

**DIRECTIONS FOR USE**  
How and where should I use the product? How much is okay?  
**Not following the product's instructions is not only dangerous, but it is illegal!**

**PRECAUTIONARY STATEMENTS**  
How can the product be used safely?

**FIRST AID**  
What should I do if it gets in my eyes, mouth, lungs, or on my skin?

**npic**  
NATIONAL PESTICIDE INFORMATION CENTER  
1.800.858.7378

For general questions about pesticides, including the potential risk to humans, pets, or the environment, call NPIC at 1-800-858-7378.

**POISON Help**  
1-800-222-1222

If someone breathes in, swallows, or gets pesticide in the eyes or on the skin, call a poison control center 24/7 at 1-800-222-1222.

# Worker Protection Standard (WPS) Related to Agriculture and Respirator Fit Testing

All requirements of the revised Agricultural Worker Protection Standard (WPS) are now in effect. Pesticide safety training materials with the expanded content required by the 2015 WPS must be used to train workers and handlers. EPA-approved training materials for national use are also available on the Pesticide Educational Resources Collaborative (PERC) website: <http://pesticideresources.org/>



Anyone working with a pesticide must follow all personal protective equipment (PPE) requirements listed on the label. This is for safety and is a legal requirement for using pesticides. Pesticides that carry a risk of inhalation exposure require the use of a respirator. Handler employers must provide the following protections for handlers **when using agricultural pesticide products that require the use of a respirator:**

1. **A medical evaluation by a physician or other licensed health care professional** that conforms to the provisions of 29 CFR 1910.134(e) for each handler — to ensure the handler’s physical ability to safely wear the respirator specified on the pesticide product labeling.
2. **Annual fit-test for each type of respirator required by the pesticide product(s) label** that the handler will be using. The fit-testing must be done in a manner that conforms to the provisions of 29 CFR 1910.134, including Appendix A.
3. **Annual training on how to properly use the respirator(s)** specified on the labeling of the pesticide products the handler will be using. The training must conform to the provisions of 29 CFR 1910.134(k)(1)(i) through (vi).
4. The handler employer must maintain records that document the completion of the requirements in the WPS — for at least two years from the dates conducted

## IMMEDIATE FAMILY EXEMPTION

When an agricultural establishment is majority-owned by one family, the WPS exempts owners and members of their immediate family from many of the WPS requirements. However, owners of agricultural establishments must do the following things for themselves and/or employed handlers who are immediate family members:

- Wear a respirator if required by the pesticide product label.
- Provide a respirator that is clean and in good working condition.
- Provide a medical evaluation before wearing a respirator.
- Provide fit-testing.
- Provide respirator training.
- Maintain records of medical evaluation, fit-testing, and/or respirator training.

Owners of agricultural establishments and their immediate family members are not required to do the following:

- Ensure that respirators are used correctly, maintained, and/or cleaned according to manufacturer’s instructions.
- Ensure that damaged respirators are rendered unusable.
- Provide a place to store and put on PPE that is away from stored pesticides.

**Notes:**

# 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 repurposing 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						
	<b>8210-N95</b>	<b>9211-N95</b>	<b>8511-N95</b>	<b>8271-P95</b>	<b>8233-N100</b>	<b>8515-N95</b>
<b>Uses</b>	Organic Dust, Mold, Livestock, Poultry, Hogs, Cattle, Hay, Grain, Woodworking, Pesticide Handling (refer to label), Zoonotic Diseases					Welding Soldering Metal Fumes
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• Least expensive</li> <li>• Easy to use</li> <li>• Durable</li> <li>• No exhalation valve</li> </ul>	<ul style="list-style-type: none"> <li>• Exhalation valve</li> <li>• Small face shape</li> <li>• Indiv. packaged</li> </ul>	<ul style="list-style-type: none"> <li>• Exhalation valve</li> <li>• Good for long periods of wear</li> <li>• Good for large face shapes</li> </ul>	<ul style="list-style-type: none"> <li>• Exhalation valve</li> <li>• Good for use with oil mist</li> <li>• Good seal</li> </ul>	<ul style="list-style-type: none"> <li>• Exhalation valve</li> <li>• Good straps</li> <li>• Longer use</li> <li>• Good seal</li> <li>• 100% efficient</li> </ul>	<ul style="list-style-type: none"> <li>• Exhalation valve</li> <li>• Economical option for welders</li> <li>• Flame resistant per modified ASTM D2859</li> </ul>

**Particulate Filter Types:** NIOSH-approved filters are rated as N95, R95, P95, N99, R99, P99, N100, R100 or P100. The number 95, 99 or 100 (99.97%) indicates the percent NIOSH filtration efficiency. **N Series:** Used in particulate environments free of oil aerosols. **R Series:** Used for oil and non-oil particles with time use limitations specified by NIOSH. **P Series:** Used for oil and non-oil particles with time use limitations specified by manufacturer.

**Exhalation valves** are designed to improve breathability by releasing hot, humid exhaled breath quickly, helping to reduce heat build-up and moisture inside the facepiece. This can help prevent fogging of glasses. An exhalation valve can also permit the exhalation of viruses and should not be worn for protection during a pandemic.

## 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

Different sizes available, can add cartridges.



## Full Facepiece

Includes eye protection and provides more protection.



### Cartridge Options

<b>P100</b> Pink or White		Organic Dust, Grain, Feed, Hogs, 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</b> Black		Pesticides, Paints Use Pre-Filter/Filter Cover
<b>Ammonia</b> Green		Anhydrous Ammonia (rescue or exit situations), Hogs, Poultry Use Pre-Filter/Filter Cover
<b>Organic Vapor Acid Gas</b> Yellow		Paints, Disinfectants, Bleach Use Pre-Filter/Filter Cover
<b>Multi Gas</b> Olive		Paints, Disinfectants, Bleach Use Pre-Filter/Filter Cover

**Remember:** Schedule times to change your cartridges based on a) the outdate on the product label, b) when it becomes difficult to breath, or c) 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 specifies). 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, tankers, 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 confuse 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.

# Respirator Fit Testing

## Types of Respirator Fit Testing

Fit tests are not required for loose-fitting respirators, such as hoods, helmets, and loose-fitting face-pieces because a tight seal is not needed for the equipment to protect the user. Fit tests are required for respirators with tight-fitting face-pieces, such as disposable particulate filter masks, half-masks, and full-face masks. A fit test may be required by WPS. Even if not required, it is recommended that a fit test be performed when a tight-fitting respirator is used to ensure that a proper seal can be formed.

**There are two types of fit tests: qualitative and quantitative.**

### Qualitative Fit Test

Qualitative fit testing is a pass/fail test method that uses your sense of taste or smell, or your reaction to an irritant to detect leakage into the respirator face piece. 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 face piece. There are 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



### Quantitative Fit Test

Quantitative fit testing uses a machine to measure the actual amount of leakage into the face piece and does not rely upon your sense of taste, smell, or irritation to detect leakage. The respirators used during this type of fit testing will have a probe attached to the face piece 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.

