

School/Facility: Long Reach High
Location: Rooms 232
Date of IEQ Report Form: December 5, 2016
Date(s) Investigated: December 23, 2016, January 5, 10, and 30, 2017
Date of Report: March 31, 2017

IEQ Concern:

Staff detected an odor in the classroom.

IEQ Investigation Process:

Identify deficiencies that may impact IEQ and/or sources of odor concerns. Typically includes the following depending on the nature of concern, but not limited to:

- interview/questionnaire of concern individual(s)
- inspection above drop ceiling (condition of roof deck, pipe insulation, return air plenum)
- inspection of ventilation system (operation of variable air volume box and outdoor air dampers, check controls, measurements of carbon dioxide, temperature and relative humidity, sources near outdoor air intake, measure return and supply air volume, cleanliness of coils, liner and condensate pan)
- inspection of exterior
- inspection below drop ceiling (housekeeping, sink and floor drain traps, signs of past and present moisture concern via visual and/or moisture meter, mold growth, ensure connection of current and capping of abandoned sanitary vents, odorizers, excessive plants and fabric items, identify potential pathways, and measure volatile organic compounds, carbon monoxide, and lighting)

Findings:

- An odor was not detected on the initial visits while the room was occupied and in use for a few periods. A soapy and/or hand lotion like aroma was detected on a visit made shortly after the end of the school day. A slight body odor was detected during the second morning visit while the classroom was occupied.
- Carbon dioxide measurements were collected twice and were elevated (+707 ppm & +764 ppm) above guidelines of outdoor air concentration plus 700 parts per million (ppm). The measurement assists with indicating if adequate outdoor air is being introduced to dilute body odors. The outdoor air dampers of the ventilation units did not appear to be functioning, fan speed set to low, and outdoor air dial was position between 5-8%.

Corrective Actions:

- The elevated CO₂ measurements were and are being addressed as follows by Building Services HVAC shop:
 - On January 24, 2017, Building Services checked equipment operation and found to be normal. They checked and adjusted room unit operating parameters, lowered mixed air low limit to 50 degrees Fahrenheit, set minimum outdoor air intake to 15%, set unit fan speed to high, changed air filter, and cleaned and opened (100%) the room's exhaust air grille.
 - After earlier in-house attempts to review and improve the volume of the ventilation units' introduction of outdoor air, additional carbon dioxide measurements continued to be above guidelines of outdoor concentration plus 700 (ppm).
 - As a result, Building Services' mechanical engineer and the HVAC shop are working with a control specialist (manufacturer of the unit ventilator) and HVAC testing and balancing company to review the operation sequence of the outdoor air damper and ensure it is operating as designed. Manipulation of the outdoor air damper just to introduce more outdoor air is not encouraged because it could hinder the performance of the ventilation unit, thus causing possible issues like increased humidity (cooling season) or pipe freezing (heating season). The school will be updated with end result of the ventilation review process.
 - Carbon dioxide measurements is a way to assess ventilation (introduction of outdoor air). Outdoor air is introduced to commercial buildings (i.e. schools) ventilation systems to assist with comfort. In this case, comfort is diluting human bioeffluents (a.k.a body odor).