Handout
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Respiratory Protection Program

Regulatory Overview

• OSHA Respiratory Protection Standard 29 CFR 1910.134
• Currently under Emergency Use Authorization (EUA)
Respiratory Protection Program Administrator

- Hazard assessment
- Develop & implement policies & procedures
- Ensure training
- Coordinate purchase of respirators
- Ensure fit testing
- Maintain records
- Evaluate effectiveness of program
Hazard Assessment

- Based on job title & individual task
- Respirator Assignment by task or location

Types of Respirators

- Filtering Facepiece Respirator (FFR)
  - CDC / FDA if NIOSH approved
  - N95 – negative pressure capture more than 95% of particles from the air that passes through it
- Elastomeric Respirator
- Powered Air Purifying Respirator (PAPR)
Medical Evaluation Questionnaire

• Lung disease
• Heart disease
• Claustrophobia
• Previous difficulty w/ respirators

Medical Evaluation Questionnaire

• Review by Physician or Licensed Healthcare Provider before fit testing
  • Referral for medical evaluation
  • Signed & placed in health file
  • Re-evaluation health change, change in workplace conditions
Fit Testing – Key factors for respirator to be effective

• Put on correctly & worn during exposure
• Fit snugly against the user’s face to ensure there are not gaps between skin & respirator seal
• Respirator filter > 95% of particles

Training

• Respiratory Protection Program
• When respirators needed
• Respiratory hazards exposed to
• Limitations of respirator
  • Medical conditions that limit effectiveness
• Donning & Doffing - Competency
• Cleaning / storage
• Information for Voluntary Users

Upon hire, before use of respirator & annually
Storage & Cleaning

• PAPR – stored at room temp protected from exposure
  • Clean according to Manufacturer’s IFU
  • Disposable FFRs discarded after each use

Extended use

• Favored over re-use
• Use for multiple patient encounters
• Must maintain fit & function
• Cleanable face shield or surgical mask over N95 to reduce contamination
• Hand hygiene before & after touching respirator
• Discard if visibly damaged or hard to breathe through
• Discard after AGP
Limited Reuse

- Doffing after each encounter
- Check w/ IFU for maximum number of donnings, if no IFU, limit to 5
- Store in paper bag
- Hang in storage area – do not touch each other
- Avoid touching inside of respirator
- Single wearer
- Fit – straps still tight, nosepiece broken
- Seal check

Annual Respiratory Protection Program Evaluation

- Annual Training
- Evaluation checklist – on workplace practices
- Fit Testing
- Feedback
- Respiratory hazard assessments
- Approved by MEC / Governing Body
Recordkeeping

- Medical evaluation questionnaire
- N95 Respirator fit test form
- Annual fit test / mask questionnaire
  - Weight loss/gain
  - Facial changes
- Validation of donning/doffing competency

References

OSHA Respiratory Protection Program  29 CFR 1910.134

Strategies for Optimizing the Supply of N95 Respirators

Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings
https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html

Checklist for Healthcare Facilities: Strategies for Optimizing the Supply of N95 Respirators during the COVID-19 Response

Fit Under Fire: Situational Strategies to Achieve the Best Respirator Fit During Crisis
https://blogs.cdc.gov/niosh-science-blog/2020/03/16/n95-preparedness/
Remarks

• This presentation is based on current United States federal requirements as of September 2020. US, state or other country requirements may be different and can change in the future.
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Agenda

• Types of respirators that require fit testing
• Fit test methods
• 3M COVID-19 fit test guidance
• Best practices
• Resources

Speaker introductions

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Application Engineer for 3M’s Personal Safety Division for 11 years, where she helps customers understand their respiratory protection solutions, and provides education and support to respirator wearers, selectors and fit testers.
Introduction - Why fit test?

Respirator performance and therefore protection of the respiratory system of the wearer depends on interactions between:

1. Filtration
   How well the material filters airborne particles
2. Fit
   Leakage between the facepiece and the face
3. Compliance
   Wear time

Which respirators require fit testing

<table>
<thead>
<tr>
<th>Type</th>
<th>Tight-Fitting</th>
<th>Loose-Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Half Facepiece</td>
<td>Disposable</td>
<td>Helmet</td>
</tr>
<tr>
<td>Full Facepiece</td>
<td>Reusable</td>
<td>Hood</td>
</tr>
<tr>
<td>APFs</td>
<td>10</td>
<td>1,000</td>
</tr>
</tbody>
</table>

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One special case to be aware of

Quantitative fit testing (e.g. PortaCount) is required if used in negative pressure mode (i.e. with dual cartridges/filters).