Quantitative fit testing can be used for any type of tight-fitting respirator



*Photo credit: Working for Health Ltd*

### Respirator Fit Test Kit Information

Qualitative fit test kits can be purchased from a wide range of safety supply online stores. The price ranges from \$200 – \$300 per kit. The cost depends on the brand and type of fit test solution which is part of the kit. Additional fit test solution and replacement fit test hoods can also be purchased.

Quantitative Fit Test Equipment can be rented or purchased from safety equipment supply companies. The cost varies depending on the brand and type of equipment.

# Filtering out Confusion: Frequently Asked Questions about Respiratory Protection

## User Seal Check

Over 3 million United States employees in approximately 1.3 million workplaces are required to wear respiratory protection. The Occupational Safety and Health Administration (OSHA) (29 CFR 1910.134) requires an annual fit test to confirm the fit of any respirator that forms a tight seal on the wearer's face before it is used in the workplace.<sup>1</sup> Once a fit test has been done to determine the best respirator model and size for a particular user, a **user seal check** should be done every time the respirator is to be worn to ensure an adequate seal is achieved.



## What is a User Seal Check?

A user seal check is a procedure conducted by the respirator wearer to determine if the respirator is being properly worn. The user seal check can either be a positive pressure or negative pressure check.

During a **positive pressure user seal check**, the respirator user **exhales** gently while blocking the paths for air to exit the facepiece. A successful check is when the facepiece is slightly pressurized before increased pressure causes outward leakage.

During a **negative pressure user seal check**, the respirator user **inhales** sharply while blocking the paths for air to enter the facepiece. A successful check is when the facepiece collapses slightly under the negative pressure that is created with this procedure.

A user seal check is sometimes referred to as a fit check. A user seal check should be completed each time the respirator is donned (put on). It is only applicable when a respirator has already been successfully fit tested on the individual.

## How do I do a User Seal Check while Wearing a Filtering Facepiece Respirator?

Not every respirator can be checked using both positive and negative pressure. Refer to the manufacturer's instructions for conducting user seal checks on any specific respirator. This information can be found on the box or individual respirator packaging.

The following positive and negative user seal check procedures for filtering facepiece respirators are provided as examples of how to perform these procedures.



Centers for Disease Control  
and Prevention  
National Institute for Occupational  
Safety and Health

## How to do a positive pressure user seal check

Once the particulate respirator is properly donned, place your hands over the facepiece, covering as much surface area as possible. Exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure is being built up inside the facepiece without any evidence of outward leakage of air at the seal. Examples of such evidence would be the feeling of air movement on your face along the seal of the facepiece, fogging of your glasses, or a lack of pressure being built up inside the facepiece.

If the particulate respirator has an exhalation valve, then performing a positive pressure check may be impossible. In such cases, a negative pressure check should be performed.

## How to do a negative pressure user seal check



Negative pressure seal checks are typically conducted on particulate respirators that have exhalation valves. To conduct a negative pressure user seal check, cover the filter surface with your hands as much as possible and then inhale. The facepiece should collapse on your face and you should not feel air passing between your face and the facepiece.

In the case of either type of seal check, if air leaks around the nose, use both hands to readjust the nosepiece by placing your fingertips at the top of the metal nose clip. Slide your fingertips down both sides of the metal strip to more efficiently mold the nose area to the shape of your nose. Readjust the straps along the sides of your head until a proper seal is achieved.<sup>2</sup>

If you cannot achieve a proper seal due to air leakage, you may need to be fit tested for a different respirator model or size.

## Can a user seal check be considered a substitute for a fit testing?

No. The user seal check does not have the sensitivity and specificity to replace either fit test methods, qualitative or quantitative, that are accepted by OSHA (29 CFR 1910.134). A user should only wear respirator models with which they have achieved a successful fit test within the last year. NIOSH data suggests that the added care from performing a user seal check leads to higher quality donnings (e.g., reduces the chances of a donning with a poor fit).<sup>3</sup>

## Where can I Find More Information?

This information and more is available on the [NIOSH Respirator Trusted-Source webpage](#).

### References

1. OSHA [1998]. Respiratory Protection. 29 CFR 1910.134. Final rule. Fed Regist 63:1152-1300.
  2. NIOSH [2010]. How to properly put on and take off a disposable respirator. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2010-133 <https://www.cdc.gov/niosh/docs/2010-133/pdfs/2010-133.pdf>
  3. Viscusi DJ, Bergman MS, Zhuang Z, and Shaffer RE [2012]. Evaluation of the benefits of the user seal check on N95 filtering facepiece respirator fit. J Occup and Environ Hyg. 9(6):408-416.
- Photos courtesy of NIOSH*

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info or visit the NIOSH Web site at [www.cdc.gov/NIOSH](http://www.cdc.gov/NIOSH).  
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# Qualitative Fit Test Apparatus FT-10 (Sweet) and FT-30 (Bitter)

## Instructions for Use

Issue Date 4/29/05

**Contents:**

- One Hood
- One Collar Assembly
- Nebulizer #1 (Sensitivity)
- Nebulizer #2 (Fit Test)
- Two Sets Replacement Nebulizer Inserts
- Sensitivity Solution (#1)
- Fit Test Solution (#2)

**Intended Use:**

The intended use of these products is to fit test any particulate respirator or gas/vapor respirator with a particulate prefilter.

