

Lab Safety Inspection Standard Checks (Potential Findings) with Corrective Actions (updated 9/17/24)

General

- Applying cosmetics (include lip balm) or handling contact lenses in the lab.
Corrective Actions: Applying cosmetics (include lip balm) or handling contact lenses is prohibited in the lab.
- CHP/Lab Safety Manual not available to personnel.
Corrective Action: Make CHP/Lab Safety Manual available to personnel.
- Chipped or broken glassware in use in the lab.
Corrective Action: Chipped or broken glassware must be repaired or discarded.
- Defective, damaged, or unrated tubing used for Bunsen burner.
Corrective Actions: Use rated tubing/hose that fits the gas valve outlet and burner inlet. Rated tubing includes fabric-reinforced PVC, fabric-reinforced neoprene (polychloroprene), fabric-reinforced nitrile rubber (NBR), thick-wall non-reinforced neoprene, or tubing specifically designed for Bunsen use provided it is not natural rubber.
- Evidence of eating and/or drinking in the lab.
Corrective Actions: Food and drink are prohibited in all research wet labs. Please view policy and instructions for obtaining exemption at: <https://researchsafety.uky.edu/cs-policies-and-procedures/food-and-drink-laboratories>
- Foodstuffs utilized for research not labeled for intended use (e.g. "Food not to be used for human consumption").
Corrective Action: Label all foodstuffs as "Not for Human Consumption" or similar.
- Glassware disposed of improperly.
Corrective Action: Glassware must be disposed of in rigid cardboard box with plastic liner.
- Handwashing sink lacking liquid hand soap and/or paper towels.
Corrective Actions: Liquid hand soap and/or paper towels must be made available to allow for handwashing after removal of gloves, when visibly contaminated, and before leaving the lab.
- Hazardous equipment, machinery or other devices without safeguarding.
Corrective Action: Any machine part, function, or process that could cause injury must be safeguarded (i.e., moving parts, belts, etc.)
- Improper pipette disposal in unlined box.
Corrective Actions: Line pipette disposal boxes to prevent leakage.
- Lab personnel wearing improper attire in the lab (e.g. shorts or open toed footwear).
Corrective Actions: Lab personnel must wear proper attire in the lab (e.g. shorts or open toed footwear prohibited).
- Poor housekeeping of lab space.

Corrective Actions: Appropriate housekeeping of lab surfaces (e.g., floors, walls, and other “housekeeping surfaces”) to facilitate cleaning and minimize the accumulation of debris and/or fomites is required.

- Sharps containers more than 2/3 full.
Corrective Actions: Dispose of sharps containers when 2/3 full.
- UV sources not labeled.
Corrective Action: UV sources must be labeled.
- UV sources utilized without proper shielding and/or PPE.
Corrective Action: UV sources must be shielded or utilized with appropriate PPE.
- Vacuum sources without vacuum traps.
Corrective Actions: Vacuum sources shall have vacuum traps.

Flammable

- Flammable materials are stored in refrigerator/freezer that is not rated for flammables.
Corrective Action: Store flammable materials in a flammables-rated refrigeration unit. Please see the Policy on Storage of Small Quantities of Flammables in Household-Type Fridges, with allowable exemptions here: <https://researchsafety.uky.edu/chemical-hazards-information/flammables>
- Flammable storage cabinets left open.
Corrective Actions: Flammable storage cabinet doors shall remain closed at all times.
- Potentially explosive compounds not dated when opened/tested/refilled in accordance with guide sheet.
Corrective Action: Potentially explosive compounds must be dated when opened, tested or refilled. Peroxide forming compounds must be used, tested or disposed no later than 1 year after opening. Consult the manufacturer's SDS and/or other authoritative sources for guidelines for your specific chemical.
- Potentially explosive compounds not disposed of by manufacturer's expiration date.
Corrective Actions: Potentially explosive compounds must be used or disposed by manufacturer's expiration date.
- The amount of unprotected flammable solvents in area exceeds amount set by UK Solvent Storage Policy.
Corrective Actions: Reduce the amount of flammable solvents in the area in accordance with UK Flammable Solvents Storage Policy:
 1. The total amount of solvents within the laboratory shall not exceed ten (10) gallons per 100 sq.ft.
 2. The total amount of unprotected solvents within the laboratory shall not exceed five (5) gallons per 100 sq.ft.

