

Unattended Operations

Any equipment or experiment left unattended, whether over a lunch break or overnight, has the potential to cause significant problems. Though leaving operations unattended is discouraged, sometimes there is a strong need to do so. There are many actions you can take to make sure your unattended operation is as safe as possible.

Risk Assessment

A reaction left alone overnight is not more hazardous if done at night versus during the day. It is, however, a higher risk, because no one will be there to monitor it or adjust it if anything goes wrong. In order to decide if you can leave a reaction overnight, you need to determine what the risks of it are.

You should consider the chemicals involved, temperatures involved, what sort of reaction it is, and what sort of resources it will use. Think about what will happen if the lab loses power, compressed air, gas, or water, or if there is a leak in your system. What would the consequences of these issues be? Would the system over-pressurize, over-heat, or lose cooling? If it would have negative consequences, revise your set-up to eliminate these. If the negative consequences cannot be controlled, your procedure should not be left unattended.

Some reactions cannot be left unattended under any circumstances. This includes column chromatography and any time-sensitive reactions. Anything using unstable compounds that aren't stored properly (such as pyrophorics, oxidizers, or other reactive materials) should not be left unattended. If you have never run the reaction before, or if it cannot "fail safe", then you should stay while it is running.

Signage

In order to make sure that others in the lab, including potential emergency responders, know what your reaction includes, signage is important. For instance, if there is an emergency in the middle of the night, responders will want to know what chemicals are involved. If one of your lab mates bumps the hot plate, your signage will tell them what temperature you meant it to be set at so they can adjust it back.

Signage should be laminated and hung on the hood sash.

Before You Leave

Before you can leave safely, there are some steps you should take to ensure your reaction will proceed safely and to make sure others (including potential emergency responders) will be able to find enough information on what your reaction involves.

Fail-Safe

- If anything goes wrong, your reaction should end in a stable state.
- Think about your process and what would need to happen to shut the reaction down or prevent negative consequences.
- Potential processes include internal shut-offs, water flow monitors, temperature sensors and high-temperature limits on hot plates that ensure the equipment cannot heat past a point.

Double Check

- Remove extra equipment from your fume hood and double check your connections and settings to make sure they are secure.

Signage

- Write and post signage including the date, duration, temperature set point, process you are running, any hazards, intended conditions, emergency shut-down procedure and contact information for the person running the experiment.

Verify Stability

- Make sure your reaction has been at a constant temperature for at least 1 hour and that it is less than 25% completed prior to leaving unattended.

Notify

- If leaving during normal work hours, tell someone else who will be present.
- If the reaction will go overnight, notify the person that will arrive first the next morning.
- Others in your lab should know that your reaction is running, that it will be unattended and the basics of the process.