

Report of recent Harvard EH&S Activities at Graduate School of Design

Jan 2019

Sampling of 3D Printers (10/19/2018)

- Sampling of the 3D printers with the 3M Quest EVM7 indoor quality direct read monitor was conducted in the trays area on 10/19. Total Volatile Organic Chemicals (TVOC's) - was non-detect while printing with PLA filament.
- Additional sampling of the four 3D printers near Building Services was also non-detect for TVOCs. These printers were printing with ABS filaments. Low levels of formaldehyde was detected with the Z-300 direct read formaldehyde meter. On average formaldehyde was detected at 0.04 mg/m³
- CO₂, relative humidity and temperature were all with ASHRE guidelines: CO₂ on average was 563 and 545 ppm respectively
- According to recent studies by NIOSH and the CDC, polylactic acid (PLA) filament is thought to be safer since it is biodegradable, PLA still released chemicals such as methyl methacrylate. Acetaldehyde and formaldehyde were released from all the studied filaments. ABS emitted more particles than PLA or nylon filaments. Ventilation (direct exhaust) and filtration (if direct ventilation is not feasible) is recommended for areas with a high concentration of 3D printers.

Review of Student Project

- Student inquired about cutting a ceiling tile with the Lund knife system, based on the safety data sheet (SDS) and recommendations from the manufacturer - mechanical cutting would release silica (silica is part of the fireproofing of the tile make up) - based on the data - it was determined not to cut the ceiling tile.

Sampling of Spray Booth Area (12/3 - 12/7)

- Monitoring was conducted over a three day period - low levels of TVOCs were detected, on average 0.200 ppm with maximum concentration of 1.9 ppm. The spray booth was observed and sampled previously in 2017, spray booth capture velocity was observed to be fine (smoke visualization) as well as non-detect for TVOCs while spraying at various distances from the unit.
- Additionally, FMO and EH&S reviewed the process of changing out the filters with the respective staff.

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