

Chemical fume hood safety

A fume hood is a common piece of laboratory equipment that protects workers who are handling or working with hazardous chemicals inside the fume hood. Because it is equipped with a mechanical exhaust ventilation system, a fume hood protects workers from breathing in chemical vapors, fumes, gases, and dusts. The sash (clear sliding window) on a fume hood shields workers from splashes or fires. Like any other equipment, before working with chemicals in a fume hood, you should be trained on how to use that particular piece of equipment. Here are some quick tips to keep yourself safe:

- For hoods with a vertical or horizontal sash, open the sash just enough so that you can insert your hands and arms to be able to work comfortably and safely with the contents inside the fume hood;
- Use shallow trays to catch any accidental chemical spills from going down the drain;
- Keep chemicals at least 6 inches from the sash, and make sure no other objects block the flow of air that provides ventilation;
- Never work with biohazardous materials inside a fume hood; *and*
- Store chemicals and equipment outside of the hood in an appropriate cabinet.

You should also always know about the hazards of the specific chemicals you are working with by reading the safety data sheet (SDS).



SAFETY EDUCATE, ENGAGE & EVOLVE

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Don't get caught: Protect yourself from caught-in hazards

The construction industry's "Fatal Four" (falls, struck-by object, electrocutions, and caught-in) account for most worker deaths in the industry. If you are exposed to these hazards at work, you should know how to recognize them and what safe work practices can keep you injury-free.

Let's take a closer look at common situations where there are caught-in hazards, which is when a worker is caught inside or between different objects or is caught inside the parts of an object or equipment.

Heavy equipment. Never enter the area between a large piece of equipment, such as a backhoe, bulldozer, or excavator, and an immovable object, like a wall. For rotating equipment, like a crane, never enter the area that the load carried by the equipment may swing into (i.e., the swing radius). In both of these situations, you may become pinned between the equipment and the wall or other immovable objects. Before beginning the job, you should define zones that workers should not enter using barricades. Additionally, when approaching heavy equipment, be sure that the operator can see you and that the equipment is turned off completely.

Tools. Many tools have guards, and larger equipment may have machine guards installed that protect the operator from getting caught in moving parts or being pulled into the machinery. These guards should never be removed. You should also never use equipment that has missing or damaged guards. When working with tools, work at a safe distance from moving parts, being careful that your fingers, gloves, jewelry, clothing, and long hair do not get too close to the moving parts. If a tool or equipment must be serviced, you should follow the proper lockout/tagout procedures.

Material handling. When manually moving materials, you can potentially pinch or crush your toes or fingers when unloading the object to the ground, a shelf, or another location. Before you unload, make sure your fingers and toes are not underneath the object. When stacking large pieces of material, you might become trapped between the material; or, if you stack objects in an unstable manner, you can be caught under a fallen load.

Trenches and excavation. If a trench cave-in occurs, workers can be trapped, buried, or crushed by the soil. Protective systems should be put in place. These systems may include trench shoring to prevent the movement of soil and trench shielding to prevent the worker from being crushed if there is a cave-in. There can also be other caught-in hazards, depending on the work being done in the trench, such as laying pipe. Always use caution when working in and around trenches or other excavations.

By being aware of the caught-in hazards present at your jobsite and implementing safe work practices, you can prevent yourself from becoming another casualty one of the "Fatal Four."



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Dust exposure: Drywall sanding

According to a National Institute for Occupational Safety and Health (NIOSH) study, workers who sanded drywall were exposed to as much as 10 times the permissible exposure limit (PEL) for dust. Exposure to talc, calcite, and gypsum dusts can lead to irritation of the eyes, nose, and throat and cause difficulty breathing. Breathing silica dust is particularly dangerous because it may lead to the lung disease called silicosis or even lung cancer. Even if respiratory protection is worn, workers may still be exposed to dust due to the high levels created during drywall sanding.

To reduce your exposure to dust from sanding drywall you can use a portable vacuum sanding system that captures dust in a collection basin. These systems can be effective in reducing the drywall dust level up to 97 percent. Another option is to perform pole sanding instead of hand sanding. This practice reduces the dust exposure to the nose and mouth because the worker is physically further away from the source of the dust.

Caught-in hazards: QUIZ

- If a trench ____ occurs, workers can be trapped, buried, or crushed by the soil.
 - Cave-in
 - Implosion
 - Avalanche
- Many tools and equipment have ____ to protect the operator from getting caught in moving parts.
 - Guards
 - Locks
 - Buffers
- You should never walk or stand between heavy equipment and a wall. TRUE or FALSE.

Metalworking fluids

There are over 1.2 million workers in machine finishing, machine tooling, and other metalworking and metal-forming operations. If you are one of them, you probably work with metalworking fluids (MWFs), the oils and other liquids that are used to lubricate and cool metal during machining. Another purpose of MWFs is the continuous removal of chips and swarfs created by cutting tools during machining. Many MWFs are petroleum-based that may or may not be mixed with water, but some are synthetic. You should know what is in the MWFs you work with, and you can get this information from the SDS.

Exposure. Metalworkers can be exposed to MWFs if the mist, aerosols, or vapors are inhaled; if they contact skin when fluid splashes or mists; or when workers handle wet workpieces and tools. If you use a rag that may be contaminated with MWFs, you should not store it in your pocket. To avoid ingestion, always wash your hands before eating, drinking, or smoking.

Exposure levels will vary depending on how the fluid is applied and what kind of machining is being performed. However, your exposure may be increased if you work in close proximity to the machine, if the work involves deep or fast cuts, or if the ventilation is poor.

Health effects. Breathing in MWFs can lead to asthma, bronchitis, or the development of other respiratory conditions. When skin comes in contact with MWFs, common effects can include skin irritation, allergic reactions, and oil acne. If small metal particles are present in the MWF, it can damage the skin, making irritation worse.

Commonly, there is bacterial growth in MWFs, and breathing this contamination can lead to flu-like symptoms. Biocides are sometimes used to control the growth of bacteria, but some release the carcinogen formaldehyde.

N	A	H	N	P	C	S	H	U	R	
G	A	H	U	S	H	P	V	D	U	
H	H	S	A	O	O	U	A	H		C
V	K	M	U	G	M	S	N	N	U	R
R	G	I	A	H	V	T	G	H	C	M
A	U	S	S	D	A	A	H	A	G	P
U	G	U	A	R	D	C	T	I	I	S
T	R	A	P	C	N	K	C	K	A	T
C	M	O	V	I	N	G	V	U	R	R
D	R	A	P	A	N	A	G	R	U	

1. **A. Cave-in.** There should be protective systems installed to prevent a trench cave-in and to protect the worker if there is a cave-in. 2. **A. Guards.** Machine guards are installed for your protection, and you should always ensure that the machine guard is in good condition before using the equipment. 3. **TRUE.** Never enter this area. You could become pinned or crushed between heavy equipment and an immovable object.