



Global Risk Advisors

Qualitative Respirator Fit Testing

Joseph A. Lohkamp, CIH, CSP

AVP – Industrial Hygiene and Safety

October 7, 2020

Chubb Global Risk Advisors is a service of ESIS[®], Inc., a Chubb company. Chubb Global Risk AdvisorsSM provides claim and risk management services to a wide variety of commercial clients. ESIS' innovative best-in-class approach to program design, integration, and achievement of results aligns with the needs and expectations of our clients' unique risk management needs. With more than 60 years of experience, and offerings in both the U.S. and globally, ESIS provides one of the industry's broadest selections of risk management solutions covering both pre and post-loss services. Chubb is the marketing name used to refer to subsidiaries of Chubb Limited providing insurance and related services. For more information, visit us at www.chubb.com.

Chubb Global Risk Advisors' loss control services are not a substitute for, and do not excuse a client from, fulfilling any legal duty they may have to provide a safe workplace, premises, product or operation. Chubb Global Risk Advisors' loss control services are not intended as a substitute for advice from legal counsel, nor are they intended to supplant any duty to provide a safe workplace, operation, product or premises. Any duty to implement Chubb Global Risk Advisors' recommendations rests with the client not with Chubb Global Risk Advisors.

The opinions and positions expressed in this presentation are the presenter's own and not necessarily those of Chubb. The material presented herein is not intended to provide legal or other expert advice as to any of the subjects mentioned, but rather is presented for general information only. You should consult knowledgeable legal counsel or other knowledgeable experts as to any legal or technical questions you may have. This presentation is solely for informational purposes.

Fit Test Requirements

Occupational Safety and Health Administration (OSHA) 29 CFR 1910.134 (f)

- Requirements – Prior to using any negative or positive pressure tight-fitting face piece
 - Prior to Initial Use
 - Annually thereafter

OSHA Temporary Enforcement Guidelines

Due to supply shortages – relaxed annual fit testing requirements (April 8, 2020 till further notice) as long as employers:

- Make Good Faith efforts to comply
- Use only NIOSH- certified respirators
- Implement CDC and OSHA strategies for optimizing the Supply of N95
- Perform initial fit tests for health care providers (HCP) with the same model, style, size respirator
- Inform works that the employer is temporarily suspending the annual fit testing of N95
- Explain to the work the importance of performing a User Seal Check
- Conduct a fit test if they observe visual changes in the employees physical condition that could affect respirator fit
- Remind workers they to inform supervisors if the integrity or fit of N95 are compromised
- Employers should evaluate engineering controls, work practices, and administrative controls

Qualitative Fit Testing Table Set-up



What you will find

- Most people do not know how to use or wear a respirator
- People may bring their own respirator, but you are fit testing the ones provided as there is a short supply
- One size fit all?
- People bring medical evaluations/questionnaires, but they are unnecessary for the fit testing process

Testing Requirements

- People being fit tested should not do the following for at least 15 minutes prior to fit testing:
 - Eat anything
 - Chew Gum
 - Chew or smoke tobacco
 - Drink anything other than water

QUALITATIVE FIT TEST FOR N₉₅ RESPIRATORS IS A TASTE TEST -- YOU DO NOT WANT ANYTHING THAT CAN AFFECT THE SUBJECT'S ABILITY TO TASTE

People Will Show Up With Facial Hair

Facial Hairstyles and Filtering Facepiece Respirators

Intended for workers who wear tight-fitting respirators

Facial Style	Compatibility	Notes
CLEAN SHAVEN	✓	
STUBBLE	✗	
LONG STUBBLE	✗	
FULL BEARD	✗	
FRENCH FORK	✗	
DUCKTAIL	✗	
VERDI	✗	
GARIBALDI	✗	
BANDHOLZ	✗	
SOUL PATCH	✓	
GOATEE	✗	(Careful! Chin hair may easily cross the seal)
CHIN CURTAIN	✗	
EXTENDED GOATEE	✗	
CIRCLE BEARD	✗	
ANCHOR	✗	(Careful! Chin hair may easily cross the seal)
BALBO	✗	(Careful! Chin hair may easily cross the seal)
VAN DYKE	✗	
IMPERIAL	✗	
SIDE WHISKERS	✓	
MUTTON CHOPS	✗	
HULIHEE	✗	
HORSESHOE	✓	(Careful not to cross the seal)
ZAPPA	✓	
WALRUS	✓	
PAINTER'S BRUSH	✓	
CHEVRON	✓	
HANDLEBAR	✓	
PENCIL	✓	
TOOTHBRUSH	✓	
LAMP SHADE	✓	
ZORRO	✓	
VILLAIN	✗	(Careful not to cross the seal)
FU MANCHU	✗	
ENGLISH	✗	
DALI	✗	