Solvents in excess of the amounts listed in item #1 shall be inside (bulk) storage rooms meeting NFPA 30.

- Unapproved flammable storage cabinet in use.
Corrective Action: Use rated flammable storage cabinet per NFPA 30.
- Vent plugs of flammable cabinets have been removed.
Corrective Action: Replace vent plugs for flammable storage unit.

Facilities

- Chemical fume hood alarm is not functional.
Corrective Actions: UK OHS will be contacted to initiate correction.
- Chemical fume hood is in alarm mode.
Corrective Actions: UK OHS will be contacted to initiate correction.
- Chemical fume hood is missing an audiovisual alarm.
Corrective Actions: Install audiovisual alarm when funds are available.
Contact UK OHS for guidance.
- Chemical fume hood missing a flow indicator.
Corrective Actions: Install flow indicator when funds are available. Contact UK OHS for guidance.
- Fire extinguisher has not been inspected annually.
Corrective Actions: The UK Fire Marshal's Office will be contacted to inspect the extinguisher.
- Fire extinguisher not charged – “not in the green”.
Corrective Actions: The UK Fire Marshal's Office will be contacted to inspect and replace/recharge extinguisher.
- Fire extinguisher not mounted properly.
Corrective Actions: The UK Fire Marshal's Office will be contacted to mount extinguisher on wall.
- GFCI outlets not present in required areas.
Corrective Action: GFCI shall be installed in areas within 6' of water use.
- Mold is growing in cold room.
Corrective Actions: Mold was found growing in the cold room. Moldy items must be removed and wipe all surfaces with a cleaning/disinfecting solution. Cardboard and other cellulose-based items must not be stored long term in cold rooms.
- No eyewash in lab.
Corrective Actions: Install compliant eyewash when funds are available.
Contact UK OHS for guidance.
- No fire extinguisher in lab.
Corrective Actions: The UK Fire Marshal's office will be contacted to place extinguisher in lab.
- No safety shower available in lab.
Corrective Actions: Install ANSI Z358.1 compliant safety shower when funds available. Contact UK OHS for guidance.

- Positive or static airflow relative to uncontaminated areas.
Corrective Actions: Lab airflow must be negative relative to uncontaminated areas. UK OHS will be notified of ventilation issue.

Hazardous Waste

- Containers near drains without spill trays.
Corrective Action: Relocate the containers away from the drain or place the waste in a spill tray which may be obtained from the Environmental Management Department.
- Containers uncapped or with funnels in them.
Corrective Action: All containers must be closed with a tight-fitting lid unless contents are being added to them. Place a compatible lid on the container or, if an HPLC effluent container, install a cap with holes drilled in it for the tubing.
- Evidence of improper disposal (e.g. drain disposal, trash) of hazardous materials that have not been reviewed or approved by EQM
Corrective Actions: Hazardous waste must be ticketed for disposal and pick up by Environmental Quality Management. Any hazardous material to be drain disposed or placed in regular trash must be reviewed and approved by Environmental Quality Management.
- Full hazardous waste containers not ticketed for disposal.
Corrective Action: Hazardous waste containers, when filled must be dated with the date on which the container is filled. This may be done by completing an Chematix/Etrax waste card and printing the card to be placed on the container.
- Hazardous waste containers not labeled with the words 'Hazardous Waste'.
Corrective Actions: A waste accumulation container must be labeled with the words 'HAZARDOUS WASTE' as soon as waste is introduced into the container unless the waste is Ethidium Bromide or Formalin. These 2 wastes should be labeled as 'NON-RCRA REGULATED WASTE.' Premade labels may be obtained by request: Environmental Management, Maridely Loyselle: mmloys2@uky.edu.