**FT-10 Ingredients:**

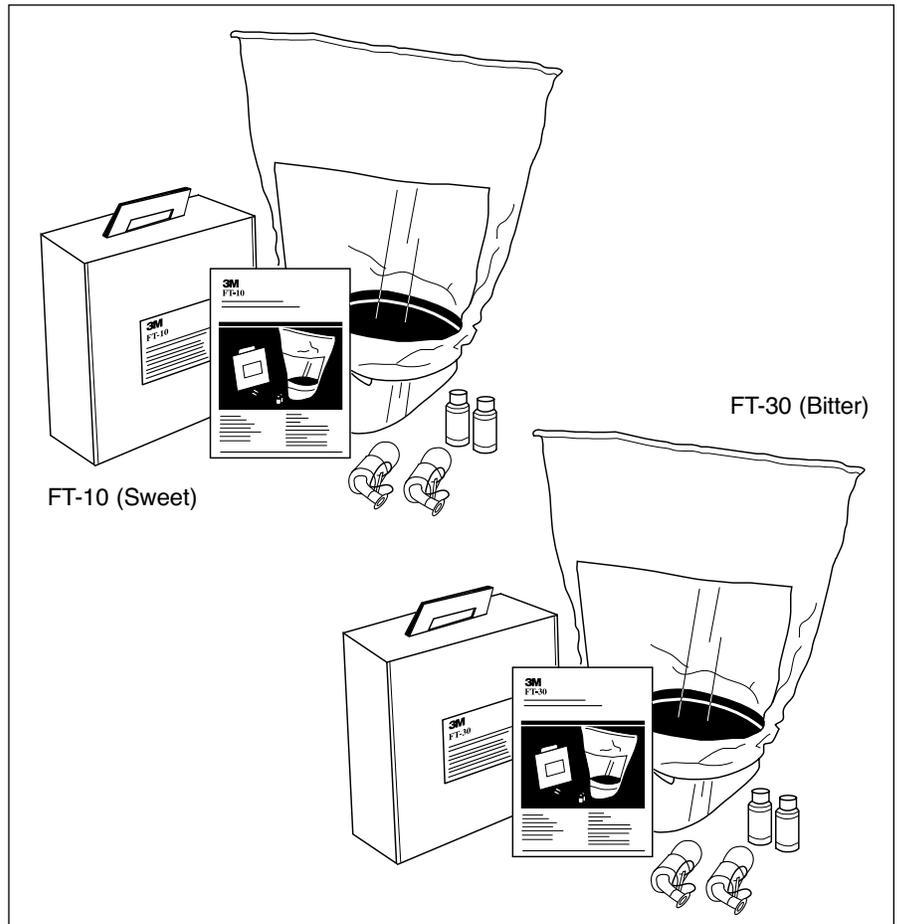
- Water, sodium saccharin

**FT-30 Ingredients:**

- Water, sodium chloride, denatonium benzoate

**Caution:** Denatonium benzoate is a very bitter chemical used to keep children from ingesting certain consumer products. Keep out of reach of children.

**Caution:** If there is evidence of solution contamination, immediately discard the bottle.



**3M™ Qualitative Fit Test Apparatus FT-10 (Sweet) and FT-30 (Bitter)**

**Note:** OSHA requires that a respirator medical evaluation be conducted prior to fit testing. Subjects should be informed of the ingredients of the fit test solution and that they will be exposed to a fine mist.

**Note:** If crystals are present hold closed bottle under a warm stream of water or shake vigorously to dissolve the material.

**OSHA:**

The 3M™ Qualitative Fit Test Apparatus FT-10 (Sweet) and FT-30 (Bitter) meet the performance criteria for fit testing respirators under the current OSHA Standard for Respiratory Protection: 29 CFR 1910.134.

## Instructions for Use

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### Preparation:

1. Attach hood to collar by placing drawstring between flanges on collar. Tighten drawstring and tie with square knot or bow.
2. Pour a small amount (approximately one teaspoonful) of the Sensitivity Test Solution (#1) into the nebulizer labeled “#1 Sensitivity Test Solution.”
3. Pour the same amount of Fit Test Solution (#2) into the second nebulizer labeled “#2 Fit Test Solution.”
4. Immediately recap the bottles.

### Sensitivity Test:

This test is done to assure that the person being fit tested can detect either the sweet or the bitter taste of the test solution at very low levels. The Sensitivity Test Solution is a very dilute version of the Fit Test Solution. The test subject should not eat, drink (except water), or chew gum for 15 minutes before the test.

1. Have the test subject put on the hood and collar assembly without a respirator.
2. Position the hood assembly forward so that there is about six inches between the subject’s face and the hood window.
3. Instruct the test subject to breathe through his/her mouth with tongue extended.
4. Using Nebulizer #1 with the Sensitivity Test Solution (#1), inject the aerosol into the hood through the hole in the hood window. Inject ten squeezes of the bulb, fully collapsing and allowing the bulb to expand fully on each squeeze. Both plugs on the nebulizer must be

removed from the openings during use. The nebulizer must be held in an upright position to ensure aerosol generation.

5. Ask the test subject if he/she can detect the sweet or bitter taste of the solution. If tasted, note the number of squeezes as 10 and proceed to the Fit Test.
6. If not tasted, inject an additional ten squeezes of the aerosol into the hood. Repeat with ten more squeezes if necessary. Note whether 20 or 30 squeezes produced a taste response.
7. If 30 squeezes are inadequate, in that the subject does not detect the sweet or bitter taste, the test is ended. Another type of fit test must be used.
8. Remove the test hood, and give the subject a few minutes to clear the taste from his/her mouth. It may be helpful to have the subject rinse his/her mouth with water.

### Fit Test:

1. Have the test subject don the respirator and perform a user seal check per the instructions provided on the respirator package.
2. Have subject wear any applicable safety equipment that may be worn during actual respirator use that could interfere with respirator fit. Respirator must be worn at least 5 minutes before testing.
3. Have the subject put on and position the test hood as before, and breathe through his/her mouth with tongue extended.
4. Using Nebulizer #2 with Fit Test Solution (#2), inject the fit test aerosol using the same number of squeezes as required in the

Sensitivity Test (10, 20, or 30).

A minimum of ten squeezes is required, fully collapsing and allowing the bulb to expand fully on each squeeze. The nebulizer must be held in an upright position to ensure aerosol generation.

5. To maintain an adequate concentration of aerosol during this test, inject one-half the number of squeezes (5, 10, or 15) every 30 seconds for the duration of the fit test procedure.
6. After the initial injection of aerosol, ask the test subject to perform the following test exercises for 60 seconds each:
  - a. Normal breathing — In a normal standing position, without talking, the subject shall breathe normally.
  - b. Deep breathing — In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
  - c. Turning head side to side — Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
  - d. Moving head up and down — Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
  - e. Talking — The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from

# 3M™ Qualitative Fit Test Apparatus FT-10 (Sweet) and FT-30 (Bitter)

## Instructions for Use

- a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.
- f. Bending over — The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place may be substituted for this exercise.
- g. Normal breathing — Same as exercise a.
7. The test is terminated at any time the sweet or bitter taste of aerosol is detected by the subject because this indicates an inadequate fit. Wait 15 minutes and perform the fit test again.
8. Repeat the fit test after redonning and readjusting the respirator. A second failure may indicate that a different size or model respirator is needed.
9. If the entire test is completed without the subject detecting the aerosol, the test is successful and respirator fit has been demonstrated.
10. Periodically check the nebulizer to make sure that it is not clogged. If clogging is found, clean the nebulizer and retest.

### Cleaning:

At the end of each session or at least every four hours, discard the unused solutions from the nebulizers.

**DO NOT pour unused solutions back into bottles.** Rinse the nebulizers with warm water to prevent clogging and shake dry. Wipe out the inside of the hood with a damp cloth or paper towel to remove any deposited Test Solution. 3M™ Respirator Cleaning Wipes 504 may be used to clean non-disposable type respirator facepieces between fit tests.

## Replacement Parts

Part Number	Description	Packaging
F-11	Sensitivity Solution — Sweet (55 ml Bottle)	1 Each/Box; 6 Boxes/Case
F-12	Fit Test Solution — Sweet (55 ml Bottle)	1 Each/Box; 6 Boxes/Case
FT-31	Sensitivity Solution — Bitter (55 ml Bottle)	1 Each/Box; 6 Boxes/Case
FT-32	Fit Test Solution — Bitter (55 ml Bottle)	1 Each/Box; 6 Boxes/Case
FT-13	Nebulizer	1 Each/Box; 3 Boxes/Case
FT-14	Test Hood (2/Pack)	2 Each/Box; 5 Boxes/Case
FT-15	Collar	1 Each/Box; 1 Box/Case

# 3M™ Qualitative Fit Test Apparatus FT-10 (Sweet) and FT-30 (Bitter)

## Instructions for Use

### 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.

### WARNING



Respirators help reduce exposure to certain airborne contaminants. **Misuse may result in sickness or death.** Before use, the wearer must read and understand *User Instructions* provided as a part of product packaging. Time use limitations may apply. Call 3M OH&ESD Technical Service at 1-800-243-4630. In Canada, call 1-800-267-4414.

