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History Hurts
Courtesy of Elizabeth DeWolfe

Atypical Labs: Safety in the Archive

By Elizabeth DeWolfe, Ph.D.
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My research in the Lexington, Kentucky, County Clerk's Office examining nineteenth-century property deeds had been going well. Eager for the next historical find in the oversized volumes, I moved my hand across the top of the book and along a surprisingly sharp page. There's that moment of dumbly staring at the blood oozing from your finger, followed by the stinging pain a paper cut provides. A tissue and a rinse in the rest room and I was good to go, keeping the offending (and throbbing) finger well away from the 150-year-old documents.

Archives are the laboratory — the site of exploration and knowledge acquisition — for UNE scholars and students in diverse fields, including history, English, political science, and environmental studies.

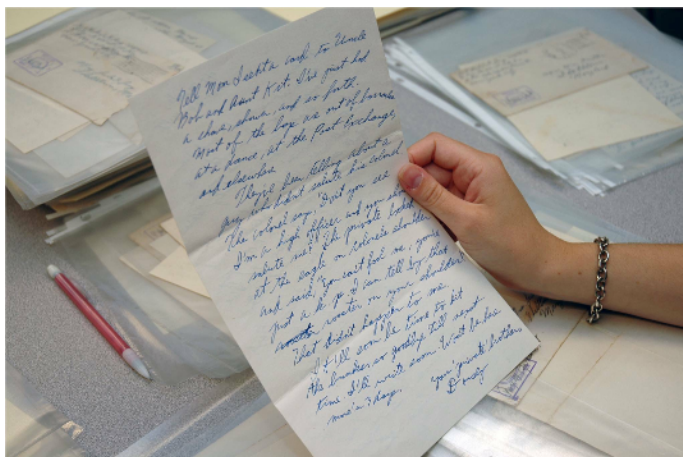
Dreaded paper cut aside, in most archives, there is more danger to the archival material than to the researcher. Archives' policies are a careful balance between researcher access and protecting historical and cultural materials. Traditionally, white cotton gloves were mandatory when handling archival materials to avoid transferring the oils and dirt on hands to one-of-a-kind documents and rare items.

Archivists today recognize that gloves can do more harm than good. Wearing gloves prevents fingertips from accurately sensing the fragility of materials, making it more difficult to separate and turn the pages of letters or books. Rough-edged paper can snag on gloves' fabric, leading to tears or other damage. And the gloves are pretty slippery, increasing the potential of a rare book or material object slipping from one's hands.

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Soiled gloves can transfer the dirt to other objects. While they can be washed, it is far easier — and safer for archival materials — if the researcher follows the current protocol of washing and drying one’s hands before commencing work. The UK [National Archives](#) asks researchers to avoid hand cream on research days and resist licking one’s fingers to turn a page.

There are exceptions. Gloves are typically required with items that are difficult to clean or are especially sensitive to body oils. The [Library of Congress](#) requires gloves when handling delicate materials such as books with fine bindings, photographs, metals, film, and ivory and in situations where there may be a health hazard, such as [mold](#).



Manuscript
Courtesy of Elizabeth DeWolfe

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Despite anecdotal stories of librarians contracting a centuries-old plague, there is no evidence that old books or paper can transmit disease. Yet, in the U.S. and U.K. in the late nineteenth century, a widely-held belief that tuberculosis, scarlet fever, and even cancer could be transmitted via [books](#) led to disinfection processes that damaged books, policies that forbid the ill from borrowing library materials, and mandates to destroy contaminated books. Librarians of the day argued that the greater danger was public panic.

With diligent attention to handwashing and careful handling of archival materials, the damage potential is minimized. These simple protective steps are easily taught to students, thus welcoming them early and often into the [archives and special collections](#) on UNE’s campus and beyond.



Hot Plate Hazards

By Jesse Millen-Johnson

Hot plates in academic laboratories have contributed to dozens of fires and other accidents and countless near-misses in recent years. Besides being a fire hazard, they also present a burn and electrical shock risk.

In one example, a University of Delaware researcher thought he'd turned off a hot plate in a fume hood at the end of the day but had actually set it to high. The oil bath on the hot plate that had been used for an earlier synthesis reaction caught fire and spread to a flask of solvent that was stored in the same hood. A nearby researcher who was working late saw the fire and used a dry chemical extinguisher to put it out, in addition to calling 911. The hood was moderately damaged and had to be decontaminated. Also of concern, there were two water reactive chemicals and a highly toxic cyanide compound stored near the reaction. The heat from the fire caused the can containing the cyanide compound to expand but not rupture.