*If your respirator has an exhalation valve, some of these styles may interfere with the valve working properly if the facial hair comes in contact with it.
 †This graphic may not include all types of facial hairstyles. For any style, hair should not cross under the respirator sealing surface.
 Source: OSHA Respiratory Protection Standard
https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=12716
 Further Reading: NIOSH Respirator Trusted-Source Webpage
https://www.cdc.gov/niosh/nppt/topics/respirators/disp_part/respsource3fittest.html

Original image vector by fredriser/Shutterstock.com




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

2017

What Is An N95?

- Do surgical masks require fit testing if required by employer?
- Do KN – 95 respirators provide respiratory protection?

Understanding the Difference

			
	Surgical Mask	N95 Respirator	Elastomeric Half Facepiece Respirator
Testing and Approval	Cleared by the U.S. Food and Drug Administration (FDA)	Evaluated, tested, and approved by NIOSH as per the requirements in 42 CFR Part 84*	Evaluated, tested, and approved by NIOSH as per the requirements in 42 CFR Part 84
Intended Use and Purpose	Fluid resistant and provides the wearer protection against large droplets, splashes, or sprays of bodily or other hazardous fluids. Protects the patient from the wearer's respiratory emissions.	Reduces wearer's exposure to particles including small particle aerosols and large droplets (only non-oil aerosols)	Reusable device made of synthetic or rubber material
Face Seal Fit	Loose-fitting	Tight-fitting	Tight-fitting
Fit Testing Requirement	No	Yes	Yes

Source: CDC

Be On The Look Out For Counterfeits

[Resource: NIOSH – National Personal Protective Technology Lab \(NPPTL\)- Factors to Consider when Planning to Purchase Respirators from Another Country- Webinar and related links](#)



Recent Respirator Issues

- June 6, 2020 – FDA reissued the Emergency Use Authorization for Non- NIOSH Approved Disposable FFR Manufactured in China.
 - Appendix A – No Longer Authorized under certain circumstances
- August 20, 2020 – NIOSH International Assessment Results – Not NIOSH Approved
 - Only particulate filter efficiency was assessed.
 - Most of these products have an ear loop design
 - NIOSH indicates that the ear loop is difficult to achieve a proper fit



Labeling Requirements

Required Labeling of NIOSH-Approved N95 Filtering Facepiece Respirators

For more information about NIOSH-Approved respirators, go to <https://www.cdc.gov/niosh/npptl/pdfs/N95-Infographic-Mask-Labeling-508.pdf>

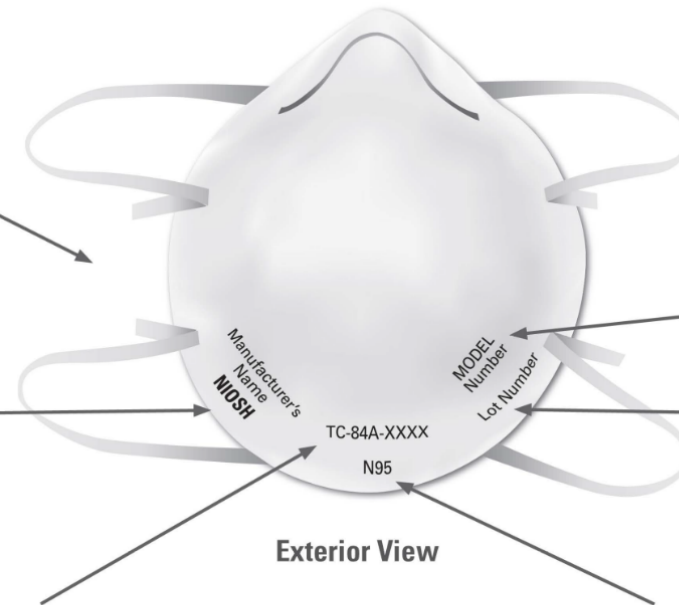
Example of Exterior Markings—Approval holder business name, a registered trademark or an easily understood abbreviation.

If privately labeled, the private label name or logo will appear instead of the approval holder business name.

NIOSH—NIOSH name in block letters or NIOSH logo.

TC-Approval Number (TC-84A-XXXX)—For products manufactured after September 2008, the TC-Approval number is required to appear on the product.

