



Additive Manufacturing

While additive manufacturing offers infinite opportunities for innovation, it can also present some safety challenges.

Most plastics and metals used within the additive manufacturing industry for 3D printing **create combustible dust**. Additionally, the process of 3D printing itself creates potentially combustible particles. Below are several measures you can consider implementing at your facility:

Housekeeping

Engineered Solutions

At the heart of combustible dust safety lies minimizing fugitive dust and good housekeeping. Even a thin layer of combustible dust can post fire and explosion risks. Some recommendations include:

SAFETY TIPS

- Inspect dust residues in open and hidden areas frequently
- Clean dust residues created during the 3D printing process frequently (utilize cleaning methods that do not produce dust clouds)
- Only use vacuums listed for dust collection

Engineered solutions such as appropriate wiring methods, control of static electricity using grounding and bonding and separator devices assist in preventing hazardous situations. Some general recommendations include:

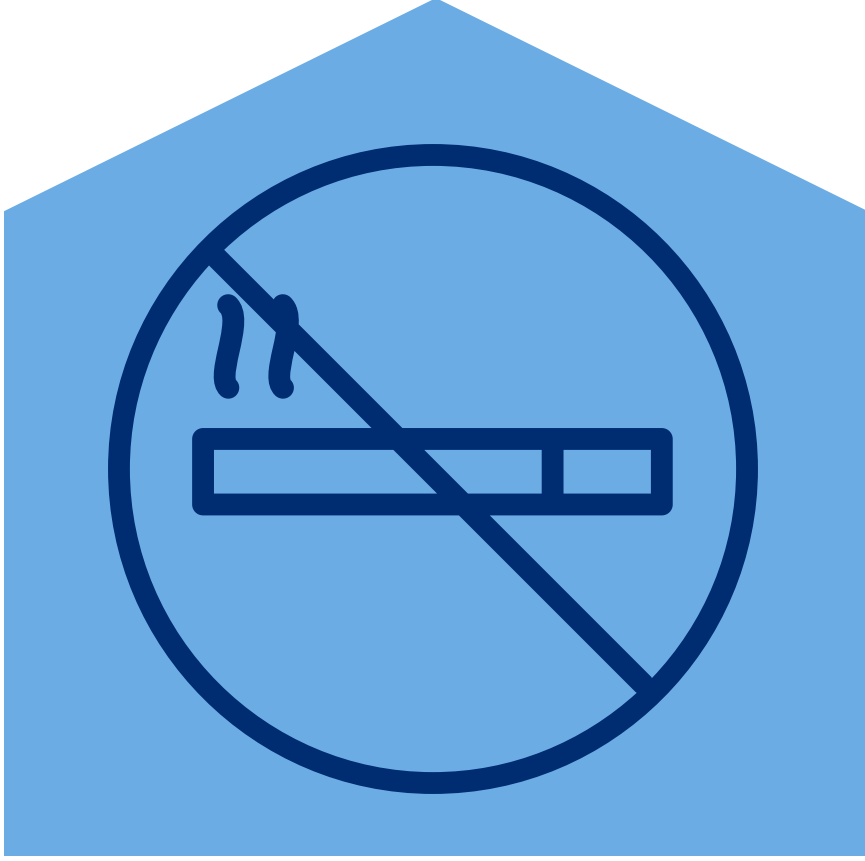
SAFETY TIPS

- Minimize the escape of dust from process equipment and ventilation systems
- Use dust collection systems depending on the type of plastics or metals being utilized
- Locate relief valves away from dust hazard areas

Implementing a Culture of Safety

Human-element programs are critical, and often cost-effective in mitigating risk within additive manufacturing, and other high-risk industries.

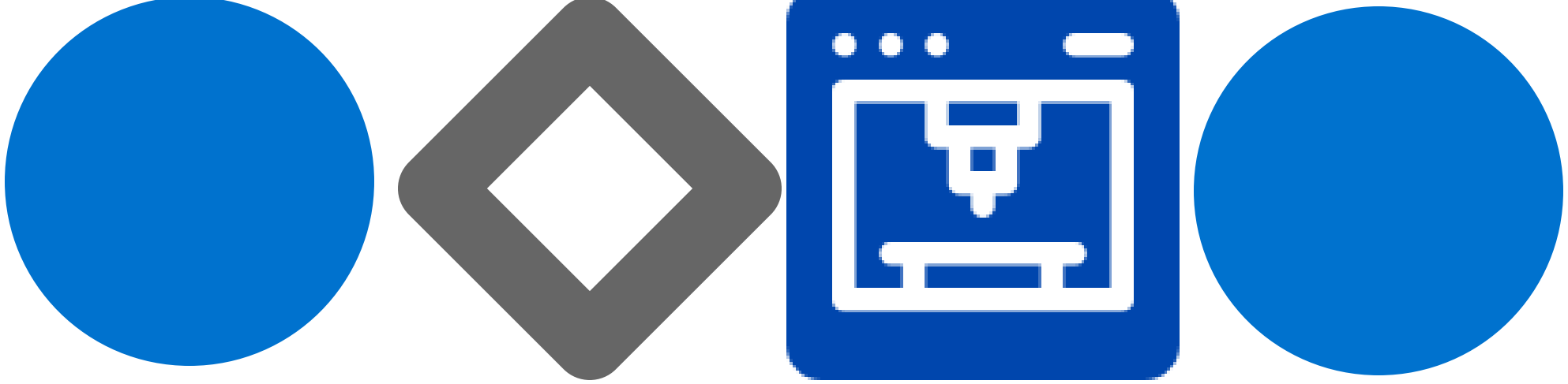
Establishing and enforcing standards for good loss control housekeeping is integral in building a safety-centered culture within any facility. Some measures include:



SAFETY TIPS

- Ban or limit smoking and open flames within your facility
- Control open flames and sparks to limit ignition sources
- Control of mechanical sparks and friction during the additive manufacturing process
- Ensure proper use of cartridge-activated tools and adequate maintenance of all tools and equipment
- Ensure safety standards, housekeeping, and maintenance programs are adopted by all employees

Dust Hazard Analysis (DHA)



Under NFPA 652: "Standard on the Fundamentals of Combustible Dust" existing facilities will be required to complete a DHA by September, 2020.

Components of a DHA include:

- Dust testing
- Identification of dust hazards present
- Identification of safe operating ranges and safeguards
- Data collection of system and performance requirements
- Recommendation for dust hazard management and documentation



Disclaimer: The measures listed above are not meant to be comprehensive, as each facility will have requirements related to the equipment onsite and environmental considerations.



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Contact us for more information on combustible dust safety and DHA solutions:

www.tuvsud.com/en-us/services/risk-management