<table>
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<tr>
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<td>1,000</td>
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<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>25</td>
</tr>
</tbody>
</table>

When to conduct fit test

Repeat fit test:
- Whenever a different make, model or size respirator is used
- Change in employee’s facial shape, including from accidents, surgery, dentures, piercings, excessive weight loss or gain
- Employee feels respirator isn’t fitting properly
- Annually – if not done sooner
Accepted Methods: quantitative (QNFT) vs. qualitative (QLFT)

<table>
<thead>
<tr>
<th>Results</th>
<th>Quantitative (QNFT)</th>
<th>Qualitative (QLFT)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Numerical result – fit factor</td>
<td>Pass/fail (Fit factor = 100)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Examples</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Particle counters, controlled negative pressure</td>
<td>Bitrex, saccharin, banana oil, irritant smoke</td>
</tr>
</tbody>
</table>

Examples:
- Bitrex™
- Saccharin
- Banana Oil
- Irritant Smoke

Source: ohsonline.com
Accepted qualitative methods

Subjective methods – fit tester depends on subject to communicate experience

- Bitrex™
  Requires any particulate filter (N95 or higher)

- Saccharin

- Banana Oil
  Requires an Organic Vapour cartridge

- Irritant Smoke
  Requires a 100-class filter

Accepted Quantitative Methods

N95 fit tests
- QuantiFit is not compatible
- N95 mode must be used for PortaCount

- QuantiFit (OHD)
  https://ohdusa.com/quantifit/

- PortaCount (TSI)
  https://tsi.com/products/
Selecting a fit test method

Protection Factor considerations

Need to validate FF of 100

Need to measure FF other than 100 (e.g. neg-pressure full facepiece)

Cost/time considerations

Lower cost, high-throughput preferred

Expensive, low-throughput is okay; one-on-one valued.

QUAL-itative

Bitrex™

Saccharin

Banana Oil

Irritant Smoke

QUANT-itative

PortaCount™

QuantiFit™

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COVID-19 fit test guidance

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COVID-19 Fit test guidance

Role: regulatory

OSHA April 3 enforcement memorandum

In healthcare, annual fit testing need not be performed, but initial fit tests are still required.


Role: regulatory

OSHA April 8 enforcement memorandum

If manufacturers provide data to support fit “equivalency” between models, initial fit test may not be required for certain models.


Role: advisory

CDC guidance

- Qualitative fit testing preferred – nondestructive
- Use expired respirators in fit testing as contingency capacity strategy
- Consider deferring annual fit testing


Role: advisory

NIOSH guidance

- Qualitative fit testing preferred – nondestructive
- “Just-in-time” fit testing
- In extreme cases, if fit testing not an option, “even without fit testing, a respirator will provide better protection than a facemask or using no respirator at all.”

https://blogs.cdc.gov/niosh-science-blog/2020/03/16/n95-preparedness/

https://blogs.cdc.gov/niosh-science-blog/2020/04/01/fit-testing-during-outbreaks/

COVID-19 Hygiene considerations

During fit test
- Fit tester – hand hygiene and respirator
- During test, dedicate one set of nebulizers for each subject being fit tested.

Equipment disinfection – before and after each fit test
- Disinfect the inside surface of hoods and the outer surfaces of nebulizer nozzles between each fit test, using disinfectant from EPA list N
- Pay attention to contact time specified for disinfectant

After end of fit test session
- Empty nebulizers; don’t pour back into bottles
- As soon as possible, rinse all internal parts of nebulizers in hot water to remove all solution.
Resources

- 3M Worker health and safety website - COVID-19 | 3M Personal Protective Equipment (PPE) Info
On-line Fit Testing Resources

Internet Search Terms:

- 3M Center for Respiratory Protection
- OSHA Fit Test Protocols
- 3M Quick Reference Guide to QLFT
- 3M Fit Testing FAQs
- 3M Fit Testing Refresher Video
- NIOSH Facial Hair Poster
- 3M Quantitative Fit Testing Tech Bulletin
- 3M Bulletin on Modified QNFT Protocols

Thank you

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