See page 25 & 27 of the Hazardous Waste Training manual for examples of correctly filled labels:
https://drive.google.com/file/d/1C0zQQT8vhGIA4_x24ilt0y1Eu67OiDzq/view
- Incompatible containers or incompatible waste storage.
Corrective Action: Place the waste in a compatible container and segregate incompatible materials.
- Pressure forming waste types (e.g. Piranha solution) not vented with approved cap.
Corrective Action: Containers used for pressure forming waste types (e.g. Piranha solution) must be sealed with a cap that is manufactured to release pressure and be spill proof. These caps may be obtained from Environmental Management.
- Sign identifying the location of the Satellite Accumulation Area not posted.

Corrective Actions: The location(s) where hazardous waste is being accumulated must be identified by a red sign indicating the Satellite Accumulation Area (SAA). Contact Environmental Management to obtain the signs.

Life Safety

- Aisles or doorways blocked.
Corrective Action: Keep aisles, doorways, free from obstruction. If the UK Fire Marshal's Office has previously issued approval for this obstructed doorway, please forward documentation of this approval to labsafety@uky.edu so this finding may be removed from the inspection.
- Items stored within 18" of sprinklered ceiling.
Corrective Actions: In a sprinklered space, keep a clearance of 18 in. from the ceiling on non-wall adjacent shelving.
- Overabundance of combustibles, e.g. cardboard boxes in the lab.
Corrective Action: Reduce the amount of combustibles in the lab to what is necessary.
- Slip, trip, or fall hazards in the lab (e.g. power and extension cords, liquids on floor).
Corrective Action: Keep area free from slip, trip, and fall hazards.

Training

- All lab personnel have not completed Hazardous Waste training within last year.
Corrective Action: All persons generating or managing Hazardous Waste must be trained on an annual basis. Access the online Hazardous Waste Generator Training on the EMD website and insure that all lab personnel complete the training.
- Not all lab personnel have taken Chemical Hygiene Plan/lab Safety Training.
Corrective Action: All lab personnel must take the online Initial Chemical Hygiene Plan/Lab Safety training, and thereafter annually complete the CHP Refresher training. Visit researchsafety.uky.edu or email labsafety@uky.edu for instructions on completing this required training.

PPE

- Appropriate PPE not available.
Corrective Actions: PPE for the work conducted shall be made available to personnel at all times.
- Lab coats laundered at home.
Corrective Actions: Lab coats must be laundered on premises or through an approved vendor.
- Lab coats not laundered when visibly soiled.
Corrective Actions: Lab coats must be laundered when visibly soiled.
- Lab personnel not wearing PPE in accordance with PPE Hazard Assessment.

Corrective Action: Lab personnel must wear appropriate PPE in the lab, in accordance with CHP Hazard Assessment.

- Lab personnel reusing single use items (e.g. gloves).
Corrective Actions: Disposable PPE must be decontaminated and placed in lab waste after use.
- PPE is improperly utilized by personnel.
Corrective Actions: Personnel shall be trained in the proper utilization of PPE, including requirements for use and its donning/doffing.
- PPE stored improperly resulting in the contamination or degradation of PPE.
Corrective Action: PPE should be stored according to manufacturer's recommendation.
- PPE worn outside of lab area.
Corrective Actions: All PPE, including lab coats and disposable gloves, shall be removed before exiting the lab and entering public corridors and non-laboratory spaces.

Equipment

- Access to eyewash is obstructed.
Corrective Action: Keep area around eyewash clear.
- Access to fire extinguisher is obstructed.
Corrective Action: Keep area around fire extinguisher free from obstructions.
- Access to the safety shower is obstructed.
Corrective Action: The area around safety shower must remain clear of obstructions.
- Fire extinguisher was discharged and not reported.
Corrective Actions: The Fire Marshal's office will be contacted to place an extinguisher in lab.
- Portable eyewash not maintained.
Corrective Actions: Maintain eyewash following manufacturer's specifications. Eye wash solution shall not be expired.
- The safety shower activation handle has been rendered inoperable.
Corrective Actions: The safety shower activation handle must remain operational at all times.

