

## **Recommendations for Negative Pressure Respirator Fit Testing during COVID-19 with remote fit testing assistance from WVU Safety & Health Extension.**

WVU Safety and Health Extension (WVUSHE) has compiled the following recommendations to reduce the risk and transmission of COVID-19 during respiratory fit testing.

Quantitative Fit Tests (QNFTs) are not recommended for filtering facepiece respirators at this time because of depleted supplies of filtering facepieces. Once supplies have stabilized, WVUSHE recommends QNFTs especially for those essential workers that are considered “very high risk” and “high” risk workers that may be exposed to COVID-19. Refer to Worker Exposure Risk to COVID-19:

<https://www.osha.gov/Publications/OSHA3993.pdf>

Qualitative Fit Tests (QLFTs) for filtering facepiece and half mask respirators with particulate filters are limited to the following:

- Saccharin solution aerosol\*
- Bitrex solution (Denatonium Benzoate) aerosol\*
- Irritant smoke (stannic chloride)

\* Saccharin and Bitrex solutions require a test enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall. The test subject dons the test enclosure (without a respirator) for a taste threshold screening test and the test subject is instructed to breathe through their slightly open mouth with tongue extended to determine if they can taste the saccharin or Bitrex threshold check solution. Therefore, the test enclosure needs to be adequately disinfected between users. This puts the person administering the fit test and subsequent fit test subjects at risk of exposure because of possible contamination of the test enclosure during sensitivity screening.

Irritant smoke uses a person's response to the irritating chemicals released in the “smoke” produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator. The irritant smoke protocol does not require the use of a test enclosure. The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s). For the sensitivity screening check the person to be fit tested must demonstrate their ability to detect a weak concentration of irritant smoke.

### **WVUSHE Procedures for Irritant Smoke Fit Test Consultation:**

- Email WVUSHE at [SafetyandHealth@mail.wvu.edu](mailto:SafetyandHealth@mail.wvu.edu) to request assistance with QLFT – irritant smoke fit testing
- Please review the general information and links provided for medical evaluation, user seal checks and fit tests
- Determine the respirator type (half mask respirator with P100 filters or P100 filtering facepiece)
- Identify irritant smoke fit test products.
- Connect with WVUSHE through a provided Zoom meeting link and a password will be provided for secure login.
- A WVUSHE specialist will guide you through the irritant smoke fit testing protocol and fit testing procedure.
- Do not share the respirators during fit testing to limit contamination and potential spread of COVID-19.
  - a. If you must share respirators completely decontaminate the respirator between each fit test. This requires that the person performing the decontamination must wear proper PPE including gloves, respirator, and face shield or goggles.
  - b. Must completely wipe out the inside and outside of the half mask respirator including paying particular attention to valve areas while disinfecting. 1910.134: Appendix B-2 Respirator Cleaning

Procedures (Mandatory) <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134AppB2>

- c. The person conducting the fit test should wear a respirator, face shield and gloves. Gloves will need to be changed between each fit test if handling of a potentially contaminated respirator and fit test equipment.

Additional References and Supplementary Materials.

Note: Decontamination and Reuse of Filtering Facepiece Respirators

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html>

**Respiratory Protection:** OSHA 1910.134. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134>

**Medical Evaluation.** 1910.134(e)

The employer shall provide a medical evaluation to determine the employee's ability to use a respirator, before the employee is fit tested or required to use the respirator in the workplace. The employer shall identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire. The medical evaluation shall obtain the information requested by the questionnaire in Sections 1 and 2, Part A of Appendix C:

- <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134AppC>

**Fit testing.** 1910.134(f)

The employee must be fit tested with the same make, model, style, and size of respirator that will be used in the workplace. The employer shall ensure that employees using a tight-fitting facepiece respirator pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT) in Appendix A:

- <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134AppA>

Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator.

The test subject shall conduct a **user seal check**, either the negative and positive pressure seal checks described in appendix B-1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in appendix B-1. User seal checks are not substitutes for qualitative or quantitative fit tests.

- <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134AppB1>

**Irritant Smoke:** 1910.134 App A., B. QLFT, 5. Irritant Smoke (Stannic Chloride) Protocol

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134AppA>

**Fit Testing Procedures:** 1910.134 App A, A. Fit Testing Procedures – General Requirements

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134AppA>

- The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface.
- The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
- The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.