#### Important

Before using respirators, you must determine the following:

1. The type of contaminant(s) for which the respirator is being selected.
  2. The concentration level of contaminant(s).
  3. Whether the respirator can be properly fitted on the wearer's face. All respirator instructions, warnings and use and time limitations must also be read and understood by the wearer before use.
- Before use of these respirators, a written respiratory protection program must be implemented, meeting all the requirements of OSHA 29 CFR 1910.134, including training, medical evaluation and fit testing.

#### For more information, please contact:

#### 3M Occupational Health and Environmental Safety Division (OH&ESD)

#### In the U.S., contact:

##### Sales Assistance

1-800-328-1667

##### Technical Assistance

1-800-243-4630

##### Fax On Demand

1-800-646-1655

##### Internet

[www.3M.com/occsafety](http://www.3M.com/occsafety)

#### For other 3M products

1-800-3M HELPS

#### In Canada, contact:

3M Canada Company, OH&ESD

P.O. Box 5757

London, Ontario N6A 4T1

##### Sales Assistance

1-800-265-1840, ext. 6137

##### Technical Assistance (Canada only)

1-800-267-4414

##### Fax On Demand

1-800-646-1655

##### Internet

[www.3M.com/CA/occsafety](http://www.3M.com/CA/occsafety)

#### Technical Assistance In Mexico

01-800-712-0646

5270-2255, 5270-2119 (Mexico City only)

#### Technical Assistance In Brazil

0800-132333

#### Fax On Demand O.U.S. Locations

1-651-732-6530

**3M Occupational Health and Environmental Safety Division**  
3M Center, Building 235-2W-70  
St. Paul, MN 55144-1000

3M™ FT-10 (sweet) and 3M™ FT-30 (bitter) fit test kits are suitable for disposable respirators, half facepiece fitted with particulate filters, and full facepieces fitted with particulate filters.†

Wearers must be clean-shaven to get a proper fit with a respirator.

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



### Part 1 - Sensitivity Testing (The “Taste Test”)

1. Add 1/2 teaspoon of sensitivity solution (in red labeled bottle) into the sensitivity nebulizer (marked in red). Visually confirm that the nebulizer produces a cloud of aerosol when the bulb is squeezed.
2. Place test hood on participant. A respirator should not be worn during the sensitivity test.
3. Ask the participant to breathe through their mouth with their tongue slightly extended and ask them to indicate immediately when they taste the solution.
4. Squeezing the bulb completely and aiming the nebulizer to the side rather than directly at the subject, squeeze solution into the hood and count the number of squeezes it takes for the solution to be tasted.
5. If desired, participant may drink some water.



### 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 dose and start the exercises. Add a replenishing dose after every 30 second per the table below.
5. After the initial dose, ask the participant to carry out the 7 exercises shown in turn for 1 minute each and indicate immediately if solution is tasted. Remember to add a replenishing dose every 30 seconds.
6. Throughout the test, remind the participant to breathe through their mouth and visually confirm that the nebulizer is not clogged.
7. Record all results.
  - If solution is not tasted after all 7 exercises, they have passed the test with that specific respirator. If solution is tasted, stop the test, rinse mouth, face, and hands, refit respirator and restart at Part 1 - Sensitivity Testing.
  - If solution is still tasted on the second attempt, stop the test, rinse hands, mouth, and face, and consider trying an alternative 3M respirator.
7. Discard all unused solution.

### 7 Exercises



1. Breathe normally
2. Breathe deeply
3. Head side-to-side
4. Head up and down
5. Talking
6. Bend over at waist
7. Breathe normally

This product is part of a system that helps reduce exposures to certain airborne contaminants. Before use, the wearer must read and understand these User Instructions. Follow all local regulations. In the U.S., a written respiratory protection program must be implemented meeting all the requirements of 29 CFR 1910.134, including training, fit testing and medical evaluation. In Canada, CSA standard 294.4 requirements must be met and/or requirements of the applicable jurisdiction, as appropriate. Misuse may result in injury, sickness or death. For correct use, consult supervisor and User Instructions, or call 3M Technical Service in USA at 1-800-243-4630 and in Canada at 1-800-267-4414.



Quantitative fit testing must be used when an assigned protection factor higher than 10 is needed for a full facepiece used in negative pressure mode, per 29 CFR 1910.134

#### Personal Safety Division

3M Center, Building 235-2W-70  
St. Paul, MN 55144-1000

3M PSD products are occupational uses only.

#### Sweet taste

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

#### Bitter taste

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

**Stop the test if solution is not tasted after 30 squeezes. Try an alternative solution from below.**

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 demonstration video, visit the link below.  
[go.3M.com/Fit](http://go.3M.com/Fit)

## 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.

**Notes:**

# 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

# Medical Evaluation

This information is provided by the Minnesota Department of Health <https://www.health.state.mn.us/>

This section of the Respiratory Protection standard requires employers to implement medical evaluations to determine an employee's ability to use a respirator. This requirement is necessary because using a respirator may place a burden on an employee's health. This burden varies according to several factors, such as the weight and breathing resistance of the respirator and the workplace conditions where the respirator is worn

A physician or other licensed health care professional (<https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/rpp/comp/evaluation.html#phydefinition>) must perform the medical evaluation using OSHA's respirator medical evaluation questionnaire or an initial medical exam that obtains the same information as the OSHA questionnaire. OSHA's respirator medical evaluation questionnaire is mandatory and must be performed prior to fit testing.

NOTE: The medical questionnaire and examinations must be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee and in a manner that ensures that he or she understands its content. The employer must not review the employee's responses, and the questionnaire must be provided directly to the PLHCP. (See Paragraph (e)(4)(i))

## Information Needed by Physician (before or at evaluation):

- Type of respirator used
- Frequency of use
- Duration of use
- Physical demands while wearing respirator
- Environmental conditions (heat, etc.)
- Other protective equipment worn

## Follow-up Physical Examination

A follow-up physical evaluation is required for anyone who gives a positive response to any question 1-8 and can be given at physician's discretion.

- As required by initial certification
- Will include any tests the physician determines are necessary

## Physician or Other Licensed Health Care Professional

An individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him/her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e), medical evaluation."