Emergency Procedures

- Emergency numbers are not posted in lab.
Corrective Actions: Post emergency numbers in lab for ready access by laboratory personnel in the event of an emergency.
- Lab Personnel are not aware of emergency procedures.
Corrective Actions: Train all lab personnel regarding their responsibilities in an emergency. These responsibilities may range from notify and evacuate to cleaning up a small spill as long as the personnel are properly trained and comfortable in completing these tasks.

- Occupational Injury and Exposure Protocol for Laboratories is not posted or made available to personnel.

Corrective Actions: Make Occupational Injury and Exposure Protocol for Laboratories available to personnel.

https://ehs.uky.edu/docs/pdf/ohs_lab_exposure_protocol_0001.pdf

CFH

- Actively used chemical fume hood not being utilized according to UK safety guidelines.

Corrective Actions: Research activities requiring a chemical fume hood (CFH) shall always be performed within a CFH that is functioning according to UK guidelines and which has been UK OHS-certified within the year. Place a "Do Not Use" sign on the malfunctioning CFH or exposure control device. Please notify UK Occupational Health and Safety at 859-257-3827 for correction.

- Alarm has been rendered inoperable by tampering.

Corrective Actions: Lab shall not tamper with fume hood alarm. Please notify UK Occupational Health and Safety at 859-257-3827 for correction.

- CFH baffles are obstructed or there is an excessive amount of materials inside chemical fume hood while in use.

Corrective Actions: Keep the area around baffles clear from obstructions. CFH being used for chemical operations shall be free clutter. Only chemicals and equipment used for active experimentation may be temporarily stored in the CFH while procedures are underway.

- Chemical fume hood is not appropriate for lab operations, e.g. heating perchloric acid.

Corrective Actions: Chemical fume hoods must be appropriate for lab operations.

- Chemical fume hood sash is above working height while in use.

Corrective Actions: Keep sash at working height during active use and closed at all other times.

Biohazardous Waste

- Bagged biohazardous waste containers greater than 2/3 full.

Corrective Actions: Close and process biohazardous waste containers when no greater than 2/3 full to allow for adequate space for steam penetration and proper fit inside the autoclave chamber.

- Bagged biohazardous waste directly on floor, not in leak proof container.

Corrective Actions: Biohazardous waste, if not to be immediately autoclaved, should set within a leak proof container to prevent puncture and/or leakage.

Access Control

- Area doors open to non-research space.

Corrective Action: Area doors must remain closed to non-research space or shared hallways.

- Area doors unlocked when space is unoccupied.

Corrective Action: Area doors shall be locked when space is unoccupied.

CGC

- Compressed gas cylinder is not marked with its contents and/or primary hazard(s).

Corrective Actions: Compressed gas cylinders must be marked as to their contents with additional communication of primary hazards, using verbiage or GHS pictograms.)

- Compressed gas cylinder regulator is being used as gas shut off while cylinder valve open.

Corrective Actions: Corrective Action: Turn off cylinder at valve stem when gas is not in use.

- Compressed gas cylinder restraint too high or too low.

Corrective Action: Compressed gas cylinder restraints must be placed between the midpoint and shoulder of the cylinder.

- Compressed gas cylinder storage area is not dry, cool and well ventilated.

Corrective Actions: Corrective Action: Make improvements to the existing compressed gas storage area so that it is dry, cool and well-ventilated, or move cylinders to areas that meet these requirements.

- Compressed gas cylinders are being stored or transported without cylinder caps.

Corrective Actions: Corrective Action: Place cylinder cap on compressed gas cylinder when being transported or stored.

- Compressed gas cylinders are not properly restrained.

