Ventilation FAQs

Smoke Days and COVID-19

What does MERV mean?

The MERV rating for HVAC filters is an acronym for Minimum Efficiency Reporting Value. This rating is determined by filter manufacturers in accordance with ASHRAE 52.2 guidance. It rates filters on a scale of 1 to 16. The higher the number, the more effective the filter is at catching particulates from 0.30 micron in diameter up to 10 microns in diameter from the air at standard airflow conditions.

Why MERV-13?

A MERV-13 or higher filter has a removal effectiveness rate of 50 to 95 percent for particulates in the 0.30 to 1.0 micron range. Filters rated at MERV-10 or less have no effect on particulates in the 0.30 to 1.0 micron range.

How effective are MERV-13 filters at addressing COVID-19?

The COVID-19 virus attaches itself to droplets and droplet nuclei that are predominantly 1 to 4 microns in size. MERV-13 filters are 85 percent effective at removing particulates from the air at the 1.0 to 3.0 micron range and 90 percent effective in the 3.0 to 10 micron range.

Are there drawbacks of using higher-rated MERV filters?

The higher the MERV rating, the more energy is required for the HVAC unit to pull air through the filter. Higher efficiency filters require greater air pressure to drive or force air through the filter because of how the filter is designed.

Should I run an air purifier in every classroom if I am already using MERV-13 filters?

SMCSIG recommends that, in addition to using MERV-13 filters, schools put one air purifier in each classroom to help remove remaining particulates. Add a second air purifier if the HVAC system can't use MERV-13 filters or if it is a large room.

Should we shut out all outside air during a smoke event?

No. Outside air is required for HVAC systems to work properly. MERV-13 filters used with HVAC systems that are set to at least 30 percent outside air will allow for 6 air changes per hour (ACH). The addition of an air purifier to an average-sized classroom of 960 sq. ft. should allow 10.2 air changes per hour.

Does this guidance meet Title 24 requirements?

All of these guidelines meet Title 24 requirements. The target is to achieve 6 air changes per hour (ACH), which is considered Ideal under Title 24 (see below).

- **Ideal** . . . . . (6 ACH)
- **Excellent** . . . . . (5-6 ACH)
- **Good** . . . . . (4-5 ACH)
- **Bare minimum** . . . . . (3-4 ACH)
- **Low** . . . . . (<3 ACH)

What should we do if we don't have an HVAC system that can use MERV-13 filters?

If a system is not able to use MERV-13 filters, a school can use MERV-8, which will not be as effective in removing the number of particulates coming into the classroom. However, adding a second air purifier will help increase the number of air changes and scrub the air, removing remaining particulates.

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