

Healthy Schools: More Than A Change In Menu

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When people talk about “Healthy Schools” the overwhelming topic is what food and beverages are available and what should not be available to the students. On average people will consume just over 2 pounds of food and 1 gallon of liquids any given day, but breathe nearly 3,000 gallons of air. Diet plays an important role in the health of our children and the quality of air plays another important part.

With the density of people in schools being higher than any other type of building the EPA and ASHRAE promote a minimum of 3 air changes per hour in classrooms during the school day. The reason for this is to ensure that enough clean filtered air is reaching the students because indoor air if left unfiltered or stagnate the particulate levels rise 2-5 times higher than outdoor air, making the environment up to 100 times worse. With the advent of Energy Recovery Units (ERUs) indoor air is being recirculated more and more, causing less outdoor air to be drawn into buildings to dilute the more particle filled indoor air.

Most new air handling equipment is specified to run with higher efficiency filters that will catch fine particles to help provide a healthy indoor environment. Over 95% of the particulate in the air is less than 1 micron in size – the smallest size particle visible to the naked eye is 100 microns, but due to ever tightening budgets many schools will not replace the more expensive high efficiency filters that came in this newer equipment. The minimum efficiency recommended by the EPA is Merv-8, but these filters are only tested on particles 3-10 microns in size, of which they must catch 70% or more; leaving the vast majority of and most harmful smaller particles pass directly through the filter!

When ASHRAE eliminated the old test standard for air filters 52.1-1992 it was because the Dust Spot Efficiency and Arrestance did not provide an adequate representation of the particles present in the air. This spurred the creation of the three particle size ranges filters are tested in with the current test standard 52.2-2007, which are .3-1 micron, 1-3 micron, and 3-10 micron. Now filters are able to be selected based on what particle size you are trying to capture, instead of the one size fits all measurement on 52.1. To protect equipment from damage the 3-10 micron range is of most concern, but to make sure we are providing a healthy indoor environment you need to pay attention to at least the 1-3 micron range.

With more attention paid to indoor air quality the new building standard is Merv-11 which captures 65% of particles in the 1-3 micron range. The US Green Building Council and their LEED program require Merv-13 which will capture 90% of particles in the 1-3 micron range. Merv-8 is not rated in the 1-3 micron range. Some air handling systems can easily be retrofitted to accommodate the higher efficiency filters or may already have the capability for them, while others take more serious renovation.



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