Filter Designation—NIOSH filter series. Alpha-numerical rating followed by filter efficiency level (example, N95, N99, N100, R95, P95, P99, P100)



Model # XXXX—Model Number or Part Number

Lot # XXXX—Lot Number and Date of Manufacture (recommended, but not required)

Signs That a Respirator May be Counterfeit

- According to NIOSH, August 24, 2020:
 - No markings at all on the FFR
 - No approval (TC) number on the FFR or headband
 - No NIOSH Markings
 - NIOSH spelled incorrectly
 - Presence of decorative fabric or other add-ons
 - Claims of the approval for Children
 - FFR has ear loops instead of headbands

[Additional Tips for Spotting Counterfeit Respirators](#)

What About Exhalation Valves?

- Great for worker protection and will not affect performance of respirator for worker protection
- According to CDC –
 - Not be used in situations where a sterile field must be maintained because the exhalation valve may allow unfiltered exhaled air to escape into the sterile field.
 - Masks with exhalation valves or vents should NOT be worn to help prevent the person wearing the mask from spreading virus particles to others (source control)



How Long Are They Good For?

- Follow the respirator filter manufacturer's service-time-limit recommendations
 - According to NIOSH 42 CFR Part 48 - N, R, or P- series filter service life is limited by considerations of hygiene, damage, and increased breathing resistance and replaced accordingly.
 - N-series, and R-series if oil is NOT present, can be extended beyond 8-hours if the extended use will not degrade the filter, and the filter has a mass loading of less than 200 mg. In the presence of oil, R-series filters should not be used beyond 8 hours.
- [CDC/NIOSH- Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings](#)

Wearing The Respirator Correctly



Wear It Right: Putting on Your Respirator

NOTE: This sheet supplements, but does not replace, User Instructions. Always read and follow User Instructions.



1. Prepare to Use Respirator*

- Wash your hands thoroughly with soap and water, or use hand sanitizer, before handling.
- Inspect respirator for holes, tears or other damage to surface, straps, metal nose strip and nose foam. Get a new respirator if damaged.
- With model 8210, pre-stretch the straps before wearing.
- If you wear glasses, read steps 2 through 4, then remove glasses before putting on the respirator.

2. Place Respirator on Face		3. Adjust the Metal Nosepiece	4. Check Respirator-to-Face Seal	
Place respirator against your face, with the bottom under chin and metal nosepiece across bridge of nose.	Pull the top elastic band over your head and place at the top back of your head.	Next pull the bottom elastic band over your head and place around the neck below the ears.	Use both hands to bend the metal nosepiece to fit snugly against your nose and face. The respirator may not fit as well if you pinch the metal nosepiece using one hand. Use two hands. Slide fingers down both sides of metal nosepiece to seal it against your nose and face.	<p>For non-valved respirators: Completely cover the outside of the respirator with both hands. Do not push the respirator against your face. With your hands in place on the surface of the respirator, exhale, or breathe out sharply. If you feel air blowing on your face or eyes, the respirator needs to be adjusted. To adjust, repeat steps 2, 3 and 4. When respirator is a good fit, you will not feel any air blowing on your face or eyes. If you can't get a good fit, try a different model respirator. Return glasses to face, if applicable.</p> <p>For valved respirators: Completely cover the outside of the respirator with both hands. Do not push the respirator against your face. With your hands in place on the surface of the respirator, inhale, or breathe in sharply. If you feel air blowing on your face or eyes, the respirator needs to be adjusted. To adjust, repeat steps 2, 3 and 4. When respirator is a good fit, you will not feel any air blowing on your face or eyes. If you can't get a good fit, try a different model respirator. Return glasses to face, if applicable.</p>

WARNING

Filtering facepiece particulate respirators are intended to help reduce breathing in airborne particles such as dust. If you do not follow all instructions and limitations on the use of this respirator and/or do not wear this respirator during all times of exposure to the particles, the respirator may not be as effective. The respirator cannot stop the breathing in of all particles in the air and does not eliminate the risk of symptoms or sickness. **Misuse may result in sickness or death.** For correct use of this respirator, consult the supervisor and *User Instructions* or call 3M at 1-800-247-3941.