This accident illustrates both the hazards of hot plates and the importance of not storing chemicals in fume hoods or near hot objects or other reactions. The outcome could've been much worse if not for the quick response of the other researcher.

Brands/models of hot plates where claimed problems with spontaneous heating or exceedance of set temps have been reported include Corning (PC-35, PC-200, PC-220, PC-320, PC-351, and PC-420), Fisher Isotemp, and Thermolyne SP46925. In addition, any hot plate purchased before 1984 is also inherently unsafe and should be taken out of service and properly discarded, with the power cord cut off.

Hot plate information:

- High temperatures can exceed 900 degrees Fahrenheit
- Power cord from hot plate can be damaged over time or melted by the plate itself and cause fire or electric shock
- There is a spark hazard from the on/off switch or thermostat; hot plates are not explosion proof/intrinsically safe
- Inspect the plug and cord condition before use, verify no observed sparks
- Ensure plate actually turns off and cools quickly when switch is in off position
- Only heat-resistant borosilicate glassware with no cracks can be used
- When using a combination stirrer/hot plate, remember the stirrer function may be turned off but the heat might still be on
- Remember that a cold hot plate looks the same as a hot one
- Avoid unattended use; equipment with independent control circuits and safety set-points must be used when unattended heating operations occur.
- Use medium to medium-high heat for most liquids
- The hot plate surface should be larger than vessel used
- When using flammable liquids, heating must be performed in a certified fume hood or an exposure control device must be used; secondary containment is also needed
- When boiling a solvent, use a condenser and do not use open beakers
- Never put strong oxidizers in oil baths
- Clean any spills on hot plates as soon as possible and watch for corrosion over time
- Unplug hot plates when you're done; don't just turn them off



An older model hot plate/stirrer with an oil bath dish
(Courtesy University of California, Berkeley)



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INNOVATION FOR A HEALTHIER PLANET

Transporting Hazardous Materials and Lab Relocation

By Peter Nagle



If you need to transport hazardous chemicals over the road, do you know how to do it safely and compliantly? Transportation of hazardous materials in motor vehicles is strictly regulated by the US Department of Transportation (DOT). Specialized training and licensing are required and must be reviewed and renewed periodically. Researchers and laboratory staff aren't trained or licensed to carry hazardous materials over public roads, and doing so could result in heavy fines in the event of an accident. Therefore, UNE personnel is prohibited from transporting hazardous chemicals over the road under any circumstance.

Hazardous materials may NOT be sent via UNE internal mail. Shipping hazardous materials by parcel carriers (UPS, FedEx, etc.) is heavily regulated, including stringent documentation, packaging, and labeling requirements. Furthermore, UNE's mailroom is not licensed as a hazardous material carrier.

If you need to move hazardous chemicals between campuses or to another institution, you must contact EHS beforehand. EHS will determine whether an outside vendor or a parcel carrier is needed. Please provide the following information:

1. Chemical inventory
2. Refrigerators or freezers to be moved
3. Building and lab number of the new location
4. Date of move

Laboratory personnel shall also not undertake transportation of large quantities of hazardous materials during intra-campus lab relocation. If your lab is being relocated on the same campus, you must contact EHS beforehand with the date of the move and a full chemical list. EHS may approve your request to move your own hazardous chemicals, depending on the amount, type, and logistics of the move.

Even if you don't receive personal permission, EHS may still be able to move hazardous materials within the boundaries of a single campus. However, you will be required to hire a licensed professional transportation vendor if the move is intercampus or the logistics of an intra-campus move dictate professional assistance. EHS can help you find a proper transporter.

Moving refrigerators and freezers can disrupt temperature stability in their internal chambers. UNE vehicles do not have the capacity to supply cold units with electricity. Instead, outside vendors with this capacity can be hired for longer moves. If you have freezers or refrigerators with critical material that need to be moved between campuses, consider hiring a vendor. This can also reduce costly downtime. Again, EHS can help locate a suitable vendor.

If a laboratory relocation is planned, please contact EHS well beforehand and provide as much information as possible. We will work with you to make sure the move goes as smoothly as possible.



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