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ES6704.00

Louis J. Pepe, RSBA
Assistant Superintendent for Business/ Board Secretary
Summit Public Schools
14 Beekman Terrace
Summit, NJ 07901-1702

Dear Mr. Pepe:

At your request, the following is a summary of code requirements and recommendations for indoor air quality regarding COVID19:

Code Requirement for Air Quality:

Per the International Mechanical Code (IMC) 10 cubic feet per minute (CFM)/occupant and .012 CFM/square foot (SF)
Based on a 1000 SF classroom with 25 occupants that is 400 CFM minimum.

Outside air rate for example:

- Standard minimum outside air operation 2.7 air changes per hour
- Enthalpy mode 100% outside air (OA) 8 air changes per hour
- Air needs to be filtered and heated; there is no code requiring air conditioning.
- Summit meets all these requirements for any area designed by EI Associates and installed over the past 15years. This covers most of the District facilities.

Recommendations:

There is no single recommendation for improving indoor air quality regarding COVID19. The following basic recommendations are a series of tools to reduce the possibility of infection:

- More outside air
- Better filtration, MERV 13 filters and more frequent filter changes
- Ionization

For the near future when the weather is warm, we should not be using AC even if it is available. **At the request of the District we clarify the previous sentence as follows: Air conditioning can be used in conjunction with the introduction of outside air. An air conditioning system that is only recycling air within the space should not be used in lieu of outside air. The use of air conditioning with the introduction of large amounts of outside air is not energy efficient. However, dilution of the air in the space should take priority over the**

conditioning of the air. UV's (at least reasonably modern ones) are equipped with an enthalpy cycle which shifts the unit to 100% outside air automatically when outside air is cooler than inside. This can be done until the weather gets very cold. You can override the setting to run longer in this cycle but would cost some heating energy.

For filtration, see below link for better air filters. They Make MERV 13 filters for unit ventilators. This is a considerable upgrade over the MERV 4 blue filters usually used. They are effective at capturing Proplet Nuceli particles (from a sneeze) but not an unattached virus. The down side is the MERV 13 filters need to be replaced often, especially when pollen is present.

https://www.brookaire.com/products/air-filters

MERV RATING CHART

Standard 52.5 Minimum Efficiency Reporting Value	Dust Spot Efficiency	Arrestance	Typical Controlled Contaminant	Typical Applications and Limitations	Typical Air Filter/Cleaner Type
20	n/a	n/a	< 0.30 pm particle size	Cleanrooms	≥99.999% eff. On .10-.20 pm Particles
19	n/a	n/a	Virus (unattached)	Radioactive Materials	Particles
18	n/a	n/a	Carbon Dust	Pharmaceutical Man.	Particulates
17	n/a	n/a	All Combustion smoke	Carcinogenetic Materials	≥99.97% eff. On .30 pm Particles
16	n/a	n/a	.30-1.0 pm Particle Size	General Surgery	**Bag Filter**- Nonsupported
15	>95%	n/a	All Bacteria	Hospital Inpatient Care	microfine fiberglass or synthetic media, 12-36 in. deep, 6-12 pockets
14	90-95%	>98%	Most Tobacco Smoke	Smoking Lounges	**Box Filter**- Rigid Style Cartridge Filters 6 to 12" deep m ay use
13	89-90%	>98%	Proplet Nuceli (Sneeze)	Superior Commercial Buildings	lofted or paper media.
12	70-75%	>95%	1.0-3.0 pm Particle Size Legionella	Superior Residential	**Bag Filter**- Nonsupported
11	60-65%	>95%	Humidifier Dust	Better Commercial Buildings	microfine fiberglass or synthetic media, 12-36 in. deep, 6-12 pockets

Future Considerations:

Global Plasma Solutions (GPS) has a system called Needlepoint Bipolar Ionization that we have been specifying. The system has just recently tested for use against COVID19 and results have been published. This test was requested by the FAA for a simulation that would be found in an air plane cabin. They were able to test with COVID19 because the Federal Government was involved. The GPS system ionizers operate at a power level just below what would create ozone and is safe for use in educational settings.

EI Associate does not believe there is any down side to the installation of these systems. They will not damage the unit ventilators (UV)'s. They have been used in NJ schools by the ESIP

companies for the energy saving ability for years. Once this pandemic is, over we would shift them to save energy by being able to reduce outside air. For now, more outside air has shown to be helpful.

The GPS system causes particles to agglomerate into larger ones so it enhances the filters ability for capture. HEPA filters are another consideration. HEPA filters start at MERV17. Unfortunately, due to their size there is no physical space in typical HVAC equipment to install these.

Another consideration is to provide for isolation and negative pressure rooms within or in close proximity to the Health Services Areas for anyone deemed infected while inside the school. These HVAC items are in addition to, not a substitution, for the recommendations of the CDC such as social distancing, face covering and hand washing.

The above is based on reasonable assumptions as to calculations and does not take into account changes or modifications since design and assumes equipment is functional and in good repair.

Thank you for this opportunity to continue to assist Summit Public Schools.

Very truly yours,

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