

Safety in 3 Dimensions

Much like laser printers in the mid-'80s, in 2016 the 3-D printer is becoming a common fixture in engineering and design offices. An extremely rapid way to prototype, these units "print" layers of molten plastic or wax - which quickly solidifies - onto a carriage moving back and forth. Just like an inkjet, except the printhead is going up, so output grows in the 3rd dimension.




There are some safety and business interruption considerations about 3-D printers, which you may wish to review.

As the wax or plastic that is heated, it may give off an odor. Smelling typically like melted wax or plastic, this can bother those with respiratory conditions, or just be annoying. You may want to ensure the area where these printer(s) are located has adequate fresh air. It may also be a wise idea to have an industrial hygienist take an air sample. Typically the best option for odors is to use an OVM (organic vapor monitor) and have it analyzed by a GC-Mass Spectrometer organics screen.

Besides the odors, 3-D printers have fine dust associated with their use. This printing overspray is something you may also want to conduct air sampling for; if nothing more than to document low exposure values. These fine organics dusts are a bit more insidious, in that they may be explosive in the proper conditions.

How do you clean up 3-D printer dust? With a vacuum? Is it a properly-rated HEPA vacuum? No? Well, you may have just created an explosion hazard! A HEPA vacuum cleaner rated for combustible dusts, although expensive, is the way to go. Note we are not recommending adding a HEPA filter to a regular shop-vac!

But let's say a small fire does start, what do you do? Grab that A-B-C extinguisher, and spray powder, smothering the fire. The slightly-corrosive powder, which gets into every nook and cranny, has also ruined your 3-D printer. A better option is to use with a CO₂ extinguisher, or one of the special (albeit expensive) "clean room" models, that leaves no residue. 

Hazardous Waste, You Say?

You **believe** your Hazardous Waste Satellite Accumulation area is in compliance. Of the wastes, there are three 55-gallon drums, all about 1/2 full. Are you **really** in compliance?

US EPA 262.34(c) states "*a generator may accumulate as much as 55 gallons of hazardous waste or one quart of acutely hazardous waste...*"

So you're okay, right? Each container is well below 55 gallons, right?

No, the 55 gallons (or 1 quart Acutely hazardous) applies to the **total amount in the Satellite area**. So three 55-gallon drums, at 1/2 full, is over 80 gallons.

EPA has stated that the 55-gallon limit applies to the **total quantity** of non-acutely hazardous waste accumulated in a satellite location(s).

In addition, in the preamble to the final satellite accumulation rule, EPA **explicitly stated** that the 55-gallon limit on non-acutely hazardous waste applies to **each** satellite accumulation area. See 49 Fed. Reg. 49568, 49569 (December 20, 1984).

Note that many US states, such as Massachusetts and New Jersey, do allow each 55-gallon container of each waste stream to count towards an individual 55-gallon limit. 