## Physiologic effects of respirator use:

### Pulmonary effects

- » increased breathing resistance
- » increased work of breathing
- » decreased endurance
- » decrease in exercise performance

### Cardiac effects

- » increased cardiac work
- » increased heart rate
- » increased blood pressure

### Psychological effects

- » Claustrophobia » Hyperventilation
- » Anxiety

Potential contraindications to respirator use:

- Severe pulmonary disease
- Severe cardiac disease
- Uncontrolled hypertension
- Claustrophobia
- Facial abnormalities that prevent good fit

When to medically certify:

- Respirators place several physiological stresses on wearers—stresses that particularly involve the pulmonary and cardiac systems.
- Respirators typically used by health care workers are generally lightweight, and the physiological stresses they create are usually small.
- Therefore, most workers can safely wear respirators.
- Primary pre-use certification
  - » Because most health care workers wear the very light, disposable half-mask respirator, CDC Guidelines recommend that a health questionnaire be the initial step in the evaluation.
  - » If results from this evaluation are essentially normal, the employee can be cleared for respirator wear.
  - » Further evaluation, possibly including a directed physical examination and/or spirometry, should be considered in cases in which potential problems are suggested on the basis of the questionnaire results.
- Routine periodic recertification
  - » The provider may request to periodically recertify the wearer. There is no definite standard or requirement.
- Evaluation of users having problems
  - » Recertification is recommended if the employee reports medical signs or symptoms related to the ability to use a respirator, the employer determines that an employee needs to be reevaluated, or a change occurs in workplace conditions that may substantially increase the physiological burden on an employee.
  - » Recertification may also be necessary if information from the respirator program indicates a need.

How often should recertification be performed?

- No definite standard or requirement
- Physician discretion
- Some recommendations:
  - » <35 years of age, every 4 - 5 years
  - » 35 - 45 years of age, every 2 years>
  - » 45 years of age, every year

Is a medical evaluation required for voluntary use of a respirator (i.e., when respirator use is not required by your employer)?

- It depends on the type of respirator to be worn. A written respirator program, including medical evaluation, is required for the voluntary use of any respirator except filtering facepiece respirators

## Medical Forms

- OSHA Respirator Medical Evaluation Questionnaire (Mandatory):  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9783](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9783)  
Appendix C to Respiratory Protection Standard; respirator medical evaluation questionnaire.
- Respirator Medical Recommendation Form:  
<https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/rpp/comp/repmedform.pdf>  
This form outlines the results of the Occupational Safety and Health Administration (OSHA) Respirator Medical Evaluation and is to be filled out by a licensed medical provider based on the review of the OSHA Respirator Medical Evaluation Questionnaire (above).

## Additional Medical Evaluation Resources

Szeinuk J, Beckett WS, Clark N, Hailoo WL. (2000), Medical evaluation for respirator use. *Am. J. Ind. Med.*, 37: 142-157. [https://doi.org/10.1002/\(SICI\)1097-0274\(200001\)37:1<142::AID-AJIM11>3.0.CO;2-K](https://doi.org/10.1002/(SICI)1097-0274(200001)37:1<142::AID-AJIM11>3.0.CO;2-K)

Johnson AT. Respirator masks protect health but impact performance: A Review. *J Biol Eng.* 2016 Feb 9;10:4. doi: 10.1186/s13036-016-0025-4. PMID: 26865858; PMCID: PMC4748517. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4748517/>

Belafsky S, Vlach J, McCurdy SA. (2013) Cardiopulmonary Fitness and Respirator Clearance: An Update, *Journal of Occupational and Environmental Hygiene*, 10:5, 277-285, DOI: <https://doi.org/10.1080/15459624.2013.774631>

OSHA Small Entity Compliance Guide for the Respiratory Protection Standard at <https://www.osha.gov/Publications/3384small-entity-for-respiratory-protection-standard-rev.pdf>

# OSHA INFOSHEET

## Respirator Medical Evaluation Questionnaire

**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. To facilitate these medical evaluations, this INFOSHEET includes the mandatory medical questionnaire to be used for these evaluations.**

### Medical Evaluation and Questionnaire Requirements

The requirements of the medical evaluation and for using the questionnaire are provided below:

- The employer 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. (See Paragraph (e)(2)(i).)
- The medical evaluation must obtain the information requested in Sections 1 and 2, Part A of Appendix C. The questions in Part B of Appendix C may be added at the discretion of the health care professional. (See Paragraph (e)(2)(ii).)
- The employer must ensure that a follow-up medical examination is provided for any employee who gives a positive response to any question among questions 1 through 8 in Part A Section 2, of Appendix C, or whose initial medical examination demonstrates the need for a follow-up medical examination. The employer must provide the employee with an opportunity to discuss the questionnaire and examination results with the PLHCP. (See Paragraph (e)(3)(i).)
- The medical questionnaire and examinations must be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee and in a manner that ensures that he or she understands its content. The employer must not review the employee's responses, and the questionnaire must be provided directly to the PLHCP. (See Paragraph (e)(4)(i).)

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### Excerpt from Appendix C of 29 CFR 1910.134: OSHA Respirator Medical Evaluation Questionnaire

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**To the employer:** Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

**To the employee:** Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Once filled out, this form must be given to the PLHCP. This form should **not** be submitted to OSHA.



	YES	NO
c. Chronic bronchitis	<input type="checkbox"/>	<input type="checkbox"/>
d. Emphysema	<input type="checkbox"/>	<input type="checkbox"/>
e. Pneumonia	<input type="checkbox"/>	<input type="checkbox"/>
f. Tuberculosis	<input type="checkbox"/>	<input type="checkbox"/>
g. Silicosis	<input type="checkbox"/>	<input type="checkbox"/>
h. Pneumothorax (collapsed lung)	<input type="checkbox"/>	<input type="checkbox"/>
i. Lung cancer	<input type="checkbox"/>	<input type="checkbox"/>
j. Broken ribs	<input type="checkbox"/>	<input type="checkbox"/>
k. Any chest injuries or surgeries	<input type="checkbox"/>	<input type="checkbox"/>
l. Any other lung problem that you've been told about	<input type="checkbox"/>	<input type="checkbox"/>
4. Do you <i>currently</i> have any of the following symptoms of pulmonary or lung illness?	<input type="checkbox"/>	<input type="checkbox"/>
a. Shortness of breath	<input type="checkbox"/>	<input type="checkbox"/>
b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline	<input type="checkbox"/>	<input type="checkbox"/>
c. Shortness of breath when walking with other people at an ordinary pace on level ground	<input type="checkbox"/>	<input type="checkbox"/>
d. Have to stop for breath when walking at your own pace on level ground	<input type="checkbox"/>	<input type="checkbox"/>
e. Shortness of breath when washing or dressing yourself	<input type="checkbox"/>	<input type="checkbox"/>
f. Shortness of breath that interferes with your job	<input type="checkbox"/>	<input type="checkbox"/>
g. Coughing that produces phlegm (thick sputum)	<input type="checkbox"/>	<input type="checkbox"/>
h. Coughing that wakes you early in the morning	<input type="checkbox"/>	<input type="checkbox"/>
i. Coughing that occurs mostly when you are lying down	<input type="checkbox"/>	<input type="checkbox"/>
j. Coughing up blood in the last month	<input type="checkbox"/>	<input type="checkbox"/>
k. Wheezing	<input type="checkbox"/>	<input type="checkbox"/>
l. Wheezing that interferes with your job	<input type="checkbox"/>	<input type="checkbox"/>
m. Chest pain when you breathe deeply	<input type="checkbox"/>	<input type="checkbox"/>
n. Any other symptoms that you think may be related to lung problems	<input type="checkbox"/>	<input type="checkbox"/>
5. Have you <i>ever had</i> any of the following cardiovascular or heart problems?		
a. Heart attack	<input type="checkbox"/>	<input type="checkbox"/>
b. Stroke	<input type="checkbox"/>	<input type="checkbox"/>
c. Angina	<input type="checkbox"/>	<input type="checkbox"/>
d. Heart failure	<input type="checkbox"/>	<input type="checkbox"/>

