MechSE *WELL*ness

A05 Enhanced Air Quality

Intent: Recognize buildings that go beyond to promote health and well-being of the people who work and learn there.

Air pollution causes respiratory and allergic diseases, period. An emerging body of evidence shows air pollution disrupts physical and cognitive health in children. There is a clear relationship between indoor air quality and human productivity. If a facility wishes to protect and enable the highest level of cognitive ability, provide the best indoor air quality possible.

Impact: Enhancing indoor air quality positively impacts human health, well-being, and performance.

Requirements for the Sidney Lu Mechanical Engineering Building:
1. Particulate matter smaller than 2.5 microns (PM2.5) is kept below 10 micrograms per cubic meter.
2. Particulate matter smaller than 10 microns (PM10) is kept below 20 micrograms per cubic meter.
3. Formaldehyde levels are kept less than 13.4 parts per billion.
4. Benzene less than 3 micrograms per cubic meter.
5. Carbon monoxide kept less than 6 parts per million.
6. Ozone kept less than 25 parts per billion.

How do we accomplish these requirements? We continuously manage our indoor air quality via automatic control algorithms related to the HVAC system. We utilize 'source extraction', meaning we provide exhaust in restrooms, janitor closets, and other high sources of unhealthy pollutants (i.e., 3D printers and laser cutters). Where we bring in outside air and re-circulate building air, we filter the air continuously with MERV 13 filters. MERV 13 captures COVID19 particles, and is 90% efficient at capturing 10-micron particles and 85% efficient for particles of 3 microns! At least annually, we seek to specifically measure these levels and communicate the results publicly.

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