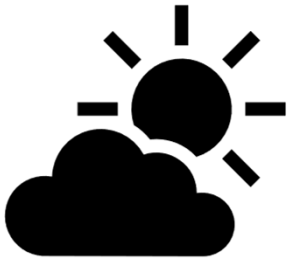
3D Printing Safety

Contact EHS prior to using a metal 3D printer as there are other necessary precautions.

Air emissions

3D printers do emit various levels of ultra-fine particles (UFP) and vapors. These UFPs have been shown to cause health effects and can be irritating to already compromised immune systems. To limit exposure,

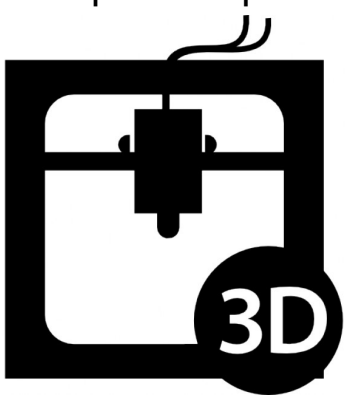
- Do not stand or work near the printers while printing
- Keep all manufactured guards and covers on the printer
- If printer does not come enclosed, consider making a vented enclosure to mitigate the spread of particulates.
- Keep printers in large, open, and well-ventilated areas
- Use PLA instead of ABS – the lower operating temperature and structure of the plastic creates less emissions



Fire Hazards

3D printers operate at high temperatures in order to melt the plastic. This does mean that they are hot enough to be a fire concern. In order to limit fire hazards

- Remove all combustibles around the printer. This includes paper, dust, hair, fabrics, etc.
- Do not leave a printer completely unattended. If you cannot constantly watch it, at least monitor the activity regularly.
- Ensure a fire extinguisher is near by and the printer operator knows how to use it.



Personal Protection

Burns, pinch points, and caught-in injuries are the most common with 3D printers. Many printers do not come with machine guarding that would keep a person from touching the equipment while it is running. It is important to wear PPE to prevent burns if you are handling or working on the equipment immediately after operation.

Other personal protective measures include:

- Ensure that printers with lasers are properly shielded to prevent eye exposure.
- Promptly dispose of dust, scrap, and waste.
- Turn off, unplug, and cool down the printer prior to cleaning or repairing. Make sure everyone in the area is aware of the printer's status.

Safety and Security

Almost anything and everything can be made with a 3D printer which can be exciting, but can lead to security issues on campus. Students, faculty, and employees are not allowed to create any weapons or weapon-like devices using on-campus 3D printers. This includes, but is not limited to, knives, guns, swords, explosives, or explosive-looking devices.

Chemical Exposures

Most 3D printing requires the use of a chemical bath to clean-up the print and remove any supports.

- Wear the required PPE when working with chemicals.
- Make sure to read SDS and follow instructions prior to using the chemicals to clean the parts.
- Utilize tongs to drop or hold piece in solution
- Ensure eyewash is near by and operational