	YES	NO
e. Swelling in your legs or feet (not caused by walking)	<input type="checkbox"/>	<input type="checkbox"/>
f. Heart arrhythmia (heart beating irregularly)	<input type="checkbox"/>	<input type="checkbox"/>
g. High blood pressure	<input type="checkbox"/>	<input type="checkbox"/>
h. Any other heart problem that you've been told about	<input type="checkbox"/>	<input type="checkbox"/>
6. Have you <i>ever had</i> any of the following cardiovascular or heart symptoms?	<input type="checkbox"/>	<input type="checkbox"/>
a. Frequent pain or tightness in your chest	<input type="checkbox"/>	<input type="checkbox"/>
b. Pain or tightness in your chest during physical activity	<input type="checkbox"/>	<input type="checkbox"/>
c. Pain or tightness in your chest that interferes with your job	<input type="checkbox"/>	<input type="checkbox"/>
d. In the past two years, have you noticed your heart skipping or missing a beat	<input type="checkbox"/>	<input type="checkbox"/>
e. Heartburn or indigestion that is not related to eating	<input type="checkbox"/>	<input type="checkbox"/>
f. Any other symptoms that you think may be related to heart or circulation problems	<input type="checkbox"/>	<input type="checkbox"/>
7. Do you <i>currently</i> take medication for any of the following problems?	<input type="checkbox"/>	<input type="checkbox"/>
a. Breathing or lung problems	<input type="checkbox"/>	<input type="checkbox"/>
b. Heart trouble	<input type="checkbox"/>	<input type="checkbox"/>
c. Blood pressure	<input type="checkbox"/>	<input type="checkbox"/>
d. Seizures	<input type="checkbox"/>	<input type="checkbox"/>
8. If you've used a respirator, have you <i>ever had</i> any of the following problems? (If you've never used a respirator, check the following space and go to question 9.) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Eye irritation	<input type="checkbox"/>	<input type="checkbox"/>
b. Skin allergies or rashes	<input type="checkbox"/>	<input type="checkbox"/>
c. Anxiety	<input type="checkbox"/>	<input type="checkbox"/>
d. General weakness or fatigue	<input type="checkbox"/>	<input type="checkbox"/>
e. Any other problem that interferes with your use of a respirator	<input type="checkbox"/>	<input type="checkbox"/>
9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire?	<input type="checkbox"/>	<input type="checkbox"/>
<p>Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.</p>		
10. Have you <i>ever</i> lost vision in either eye (temporarily or permanently)?	<input type="checkbox"/>	<input type="checkbox"/>
11. Do you <i>currently</i> have any of the following vision problems?	<input type="checkbox"/>	<input type="checkbox"/>
a. Wear contact lenses	<input type="checkbox"/>	<input type="checkbox"/>
b. Wear glasses	<input type="checkbox"/>	<input type="checkbox"/>
c. Color blind	<input type="checkbox"/>	<input type="checkbox"/>
d. Any other eye or vision problem	<input type="checkbox"/>	<input type="checkbox"/>

	YES	NO
12. Have you <i>ever had</i> an injury to your ears, including a broken eardrum?	<input type="checkbox"/>	<input type="checkbox"/>
13. Do you <i>currently</i> have any of the following hearing problems?	<input type="checkbox"/>	<input type="checkbox"/>
a. Difficulty hearing	<input type="checkbox"/>	<input type="checkbox"/>
b. Wear a hearing aid	<input type="checkbox"/>	<input type="checkbox"/>
c. Any other hearing or ear problem	<input type="checkbox"/>	<input type="checkbox"/>
14. Have you <i>ever had</i> a back injury?	<input type="checkbox"/>	<input type="checkbox"/>
15. Do you <i>currently</i> have any of the following musculoskeletal problems?	<input type="checkbox"/>	<input type="checkbox"/>
a. Weakness in any of your arms, hands, legs, or feet	<input type="checkbox"/>	<input type="checkbox"/>
b. Back pain	<input type="checkbox"/>	<input type="checkbox"/>
c. Difficulty fully moving your arms and legs	<input type="checkbox"/>	<input type="checkbox"/>
d. Pain and stiffness when you lean forward or backward at the waist	<input type="checkbox"/>	<input type="checkbox"/>
e. Difficulty fully moving your head up or down	<input type="checkbox"/>	<input type="checkbox"/>
f. Difficulty fully moving your head side to side	<input type="checkbox"/>	<input type="checkbox"/>
g. Difficulty bending at your knees	<input type="checkbox"/>	<input type="checkbox"/>
h. Difficulty squatting to the ground	<input type="checkbox"/>	<input type="checkbox"/>
i. Climbing a flight of stairs or a ladder carrying more than 25 lbs.	<input type="checkbox"/>	<input type="checkbox"/>
j. Any other muscle or skeletal problem that interferes with using a respirator	<input type="checkbox"/>	<input type="checkbox"/>

This infosheet does not include the questions in Part B because they are not mandatory; rather, they may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

### OSHA Educational Materials

OSHA has an extensive publications program. For a listing of free items, visit OSHA's web site at [www.osha.gov/publications](http://www.osha.gov/publications) or contact the OSHA Publications Office, U.S. Department of

Labor, 200 Constitution Avenue, N.W., N-3101, Washington, DC 20210. Telephone (202) 693-1888 or fax to (202) 693-2498.

### Contacting OSHA

To report an emergency, file a complaint or seek OSHA advice, assistance or products, call (800) 321-OSHA (6742) or contact your nearest OSHA regional, area, or State Plan office; TTY: 1-877-889-5627.

This InfoSheet is not a standard or regulation, and it creates no new legal obligations. It contains recommendations as well as descriptions of mandatory safety and health standards. The recommendations are advisory in nature, informational in content, and are intended to assist employers in providing a safe and healthful workplace. The *Occupational Safety and Health Act* requires employers to comply with safety and health standards and regulations promulgated by OSHA or by a state with an OSHA-approved state plan. In addition, the Act's General Duty Clause, Section 5(a)(1), requires employers to provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm.



U.S. Department of Labor



## Supplemental Respirator Medical Evaluation Information

The following information sheet was adapted from the Oregon OSHA Medical Evaluation publication provided by the Pesticide Educational Resources Collaborative (PERC). It is a sample to give guidance on how to provide the information for the Physician and Licensed Health Care Professional.

