

Organic Solvent + Oxidizer = Explosions

Texas Tech University

A chemical explosion recently occurred in a lab at Texas Tech University, sending four people to the hospital with minor injuries. Although specific details have not surfaced, it is likely that students inadvertently mixed nitric acid waste in a bottle formerly containing an organic solvent, such as acetone. The nitric acid, which is a strong oxidizer, reacted with the trace organic solvent within the glass bottle, pressurized and then exploded. Figure 1 shows the aftermath. Here's a [link](#) to an article in the *Lubbock Avalanche-Journal*, which describes the incident in greater detail. A similar incident occurred in a lab at Purdue in 2014. The result of that explosion is displayed in Figure 2. Let these events be reminders to be vigilant about not mixing incompatible chemicals.



Fig. 1 TX Tech, damaged fume hood.



Fig. 2 Purdue, amber glass bottle explosion on the floor.

Announcement: REM Safety Chair/Fair Meeting

March 25, 2015 Stewart Center 214 & 218 8:00 to 11:00 AM

Attention all lab managers, staff, and graduate students: REM is holding its Annual Safety Chair/Fair this month. There will be opportunity to attend numerous presentations. Take note that a lab safety-specific session will be held from 10:00 am to 11:00 am at STEW 214. The agenda is on-line [here](#). During the lab session, a representative from SGD, Inc. will discuss compressed gas safety, Anthony Franklin from the MAHA Fluid Power Research Center will discuss lab safety issues at his lab, and I will give a hazardous waste review. Aside from attending informative presentations, there will be a chance to network with several safety vendors at the Safety Fair. The Safety Fair will be held in STEW 218 from 7:30 to 11:30am. Vendors will be displaying a variety of products, including gloves and lab coats. Light refreshments will be provided during the event. In case you have questions, REM staff will be present throughout the event for consultation. We would love to help out!

Is Your Lab Storing Too Much Waste?

Storage Limitations and 4 Ways to Avoid EPA Non-Compliance Fines

As per Federal regulations, each lab on campus is allowed to store up to 55 gallons of hazardous waste and up to one (1) quart of acutely toxic waste. Here are some suggestions to help avoid accruing too much waste and, potentially, an expensive EPA fine:

1. Only use as much material as is necessary. Don't incur extra cost and create extra waste for no reason. Plan ahead sufficiently for your experiments.
2. Appoint a staff member to be in charge of managing waste and submitting hazardous waste pick-up requests. This will remove the tendency to assume someone else will take care of it.
3. Submit waste pick-up requests more frequently. REM staff is always happy to pick up waste.
4. For a combined lab space, make sure that the waste for each research group is clearly segregated into group-specific areas in the research complex. This will minimize the chance that an area will reach 55 gallons without anyone realizing it. In other words, do not move waste containers into a common accumulation area. Waste containers must remain at or near the location where they were generated.



Hydrofluoric Acid Safety

A Special Case

Hydrofluoric acid (HF) is an extremely hazardous chemical. It is highly corrosive and an a contact poison. As stated in the [Standard Operating Procedure \(SOP\)](#) on REM's web-page, HF has a high affinity for calcium: it will quickly penetrate skin tissue and dissolve bone calcium.

Labs that use HF should have SOP training and an HF-specific first aid kit on hand (Figure 3). The kit should contain Calgonate eyewash and skin cream, as well as a bottle of milk of magnesia.

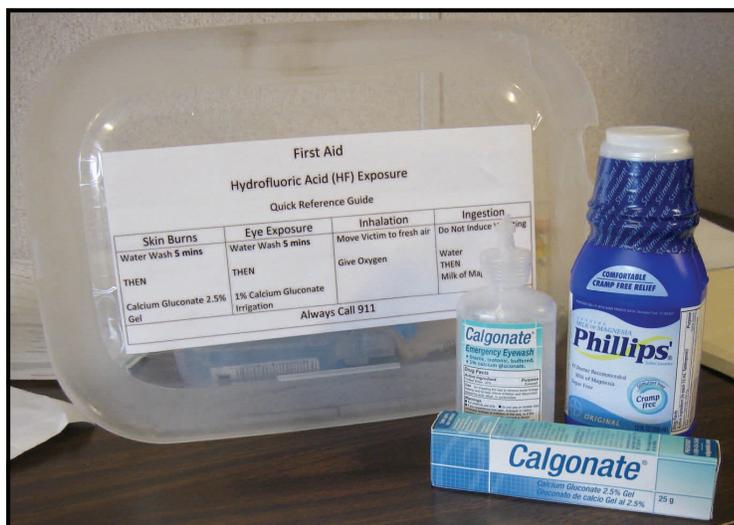


Fig. 3 HF first aid kit: Calgonate eyewash, skin cream and milk of magnesia.