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Fit Testing for N95 Respirators

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Temporary Enforcement Guidance Occupational Safety and Health Administration (OSHA) Annual Fit Testing

The Occupational Safety and Health Administration (OSHA) issues temporary enforcement guidance regarding the requirement for annual fit testing of healthcare personnel.[1] The agency is directing any field office inspectors to excuse noncompliance with annual fit testing as long as the healthcare employer is:

- Making a good faith effort to comply
- Using only respirators certified by the National Institute for Occupational Safety and Health
- Implementing CDC and OSHA strategies for optimizing the supply of N95 filtering face piece respirators and prioritizing their use
- Performing initial fit test for each healthcare employee with the same model, size and style of respirator that the worker will be required to use for protection against COVID-19
- Inform workers that annual fit testing is temporarily suspended to preserve and prioritize supply of respirators
- Reiterate the need for workers to perform a user seal check at each donning
- Conduct a fit test if they observe visual changes in employee's physical condition that could affect respirator fit
- Remind workers to inform supervisor if their N95 filtering face piece respirator is compromised

OSHA authorizes two types of fit testing, qualitative and quantitative. Qualitative fit testing destroys N95 respirators and with the shortage being faced, OSHA has determined lesser hazard exists to forego annual fit testing rather than to exacerbate the shortage. **The CDC is currently recommending qualitative testing in their guidance for COVID-19**.

Fit Testing Options[2]

Qualitative fit testing uses healthcare workers response to sense of taste or smell to detect leakage into the face piece. It is a Yes/No test—workers either report that they smell or taste the substance being introduced. The test does not measure the actual amount of leakage. All fit tests must be performed by a qualified individual. OSHA has approved four qualitative test methods:

- Isoamyl acetate, which has a banana smell
- Saccharin, which leaves sweet taste
- Bitrex, which leaves a bitter taste, and
- Irritant smoke, which can cause coughing

Quantitative fit testing uses a machine to measure the actual amount of leakage into the face piece and does not rely on sense of taste or smell. There are three quantitative test methods accepted by OSHA:

- Generated aerosol
- Ambient aerosol, and
- Controlled negative pressure

In shortage situations, consideration should be given to alternative non healthcare sources for fit testing kits:

- Occupational health clinics
- Theme parks
- Construction companies
- Woodworking, painting, industrial coating companies
- Welding suppliers
- Marine suppliers
- General industrial suppliers
- Heavy equipment, worksite machinery rental companies
- Cleaning companies
- Agriculture companies

A feasibility study was done regarding the use of homemade saccharin or bitter solutions for fit testing of particulate repirators.[3] The study found that there were no statistical differences between commercial and homemade solutions in the 62 study participants' ability to detect the bitter or sweet taste. Care must be taken to ensure that homemade solutions are stable and free of microbial contaminants.

The following protocol for making and utilizing a homemade saccharin solution to fit test has been supplied by a HealthTrust member. HealthTrust is not endorsing this process, but providing it as an alternative for consideration. This example is using an Aero Eclipse Nebulizer; in a crisis situation, consider if this could potentially be substituted from another supplier.

Download the "Procedure for Fit Testing" Word document here:
https://education.healthtrustpg.com/clinical-resources/fit-testing-for-n95-respirators/

References:

1. https://www.osha.gov/memos/2020-03-14/temporary-enforcement-guidance-healthcare-respiratory-protection-annual-fit
2. https://www.osha.gov/memos/2020-03-14/temporary-enforcement-guidance-healthcare-respiratory-protection-annual-fit
3. Fakherpour A, Jahangiri M, Yousefinejad S, Seif M. Feasibility of replacing homemade solutions by commercial products for qualitative fit testing of particulate respirators: a mixed effect logistic regression study. *MethodsX*. 2019;6:1313–1322. Published 2019 Jun 1. doi:10.1016/j.mex.2019.05.034