The EMPLOYER must provide this supplemental information to the health care professional (PLHCP) who will review the employee's medical questionnaire:

EMPLOYEE'S NAME: \_\_\_\_\_

EMPLOYEE'S JOB TITLE/CLASSIFICATION: \_\_\_\_\_

1. What type of respirator will this employee use?

*Check the type(s) below (you can check more than one category):*

\_\_\_\_\_ N-, R-, or P- filtering face-piece  
(disposable, "dust mask" type)

\_\_\_\_\_ Tight-fitting, air-purifying half-mask,

\_\_\_\_\_ Tight-fitting full-face mask

\_\_\_\_\_ Air-purifying type

\_\_\_\_\_ Supplied air type

\_\_\_\_\_ Powered-air purifying respirator (PAPR)

\_\_\_\_\_ Tight-fitting, full face mask

\_\_\_\_\_ Loose-fitting helmet or hood

\_\_\_\_\_ Self-Contained Breathing Apparatus (SCBA)

\_\_\_\_\_ Escape (gas mask)

\_\_\_\_\_ Other

2. What is the approximate weight of the respirator and any tanks or air hoses?

\_\_\_\_\_

3. How often will the employee use the respirator(s)? (circle "yes" or "no" for all answers that apply)

a. Escape only (no rescue duties) Yes / No

b. Less than 2 hrs. per day Yes / No

c. Emergency rescue only Yes / No

d. 2 to 4 hrs. per day Yes / No

e. Less than 5 hrs. per week Yes / No

f. Over 4 hrs. per day Yes / No

4. When the employee uses the respirator(s), is their work effort:

a. Light (less than 200 kcal per hour) Yes / No

If "yes" how long does this period last during the average shift: hrs. \_\_\_\_\_ mins. \_\_\_\_\_

*Examples of light work effort: sitting while writing, typing, drafting, or performing light assembly work; or standing while controlling machines.*

b. Moderate (200 to 350 kcal per hour): Yes / No

If "yes" how long does this period last during the average shift: hrs. \_\_\_\_\_ mins. \_\_\_\_\_

*Examples of moderate work effort: sitting while nailing or filing; driving a truck, drilling, nailing, performing assembly work, or transferring a moderate load (about 35 pounds) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 pounds) on a level surface. (A gallon of water weighs about 8 lbs; so, a full, 3-gallon, backpack sprayer weighs about 25 lbs.)*

c. Heavy (above 350 kcal per hour): Yes / No

If "yes" how long does this period last during the average shift? hrs. \_\_\_\_\_ mins. \_\_\_\_\_

*Examples of heavy work: lifting a heavy load (about 50 pounds) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph, climbing stairs with a heavy load (about 50 pounds).*

5. Will the employee wear protective clothing and/or equipment (other than the respirator) when using their respirator?

Yes / No

If "yes," describe this protective clothing and/or equipment: \_\_\_\_\_

\_\_\_\_\_

6. Will they be working in hot conditions (temperature more than 77 degrees F)? Yes / No

7. Will they be working in humid conditions? Yes / No

8. Describe the work they will be doing while using their respirator(s):

\_\_\_\_\_

\_\_\_\_\_

## Respirator Medical Recommendation Form

This form outlines the results of the Occupational Safety and Health Administration (OSHA) Respirator Medical Evaluation. Based on review of the OSHA Respirator Medical Evaluation Questionnaire (Mandatory) this form must be completed by a licensed medical provider.

### Respirator Use Recommendations Example Form

Name \_\_\_\_\_ ID# \_\_\_\_\_

Company if applicable: \_\_\_\_\_

**Type of respirator to be used** (circle all that apply):

- a. N, R, or P disposable filtering facepiece
- b. Half-facepiece air-purifying respirator
- c. Full facepiece air-purifying respirator
- d. Powered air purifying respirator
- e. Supplied air respirator
- f. Self-contained breathing apparatus

**Recommendations:**

- a. No restrictions on respirator use
- b. Some specific restrictions on respirator use (listed below)
- c. No respirator use permitted

Restrictions/Comments \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Follow-up medical evaluation recommended:      Yes or No

If yes, recommendations: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

A copy of the **Respirator Use Recommendations** is provided to the above individual:    Yes or No

# Community-Based Respirator Fit Testing

Respirator fit testing is a growing need in many agricultural communities due to changes in the Worker Protection Standard requirements for producers who apply pesticides. Respirator fit testing is also important for other types of exposures, but many communities do not have someone who is trained to perform fit testing.

One individual may have the capacity to perform all aspects of the respirator fit test including administering the questionnaire, review of the medical questionnaire, medical evaluation and perform the fit test but this is not common. In most cases people will need to rely on more than one individual to accomplish having a respirator fit test that complies with OSHA standards. This will require building a network consisting of individuals and organizations to ensure individuals can easily receive a respirator fit test. The chart on the previous page provides appropriate roles and responsibilities for a variety of individuals and professionals that may be responsible for respirator fit testing. Two different examples of how these individuals can work together are as follows:

## Example # 1 ABC Manufacturing Company

- ABC Manufacturing Company determines their employees need a respirator fit test and implements a Respiratory Fit Test Program,
- The Safety Officer at ABC Manufacturing Company administers the medical questionnaire,
- A registered nurse (RN) or licensed health care professional (LHCP) reviews the medical questionnaire to determine if a medical evaluation is required,
- A local physician does the medical evaluation for the employee(s),
- The safety officer at ABC Manufacturing Company is qualified to perform respirator fit testing,
- The safety officer establishes and maintains a Respiratory Program per OSHA requirements. This includes education, respirator cleaning, storage and cartridge changing schedule.



## Example #2 Farmer Swanson Applies Pesticides

- Farmer Swanson determines his family members need a respirator fit test based on the pesticide label.
- Farmer Swanson contacts his health care provider (HCP Office) to find out how to get a respiratory fit test.
- The HCP Office discusses the need for a medical questionnaire to be completed with Farmer Swanson. She/he directs Farmer Swanson pick up the medical questionnaire or sends it by mail or email to Farmer Swanson and his family members.
- Farmer Swanson and family members complete the medical questionnaire and return it to the HCP Office.



- An RN or other LHCP at the HCP Office reviews the medical questionnaire to determine if a medical evaluation is needed.
- Physician or Nurse Practitioner does the medical evaluation for Farmer Swanson but not the rest of his family members, as they do not need an evaluation based on their answers to the questions.
- The RN or other LHCP at HCP Office who is qualified to do fit testing does the respirator fit testing for Farmer Swanson and all family members.
- The RN at the Nurse HCP office provides Farmer Swanson and his family members with a fit test record for their records.

### **Community-based Respirator Fit Testing Business Case**

Finding a way to make respirator fit testing accessible in communities can be challenging. In many cases, several organizations and /or individuals may need to be involved to accomplishing a respirator fit test program that complies with OSHA and/ or the Worker Protection Standard.

Having all aspects of respirator fit testing in one organization is the easiest but not always feasible. A health care provider has the potential to have this ability by having an individual(s) trained in performing respirator fit testing within the office.

In other scenarios, someone trained in fit testing would refer to a health care provider for the medical evaluation services. In all scenarios, communication, networking and establishing a fee structure is important. The following items will most likely require some type of fee for service structure.