*This document applies only to non-folding respirators. Consult instructions for folding respirators online at 3m.com/workersafety

Fit Testing

- The fit test must be administered using an OSHA-accepted Qualitative Fit Test (QLFT) or Quantitative Fit Test (QNFT) protocol contained in Appendix A
 - QLFT Protocols
 - Isoamyl acetate (Banana Oil) - Smell Test - Organic vapor cartridges or similar needed
 - **Saccharin (Sweet Solution) – Taste Test**
 - **Bitrex (Bitter Solution) – Taste Test**
 - Irritant smoke - Irritation (N, R, or P 100 series Filter required)
 - QNFT Protocols (Best)
 - Better fit test, but discouraged for N95 respirators during shortages



Fit Testing (cont'd)

- Remember to explain the test prior to starting the fit test.
 - Explain what test agent your are using indicating that the sensitivity solution and fit test solution are the same, but the fit test solution is 10 times more concentration.
 - Ask the subject to breath through his/her slightly opened mouth with tongue extended.
 - Ask the subject to indicate the following:
 - Sensitivity – ask the subject to indicate as soon as they taste it
 - Fit test – if at any point during the fit test exercises



Qualitative Fit Test (QLFT)

- A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
- Are employees telling the truth?



Qualitative Fit Test Report

QUALITATIVE FIT TEST REPORT
 BITREX SACCHARIN

FIT TEST INFORMATION
29 CFR 1910.134 APPENDIX A

Company Name:
Last Name:
First Name:
Location:

Special Notes:

Fit Test Date:
Next Fit Test Due Date:

Test Time:

Respirator Manufacturer:
Model Number:
Cartridge Used:

Mask Style:
Mask Size:

Sensitivity Screening Check

Sensitivity Check	Pass	Fail
Number to Squeezes	10 20	30

Note: 5 minute Comfort Assessment required prior to fit test

Fit Test

<u>Exercise</u>	<u>Duration (Sec)</u>	<u>Pass</u>
Normal Breathing	60	Yes / No
Deep Breathing	60	Yes / No
Head Side to Side	60	Yes / No
Head Up and Down	60	Yes / No
Talking	60	Yes / No
Bend and Touch Toes	60	Yes / No
Normal Breathing	60	Yes / No
Post-Test Sensitivity Check	--	Yes / No

Fit Test Result Pass Fail

Comments _____

Rainbow passage: When 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 his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

Fit Test Operator _____ Date _____

Name of Employee _____ Date _____



How Long Does A Qualitative Fit Test Take?

- At least 5 minute comfort assessment = 5 minutes
- Sensitivity check = 1 – 5 minutes
- Clearing mouth and re-donning respirator = 1 – 5 minutes
- Fit test itself (assuming they pass the first time) = 7 minutes

Total time per fit test(in a perfect world) = **15 - 20 minutes**

Can you do more than 1 fit test at a time?

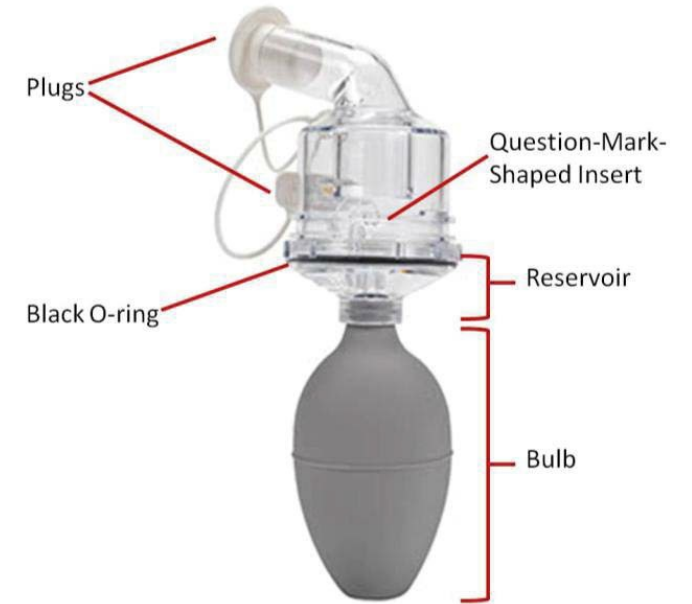
Cleaning The Shroud

- Don't Forget
 - Clean the shroud between fit test
 - Use isopropyl alcohol or ethanol (at least 60%)
 - If you cannot find it, get some grain alcohol like Everclear.



Nebulizer

- Remember:
 - Clean the nebulizer by rinsing it in water, shake dry, and refilled at least each morning and afternoon or at least every 4 hours.
 - Approximately 1 milliliter (ml) of Bitrex or Saccharin solution is used at a time in the nebulizer body.



Questions





Global Risk Advisors