- The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.
- Test Exercises - each test exercise shall be performed for one minute.
  - Normal breathing
  - Deep breathing
  - Turning head side to side
  - Moving head up and down
  - Talking: Rainbow Passage
  - Bending over
  - Normal breathing

### **Additional Resources:**

#### **Videos:**

*Honeywell Training for Fit Testers: Irritant Smoke | Honeywell Safety:*

[https://www.youtube.com/watch?v=FbfCcA\\_alDs](https://www.youtube.com/watch?v=FbfCcA_alDs)

*OSHA, OSHA Respirator Safety (user seal check for filtering facepieces and half mask respirators):*

<https://www.youtube.com/watch?v=TzpZ5fko-fg>

*U.S. Department of Labor, The Difference Between Respirators and Surgical Masks*

<https://www.youtube.com/watch?v=ovSLAuY8ib8&t=5s>

***The following examples are not product endorsements but are instead provided so that the user may identify applicable types of respiratory protection and fit testing equipment.***

Irritant smoke fit testing kit. Examples:

- Allegro, Irritant Smoke Test Kits: <https://www.allegrosafety.com/product/standard-smoke-test-kits/>  
<https://www.grainger.com/category/safety/respiratory-protection/half-mask-respirators>
- VeriFit Irritant Smoke Generators: <https://www.grainger.com/category/safety/respiratory-protection/fit-testing?internalSearchTerm=&refineSearchString=irritant+smoke>

Half Facepiece Respirators and P100 filters. Examples:

- 3M Half Facepiece Respirators: [https://www.3m.com/3M/en\\_US/company-us/all-3m-products/~All-3M-Products/Personal-Protective-Equipment/Reusable-Respirators/Half-Facepiece-Respirators/?N=5002385+8711017+8720539+8720550+8720785+3294857497&rt=r3](https://www.3m.com/3M/en_US/company-us/all-3m-products/~All-3M-Products/Personal-Protective-Equipment/Reusable-Respirators/Half-Facepiece-Respirators/?N=5002385+8711017+8720539+8720550+8720785+3294857497&rt=r3)
- 3M Particulate P100 Filters: [https://www.3m.com/3M/en\\_US/company-us/all-3m-products/~All-3M-Products/Personal-Protective-Equipment/Reusable-Respirators/?N=5002385+7581674+8711017+8720539+8720550+3294857497&rt=r3](https://www.3m.com/3M/en_US/company-us/all-3m-products/~All-3M-Products/Personal-Protective-Equipment/Reusable-Respirators/?N=5002385+7581674+8711017+8720539+8720550+3294857497&rt=r3)
- MSA Advantage 200 LS Half Mask Respirators: <https://us.msasafety.com/Air-Purifying-Respirators-%28APR%29/c/106>
- Advantage Low Profile P100 Filters: <https://us.msasafety.com/pn/815369>

P-100 Filtering Facepiece Respirators. Examples:

- 3M Particulate Respirator 8293, P-100: [https://www.3m.com/3M/en\\_US/company-us/all-3m-products/~3M-Particulate-Respirator-8293-P100-20-EA-Case/?N=5002385+3294776418&rt=rud](https://www.3m.com/3M/en_US/company-us/all-3m-products/~3M-Particulate-Respirator-8293-P100-20-EA-Case/?N=5002385+3294776418&rt=rud)
- Moldex Respiratory Protection Disposable Respirators, P-100: <https://www.moldex.com/product-category/respiratory-protection/disposable-respirators/p100-respirators/>
- Honeywell P100 Disposable Respirators: <https://www.honeywellstore.com/store/products/honeywell-p100-lead-removal-valved-disposable-respirator-rws-54020.htm>

Purchasing. Examples:

Irritant Smoke: <https://www.grainger.com/category/safety/respiratory-protection/fit-testing?internalSearchTerm=&refineSearchString=irritant+smoke>

Respirators: <https://www.grainger.com/category/safety/respiratory-protection/half-mask-respirators>

P100 Particulate Filters: <https://www.grainger.com/category/safety/respiratory-protection/cartridges-and-filters?attrs=Cartridge+Approved+For%7CP100&filters=attrs>

Disposable Particulate Filtering Facepiece Respirators:

<https://www.grainger.com/category/safety/respiratory-protection/disposable-respirators-and-dust-masks?attrs=Respirator+Filter+Class%7CP100&filters=attrs>