

Fact Sheet

Refrigerators in the Laboratory

Refrigerators are used to store chemicals, specimens, and other materials in a wide variety of labs. Improperly storing hazardous materials in a refrigerator can cause explosions, fires, and poisonings.



Hazards

Most flammable materials naturally let off some level of vapor, even when containers are covered and sealed. Storing flammables in a refrigerator allows for the build-up of those vapors in an enclosed space. Cooling elements, internal lights, defrost switches, and timers inside refrigerators are often capable of producing enough of a spark to ignite flammable vapors. Sparks generated by the electrical equipment inside a refrigerator have been known to set off explosions that have destroyed refrigerators and harmed people and parts of the lab around it.

Types of Refrigerators

Standard/Domestic

- CANNOT be used for flammables
- Can be used for **non**-flammable materials only
- Regular refrigerator, just like ones used in home kitchens
- Internal components are capable of producing a spark that could ignite vapors
- If used for food and drink, must not be in lab area, and must be signed appropriately

Modified Domestic

- A domestic refrigerator that has had the electrical components modified to remove or control ignition sources
- If the light in the refrigerator comes on when you open it, it has not been modified
- Only a few types of manual defrost refrigerators can be modified appropriately, so purchasing a flammable-safe refrigerator is the easiest option

Flammable-Safe (laboratory-safe)

- Recommended for laboratory storage of flammable materials, as they enclose all sources of potential ignition
- Often have other safety features, such as thresholds, self-closing doors, magnetic door gaskets, or special materials for inner shell
- They will often have a label that reads "Flammable materials refrigerator: keep fire away"

Explosion-Proof

- Safe to store flammables in, as well as safe to use in a flammable environment
- No locations at the University should be generating a flammable environment around the refrigerator, so these are generally not needed
- If you think your area needs one, contact your Department Safety Officer to conduct a risk assessment

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- Consider posting an inventory on the front of the refrigerator. This is especially useful for refrigerators containing chemicals, as you can know at a glance what is stored inside. This can also preserve energy and keep refrigerator contents cooler, as people may spend less time searching for items inside.
- All refrigerators should be plugged directly into an outlet. Don't use extension cords.
- Refrigerators should be cleaned out and defrosted on a regular basis. Once a year is recommended, or when ice covers materials or interferes with the ability to shut the door tightly.
- Locate your refrigerator away from laboratory exits, so that in case of a refrigerator incident, you will still have a clear exit from the area.

Signage

Domestic/standard Refrigerators

All the refrigerators in your lab should be signed appropriately for what is allowed to be stored in them. Refrigerators that are unsafe for flammables storage should be signed, clearly indicating the flammables should not be stored there.

Flammable-Safe Refrigerators

Refrigerators that are safe for flammable storage should also be signed, indicating that there are flammables stored inside. Signs like those to the right can be used, or you can make your own. Note that the signs for non-flammable storage and flammable storage can look very similar.

General Chemical Storage Refrigerators – NON-flammable

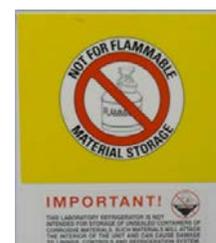
You should also label the refrigerator with the hazards of any other materials stored in the refrigerator, such as biologicals, toxics, or other materials. You can follow standard labeling guidelines.

Food and Drink Refrigerators

If the refrigerator is only for food and drink, there should be a sign on it indicating that it should not be used for any chemicals or lab supplies, and is for food/drink only.

Temperature-Sensitive Materials

If your refrigerator is storing temperature sensitive materials, it is a good idea to post emergency information on the front. This should include the required storage temperature, emergency contact information, and what to do if the refrigerator is not working.



Questions

If you have any questions about appliances or storing flammables safely, contact your Department Safety Officer, your DEHS Research Safety Professional, or call the DEHS office at (612) 626-6002. A safety professional will be able to provide guidance on appliance purchasing, chemical storage, and other concerns.