- Medical evaluation questionnaire review
- Medical evaluation (this may include a physical and a lung function test)
- Respirator Fit Test
- Respirator use education
- Respirator program administration
- Retail sales of respirator supplies

Fit testing a respirator is an important part of the entire process of appropriate respiratory protection. Other aspects of respirator fit testing include the availability of respirators and cartridges for specific respiratory hazards. Individuals or health care providers who perform respiratory fit testing and assist with the administration of a respirator program are many times also the resource for assisting the individual in finding the right respirator and purchasing decisions. Creating a community-based respirator fit test model will assist in making certain that all aspects of appropriate respirator protection are available.

## Community-based Respirator Fit Test Program Planning

When establishing a community-based respirator fit testing in your community consider the following items:

1. What are your qualifications? (Safety officer, nurse, pharmacist, farmer, farm wife, physician, nurse practitioner)  
Are you willing and able to administer the OSHA Medical Questionnaire? Yes / No  
If no, who can administer this questionnaire?
  
2. Are you qualified and willing to review the medical questionnaire? Yes / No  
If no, who can review the medical questionnaire?
  
3. Are you qualified and willing to perform the medial evaluation? Yes / No  
If no, who can perform the medical evaluation?
  
4. Do you plan to perform respirator fit tests in your community? Yes / No  
If no, who would be able to do this?
  
5. Are you confident in your ability to recommend appropriate respiratory protection? Yes / No  
If no, who would be your resource to recommend appropriate respirator protection?
  
6. List the organizations or individuals who would be part of your community-based respirator fit testing:
  - a. Medical professional \_\_\_\_\_
  - b. Safety professional \_\_\_\_\_
  - c. Professional Licensed Health Care Providers (PLHCP) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  - d. Others \_\_\_\_\_
  
7. Where can people purchase respiratory protection in your community?
  - a. Research what respirators are available in the community
  - b. Make a list (including prices) for people seeking fit testing
  - c. If respiratory protection is not available or is limited in your community, where else can people buy respiratory protection.
  
8. Do you know the cost of respirators of all types? Yes / No
  - a. Make a list of respirators commonly used
  - b. Research local and online prices of respirators

**Notes:**

# Education and Respirator Inspection

Respirator Inspection Checklist	
<b>Face-piece</b>	<input type="checkbox"/> No cracks, tears, or holes <input type="checkbox"/> No face-mask 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

## 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 record keeping requirements.

**Notes:**

# Fit Test Record

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

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

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

Farm/Company: \_\_\_\_\_

**Fit test method (check one):**

Qualitative saccharin       Qualitative bitrex  
*(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                      30 squeezes

**½ 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

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

Problems the employee encountered with respirator:

**Notes:**

# Resources

## OSHA / CDC / NIOSH / Resources

1. OSHA Respiratory Protection Standards  
<https://www.osha.gov/SLTC/respiratoryprotection/standards.html>
2. OSHA Respiratory Protection Training Video  
<https://www.osha.gov/respiratory-protection/training>
3. OSHA Info Sheet: Respirator Medical Evaluation Questionnaire  
<https://www.osha.gov/Publications/OSHA3789info.pdf>
4. Appendix A to §1910.134—Fit Testing Procedures (Mandatory) Part I. OSHA-Accepted Fit Test Protocols A. *Fit Testing Procedures—General Requirements*  
<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134AppA>
5. OSHA Small Entity Compliance Guide  
<https://www.osha.gov/sites/default/files/publications/3384small-entity-for-respiratory-protection-standard-rev.pdf>
6. CDC – A Guide to Air Purifying Respirators  
<https://www.cdc.gov/niosh/topics/respirators/>
7. Respirator Protection Program NIH.gov  
<https://www.ors.od.nih.gov/sr/dohs/Documents/Respiratoryprotectionprogram.pdf>

## Minnesota Department of Public Health

8. Minnesota Department of Public Health – Respiratory Protection Home  
<https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/rpp/index.html>
  - a. Medical Screening:  
<https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/rpp/comp/evaluation.html>
  - b. Fit Testing:  
<https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/rpp/comp/fittest.html>
  - c. Evaluation:  
<https://www.health.state.mn.us/facilities/patientsafety/infectioncontrol/rpp/comp/evaluating.html>

## Ag Health and Safety Organization Resources

9. Ag Health and Safety Alliance  
<https://aghealthandsafety.com/resources/>
10. Central States Center for Agricultural Health and Safety (CS-CASH)  
<https://www.unmc.edu/publichealth/cscash/>
11. Great Plains Center for Agricultural Health (GPCAH)  
<https://gpcah.public-health.uiowa.edu/outreach-2/topics/>
12. High Plains Intermountain Center for Agricultural Health and Safety (HICAHS)  
<https://vetmedbiosci.colostate.edu/hicahs/resources/>
13. Upper Midwest Agricultural Safety and Health Center (UMASH)  
<http://umash.umn.edu/>
14. Western Center for Agricultural Health and Safety (WCAHS)  
<https://aghealth.ucdavis.edu/training>

## **Worker Protection Standard**

9. PERC: Pesticide Educational Resources Collaborative  
<http://pesticideresources.org//index.html>
10. Worker Protection Standard Compliance Assistance Library  
<http://pesticideresources.org/wps/index.html>
11. How to Comply with the 2015 Revised Worker Protection Standard For Agricultural Pesticides: What Owners and Employers Need To Know  
<http://pesticideresources.org/wps/htc/index.html>
12. Just for You: Agricultural Employers  
<http://pesticideresources.org/wps/jfy/agemp/index.html>
13. WPS Respiratory Protection Guide: Requirements for Employers of Pesticide Handlers  
<http://pesticideresources.org/wps/respirators.html>
14. National Pesticide Information Center  
<http://npic.orst.edu/reg/wps.html>

## **Extension Resources**

15. Penn State Extension  
<https://extension.psu.edu/catalogsearch/result/?q=respirators>
16. North Dakota State University Extension — Which Mask for Which Task?  
<https://www.ag.ndsu.edu/farmsafety/general-safety/which-mask-for-which-task>
17. Colorado State University Extension — Agricultureal Respiratory Protection Equipment  
<https://extension.colostate.edu/docs/pubs/farmmgmt/05020.pdf>
18. Fit Testing a Respirator for Pesticide Applications  
<http://extensionpublications.unl.edu/assets/pdf/ec3027.pdf>

## **Industry and 3M Resources**

19. 3M Quick Reference Guide:  
<https://multimedia.3m.com/mws/media/1658130O/quick-reference-guidequalitative-fit-testing.pdf>
20. 3M Fit Testing Website  
[https://www.3m.com/3M/en\\_US/safety-centers-of-expertise-us/respiratory-protection/fit-testing/](https://www.3m.com/3M/en_US/safety-centers-of-expertise-us/respiratory-protection/fit-testing/)
21. Guide to using Fit Test Kits
  - a. Allegro Fit Test Kits  
<https://youtu.be/C89eHTicEakGG>
  - b. Guide to using the 3M Qualitative Fit Test Kits  
<https://multimedia.3m.com/mws/media/992396O/3m-fit-test-kit-training-video.mp4>





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