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Technical Bulletin

June, 2021
Revision 6

Fit Test Hygiene During COVID-19 Pandemic

Background

During the 2020 COVID-19 pandemic, fit testers may have questions regarding potential transmission of the virus (SARS-CoV-2) that causes the COVID-19 disease during respirator fit testing. Qualitative fit testing (QLFT) with saccharin or Bitrex™ involves a hood worn over the subject's head, and quantitative fit testing (QNFT) with the 3M™ Fit Test Adapter 601, 3M™ Scott™ Quantitative Fit Test Adapter (P/N 7422-FT1) or 40 mm Quantitative Fit Test Adapter (P/N 805628-01) requires that a narrow tube be placed on the inside of the respirator. Each of those items are reusable and should be disinfected according to applicable recommendations from health authorities regarding infection prevention for infectious agents of concern.

General Infection Prevention Practices During Fit Testing

As advised by the World Health Organization (WHO) in their document Getting your workplace ready for COVID-19, March 2020, employees who are ill should stay home from work whenever possible, to avoid transmitting COVID-19 to coworkers. Respirator wearers should not be fit tested if they have symptoms indicating that they may be ill. Likewise, fit testers should not conduct fit testing if they have symptoms of illness. These are always good public health practices which are especially important during an infectious disease outbreak.

Disinfection Considerations During Qualitative Fit Testing (QLFT)

During qualitative fit testing (QLFT) using saccharin or Bitrex™, a fit test subject wears a hood during both the sensitivity test and the fit test, and nebulizer nozzles are placed inside the hood during the fit test. During times when infectious disease

outbreaks are a particular concern, fit testers may consider adopting the following practices, if deemed appropriate by a risk assessment:

- During fit test, use the same hood for a subject that was used during the sensitivity test for that subject.
- Use one set of nebulizers for each subject being fit tested.
- Between each fit test, disinfect the inside surface of hoods and the outer surfaces of nebulizer nozzles, using a disinfectant from the list of products that meet EPA criteria for use against SARS-CoV-2 (the cause of COVID-19), or one approved by a similar local authority outside the U.S. Alternatively, disinfect using sodium hypochlorite solution (at a free chlorine concentration of 5,000 ppm) with 1-minute contact time, or 70% Isopropanol solution with 1-minute contact time.
- At the end of the fit test session, discard unused solution and clean any remaining solution from the nebulizer, per the fit test kit User Instructions.

Some cleaning and/or sanitizing products can pose health risks if they come into contact with a user's skin or are inhaled. Customers must ensure that their PPE cleaning and sanitization procedures are within established safe levels and do not result in exposures to cleaning/sanitizing chemicals at levels capable of causing adverse health effects.

Note that not all disinfectants have been tested on all 3M fit test equipment, and some disinfectant products may be found to decrease the useful life of the hood or nebulizer. All fit test equipment should always be thoroughly inspected before use and should be discarded if they show any signs of damage or wear.

Disinfection Considerations During Quantitative Fit Testing (QNFT) with 3M™ Fit Test Adapter 601 or 3M™ Scott™ Quantitative Fit Test Adapter 7422-FT1 or 40 mm Quantitative Fit Test Adapter (P/N 805628-01)

During quantitative fit testing (QNFT) using the 601, 7422-FT1, or 805628-01 adapter, an adapter tube must be inserted into the respirator past the inhalation valve and positioned near the mouth, per the User Instructions. This opens a path to the fit testing adapter and filter. The authors of a study published in the American Industrial Hygiene Association Journal concluded that reaerosolization of collected TB bacteria and other particles less than a few microns in size, once entrained on filter media, is insignificant at conditions encountered in respirator wear.1

The exterior of the tube (as the TSI PortaCount® Respirator Fit Tester only pulls air in and does not expel air into the respirator) and interior of the fit test adapter should be disinfected between each fit test, using a disinfectant from the list of products that meet EPA criteria for use against SARS-CoV-2, or one approved by a similar local authority outside the U.S.

Note that not all disinfectants have been tested on the 601, 7422-FT1, or 805628-01 fit test adapters, and some disinfectant products may be found to decrease the useful life of the adapter. All fit test equipment should always be thoroughly inspected before use and should be discarded if they show any signs of damage or wear.

Fit Tester Source Control

Hand Hygiene

The fit tester should perform hand hygiene as deemed appropriate by the employer organization's adopted practices for reducing transmission of COVID-19. The WHO makes recommendations for hand hygiene including frequent handwashing and the use of sanitizing hand rubs. The use of disposable gloves could also be considered.

Because fit testers may be in relatively close proximity to fit test subjects during fit testing, respiratory protection for the fit tester may also be deemed necessary, depending on recommended practices for social distancing and use of respiratory protection.

Respiratory Droplets

During fit testing, the fit test subject must be without respiratory protection during part of the interaction, and the fit tester must be within 6 feet of the fit test subject in order to conduct the sensitivity and fit tests. Therefore, organizations might consider requiring fit testers to wear respiratory protection without a valve.

Additional Questions and Answers

Q: What should be considered when selecting a disinfectant for fit test equipment

A: Disinfectants used for hoods, nebulizers, and tubing should be selected from the list of products that meet EPA criteria for use against SARS-CoV-2 (the cause of COVID-19), or one approved by a similar local authority outside the U.S. Refer to List N on the EPA Website for EPA-registered disinfectants that can be considered for use against Novel Coronavirus, SARS-CoV-2, that causes the COVID-19 disease. Locations in Canada may also want to refer to the Health Canada List of Hard Surface Disinfectants for COVID-19.

Q: Will the nebulizer bulb pull infectious particles in and then re-aerosolize them during a fit test? Do we need to disinfect the interior nebulizer surfaces in addition to the exterior nebulizer surfaces?

A: 3M is not aware of any studies or evidence that show that the use of a qualitative fit test nebulizer which has been externally disinfected between each fit test, per the procedure above, increases a fit test subject's risk of exposure. This is informed by the following:

- A small amount of a fit test subject's exhaled air leaves the hood during the sensitivity test and is diluted in the surrounding air.
- A small portion of that diluted air might enter the nebulizer.
- A small portion of microscopic particles in that air might settle on the interior surfaces of the nebulizer.
- When tiny airborne particles land on surfaces, most of them stick firmly to those surfaces and do not become re-aero-solized.

Therefore, the risk is low, and disinfection of interior surfaces is not believed to be necessary at this time. Facilities should consider all applicable local guidance for your region as it relates to disinfection for coronaviruses. Note 3M has not evaluated all disinfectants and has not conducted disinfection studies on the interior nebulizer surfaces. Some disinfectant products and methods may be found to decrease the useful life of the nebulizer. In addition, facilities should also consider the potential for incomplete evaporation of disinfectants resulting in inhalation exposure potential. Some disinfection products can pose health risks if they come into contact with a user's skin or are inhaled. Customers must ensure that disinfection methods used do not result in exposures exceeding established safe levels. Nebulizers should always be thoroughly inspected before use and should be discarded if they show any signs of damage or wear.

References

1) Qian, Y., Willeke, K. Grinshpun, S.A and J. Donnelly. Performance of N95 respirators: reaerosolization of bacteria and solid particles. Am. Ind. Hyg Assoc. J. 58:876-880; 1997.
2) https://www.ncbi.nlm.nih.gov/pubmed/2880894
3) https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html

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