

Interim Recommendations Concerning the Use of Expired N95 Masks

March 31, 2020

COVID-19 preventive measures in the workplace

These measures apply when sustained community transmission has been confirmed by public health authorities. N95 masks generally have a shelf life of five years following the date of manufacture.

According to the Centers for Disease Control and Prevention (CDC), if there is a shortage of unexpired masks, expired N95 masks may be used in the context of the COVID-19 pandemic in certain conditions (<https://www.cdc.gov/coronavirus/2019-ncov/release-stockpiled-N95.html> February 28, 2020):

- The elastic straps and nose clips can become degraded, compromising the mask's seal. In some mask models, the filter material can also become degraded. It is consequently important to inspect and seal-check expired masks.
- Storage (stockpiling) conditions for masks also need to be verified, as they must comply with manufacturer recommendations for storage conditions.
- Employers must have a respiratory protection program in place that complies with Occupational Safety and Health Administration (OSHA) requirements.

Studies supporting this position:

A series of studies of 10 major N95 mask stockpile facilities in regions across the United States conducted by the National Personal Protective Assessment Laboratory at the National Institute for Occupational Safety and Health (NIOSH) showed that some models of masks remain effective after their expiration date.

NIOSH tested the filtration performance and exhalation/inhalation resistance of 11 models of N95 masks between 5 and 13 years (8 to 12 years in the majority of cases) after manufacture. Between 172 and 602 masks per site (at least 300 masks at most sites) were tested at the 10 stockpile facilities. The project to test expired masks remains ongoing, but the 10 reports on outcomes at individual facilities are now available on the NIOSH website at <https://www.cdc.gov/niosh/npptl/ppecase.html> (March 1, 2020).

- Based on testing, the models of expired masks recommended by the CDC for use after their expiration date are:
 - 3M 1860 (tested by NIOSH at 8 sites)¹
 - 3M 1870 (tested at 3 sites)²
 - 3M 8210 (tested at 3 sites)²
 - 3M 9010 (tested at 3 sites)²
 - Gerson 1730 (tested at 3 sites)²
 - Medline/Alpha Protech NON27501 (tested at 1 site)²
 - Moldex 1512 (tested at 1 site)²
 - Moldex 2201 (tested at 1 site)²

¹ It is to be noted concerning the 3M 1860 that 2/1,247 (0.16%) of expired masks from different sites did not pass filtration performance criteria on NIOSH tests.

² All (100%) masks of this model tested passed filtration performance criteria on NIOSH tests.

- Testing has shown that the following models of expired N95 masks exhibited lower performance and are not recommended:
 - Kimberly-Clark 46827 (34/559 (6.1%) of expired masks of this model did not pass filtration performance criteria);³
 - Kimberly-Clark 46727 (40/387 (10.3%) of expired masks from five different sites did not pass filtration performance criteria)

Other considerations

- The CDC notes that before using expired N95 masks, it is important to inform users that the masks have expired and need to be inspected and seal-checked.
- The CDC and Cal/OSHA recommend not using expired N95 masks during surgical procedures, as in the studies cited above, NIOSH did not test masks for fluid resistance or flammability, which are important characteristics in the surgical context.
- Cal/OSHA recommends using unexpired masks for higher-risk situations and tasks (<https://www.dir.ca.gov/dosh/Use-of-Respirator-Supplies.html> (March 2020) and <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/FAQ-N95.aspx> (updated March 10, 2020)).
- Cal/OSHA also recommends that expired masks be used only by those with lower or less frequent risk of exposure to the virus (e.g. general practitioners).
- It is to be noted that the Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST) has never conducted performance tests on expired N95 masks. Quebec-specific data are not available in this regard.

References

- California Department of Public Health. Frequently Asked Questions about the Use of Stockpiled N95 Filtering Facepiece Respirators for Protection from COVID-19 Beyond the Manufacturer-Designated Shelf Life (updated March 10, 2020) <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/FAQ-N95.aspx>
- California Department of Public Health. Cal/OSHA Interim Guidance on Coronavirus for Health Care Facilities: Efficient Use of Respirator Supplies. (March 2020) <https://www.dir.ca.gov/dosh/Use-of-Respirator-Supplies.html>
- Centers for Disease Control and Prevention (CDC). Release of Stockpiled N95 Filtering Facepiece Respirators Beyond the Manufacturer-Designated Shelf Life: Considerations for the COVID-19 Response.(February 28, 2020) <https://www.cdc.gov/coronavirus/2019-ncov/release-stockpiled-N95.html#f1>
- Centers for Disease Control and Prevention (CDC). Strategies for Optimizing Use of N95 Masks. (updated February 29, 2020) https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fhcp%2Frespirator-supply-strategies.html
- Centers for Disease Control and Prevention (CDC). National Personal Protective Assessment Laboratory. Personal Protective Equipment Conformity Assessment Studies and Evaluations (PPE CASE) Reports: Performance of Stockpiled Air-Purifying Respirators. (March 1, 2020) <https://www.cdc.gov/niosh/npptl/ppecase.html>

³ All 34 masks that failed testing came from a single site; masks of the same model from the other six sites passed the tests.

Additional references proposed by the California Department of Public Health

- National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. [Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings](#)
- National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. [Release of Stockpiled N95 Filtering Facepiece Respirators Beyond the Manufacturer-Designated Shelf Life: Consideration for the COVID-19 Response.](#)
- Centers for Disease Control and Prevention. [Strategies for Optimizing the Supply of N95 Respirators](#)
- California Department of Public Health. [Implementing Respiratory Protection Programs in Hospitals: A Guide for Respirator Program Administrators](#)
- California Department of Public Health. [Respirator Use in Health Care – A Toolkit for Program Administrators](#)
- California Department of Public Health. [Respirator Selection Guide for Aerosol Transmissible Diseases](#)
- California Department of Public Health. [Cal/OSHA’s Aerosol Transmissible Disease Standards and Local Health Departments](#)
- OSHA. [Hospital Respiratory Protection Program Toolkit: Resources for Respirator Program Administrators](#)
- Cal/OSHA. [The California Workplace Guide to Aerosol Transmissible Diseases](#)
- Cal/OSHA. [Respiratory Protection Factsheet](#)
- Cal/OSHA. [Respiratory Protection in the Workplace: A Practical Guide for Small-Business Employers](#)
- Cal/OSHA. [Interim Guidance for Protecting Health Care Workers from Exposure to 2019 Novel Coronavirus](#)
- Cal/OSHA. Aerosol Transmissible Diseases Standard, [title 8 section 5199](#)

Note: The preceding recommendations are based on the latest available information at the time of writing. The current situation and our knowledge concerning the SARS-CoV-2 (COVID-19) virus are evolving rapidly, and the recommendations set out in this document are consequently subject to change.

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AUTHOR

Susan Stock, medical advisor.
SAT-COVID-19 Working Group

LAYOUT

Charlène Bessenay, Administrative Officer
Direction du développement des individus et des communautés

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Versacom
Revised by Nektaria, Nicolakakis

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