

Lessons Learned

Acid Burns



What Happened?

Within three weeks from each other, two WCM employees experienced significant acid burns:

1. A postdoctoral researcher working at the bench knocked an open vial of 100% **formic acid**, which spilled on her thigh and caused a large, second-degree burn, as shown in the first photo.
2. A research technician working in the fume hood was scaling up a peptide synthesis experiment with 100% **trifluoroacetic acid (TFA)**, and knocked the open vial with his sleeve. In order to keep the sash as low as possible during the manipulations, he was squatting which resulted in TFA landing on his thigh causing skin necrosis and a third-degree chemical burn, as shown in the second photo.

Both employees immediately alerted co-workers, used the emergency shower and removed the contaminated clothing, while co-workers contacted Security and EHS to expedite response and transport to the Emergency Department.

Why Did This Happen?

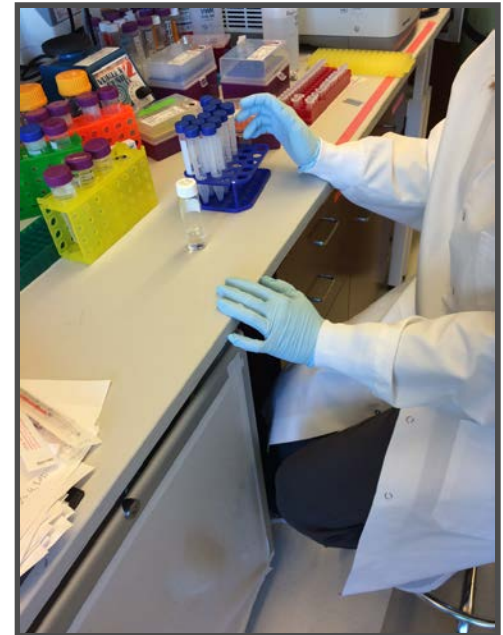
- The open, unstable vials were placed near the edge of the bench/hood instead of held securely in a rack.
- The researchers' lab coats were not fully fastened, exposing their legs.
- In the first case, a refrigerator obstructed the space underneath the bench, forcing the researcher to sit in an awkward position and exposing the lap.

Lessons Learned

- All containers of hazardous materials must be secured before work begins; for example, placed in a tube rack.
- Personal protective equipment must be worn as required to be effective: always wear a fully fastened lab coat, gloves; clothing that covers the legs and closed-toe shoes.
- When working at the bench or chemical hood, employees must either stand or sit making sure the lap is not exposed. Sitting or squatting causes the lab coat to open or shift up, which may expose the legs to spilled materials. Space under benches should be unobstructed to allow for proper sitting posture while working.
- Performing a mock run of experiments ensures that the workflow is set up to eliminate spills and other incidents.
- Employees should review the [WCM Exposure and Spill Response Guide](#) and the [Chemical Spill Planning and Response](#) and know the locations of all emergency showers and eyewash stations to optimize quick response and decontamination.



Above: Spills of formic acid and trifluoroacetic acid caused second-degree burns (first photo) and third-degree burns (second photo).



Above: placing an open vial near the edge of the bench, open lab coats and obstructed space under the bench led to one of the incidents.