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3D PRINTERS
QUICK REFERENCE GUIDE

3D printing has become an invaluable addition to classroom technology and maker spaces, allowing for a creative outlet in three dimensions through computer technology (CAD – Computer Aided Design).

As with any process using heat and chemicals, byproducts may cause problems. Users should be thoroughly trained to operate the equipment, including preparation of the material to be used and proper cleanup after use. Room size, number of machines, adequate ventilation and proper personal protective equipment (PPE) are all basics for safe operation of the 3D printer.

3D printer located within enclosure
Source: 3dprinting.com

BEST PRACTICES

INSTALLATION – All machines should be installed, used and maintained according to manufacturer's instructions. Additional electrical service may be required depending on available circuits.

VENTILATION – Adequate ventilation is critical. 3D printers produce volatile organic compounds (VOCs) and emit ultra-fine particulates that may be hazardous to health; they may be controlled through ventilation or filtration. 3D printers should be placed in a well-ventilated area or have a local exhaust to capture fumes. Recommendations include 3-4 air exchanges per hour when machines are in use. (Do not use unventilated closets.)

TRAINING – All users should be trained on machine use and material selection as well as the risks and safety practices associated with each type of material.

MATERIAL SELECTION – A wide variety of materials are used in the printing process. Each machine uses certain types of material and manufacturer directions must be followed. Safety Data Sheets (SDS) should be obtained and kept available for each type of material being used and all safety precautions followed.

PPE – Safety glasses should be used when trimming finished products. Gloves should be used when handling chemicals. Additional hazards may involve hot surfaces, high voltage electrical, ultraviolet radiation and moving parts. Consider lock out/tag out to control hazards.

CLEANUP – Some items may be difficult to remove from the printer plate, and tools such as scrapers may be needed to remove them. This creates another potential hazard that may require PPE such as gloves and safety googles. If chemicals are used to break the bond, you must adhere to state, federal and local regulations to dispose of the residue properly.