School/Facility: St. Johns' Lane Elementary

Location: Portable 214

Date of IEQ Report Form: September 2, 2017

Date(s) Investigated: September 8, 2017

Date of Report: December 7, 2017

IEQ Concern:

An individual reported detecting an odor of volatile chemicals upon entering the portable during open house.

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:

- Volatile organic compounds (VOCs) were screened using a direct reading photoionization detector (PID). The PID will not identify specific VOCs or their concentration unless the specific VOC(s) is known. At the same time, correction factors (CF) are applied since the PID is calibrated to a specific gas.
- The PID initially measured 0.5 parts per million (ppm) with the ventilation unit (HVAC) off. After operating the HVAC for approximately 10 minutes, the ppm lowered to 0.2 ppm. After approximately 20 minutes, the ppm lowered to 0.0 ppm.
- The ppm measurements were significantly low even if a correction factor was to be applied.
- Odor thresholds of VOCs are typically much lower than their health related thresholds. Thus, humans may be able to detect odors before ever becoming a health concern.
- The HVAC's outdoor air damper was closed. Outdoor air is introduced by HVAC to assist with comfort (diluting body odors).

- The portable may have contained approximately 25 occupants at the time of the concern. The odor within the portable may have been generated or influenced by the outdoor air damper not functioning and dependent upon the duration of heavy occupancy (odors are subjective; sensing, pleasant/unpleasant, or description).
- Per the label posted in the portable, the portable was constructed May 2016 and delivered/set up at the school for use during the beginning of the 2016/2017 school year.
- In general, discussions with supplier, third party certifier, manufacturer, and associated agencies of the State of Maryland it is understood that there is no mandate followed addressing off-gassing / emissions for portables. However, it has been common, at least several years, for building materials and construction to address such matters. The manufacturer of this portable stated materials containing formaldehyde are within acceptable limits and meet all applicable codes.
- VOCs, in general, dissipate over time.

Corrective Actions:

- Per work order 42462, Building Services and contractor diagnosed the outdoor air damper to have a disconnected wire from the damper motor to the terminal. The wire was re-connected and tightened. The damper tested to be functional.