Corrective Action: Restraint chains or straps shall be positioned about 2/3 of the way up the cylinder, above its center of gravity, between the shoulder and midpoint of the cylinder. Chains/Straps shall be tightly fitted to hold the cylinder in place. No more than 2 cylinders shall be restrained with a single chain or strap to a stationary building support, excluding vice clamp attachments to tables or benches. No more than one cylinder may be restrained per vice clamp restraint.

- Compressed gases stored such that egress is obstructed.

Corrective Action: Store compressed gas cylinders such that they do not obstruct egress.

- Incompatible gases are stored together.

Corrective Action: Separate compressed gas cylinders and store them according to compatibility. Flammable gases (e.g., hydrogen, methane, propane, acetylene) must be separated from oxygen or other oxidizing gas cylinders by a distance of at least 20 feet by a barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

- The number of flammable compressed gas cylinders in area exceeds UK storage policy.

Corrective Action: Keep amount of flammable gases to a minimum. The number of flammable gas cylinders (10"x50") must not exceed 3 cylinders per 500 square feet in a non-sprinkled building or 6 cylinders per 500 square feet in a sprinkled building.

- Toxic gas not properly managed.

Corrective Action: Place toxic compressed gas cylinder in a continuously vented cabinet or fume hood.

Chemical Storage

- Active use of a high hazard chemical without chemical-specific first aid available.
Corrective Actions: When active use of a high-hazard chemical is ongoing, and there is a known immediate first aid treatment possible, keep chemical-specific first aid supplies on hand in the laboratory (e.g., Hydrofluoric acid in the lab without unexpired calcium gluconate, Phenol, or cresols without 50% polyethylene glycol (PEG) 400 solution). Lab personnel shall also be provided with documented training (maintained in the Lab Specific (CHP) for use in the event of emergency exposure.
- Chemical container not sealed properly.
Corrective Actions: Tightly seal all chemical containers in long-term storage appropriately with a screw cap, seal septum, or keck clip. A closed container is defined as a container that is sealed employing a lid or other device so that neither liquid nor vapor will escape from it at ordinary temperatures.
- Chemical containers in multi-user chemical storage room not labeled as to contents and/or owner.
Corrective Action: Chemical containers in multi-user chemical storage must be clearly labeled as to contents and owner.
- Chemical containers label missing, illegible, or otherwise improper.
Corrective Actions: All labels on laboratory research chemicals shall be undamaged and legible, with the full chemical name written in English or a posted abbreviation, and include GHS pictograms and/or primary hazards (H Statements) of the chemical. Please see researchsafety.uky.edu for more information and guidance on proper chemical labeling.
- Chemical containers not dated.
Corrective Action: Please label stock chemical containers with the date received and the date opened. If not provided by the manufacturer on the container, time-sensitive chemicals such as peroxides, peroxide formers, unstabilized and amylene-stabilized chloroform, and picric acid also require an expiration date noted on the container.
- Chemical inventory not organized by compatibility and/or hazard class.
Corrective Actions: Organize chemical inventory by compatibility and hazard groups. Examples of incompatibilities: acids and bases, oxidizers and flammables, inorganic acids and organic acids. Nitric acid and >65% perchloric acid must be kept separate in secondary containers from all other

flammables, organics, oxidizers and bases. For chemical segregation guidance please see researchsafety.uky.edu.

- Chemicals not necessary for research program stored in lab.
Corrective Actions: The lab shall only store chemicals necessary for the research involved. Process unnecessary chemicals for disposal via Etrax: <https://etrax.chematix.com/Chematix/> . Examples of unnecessary chemicals include those abandoned by other researchers, those that have expired, oxidized, which have signs of compromised integrity, or are otherwise unusable for planned procedures.
- Expired chemical has not been sent to waste or documented as tested for safety (if applicable).
Corrective Actions: Promptly dispose of expired chemicals by submitting a waste ticket in E-Trax. Chemicals that have surpassed the container's listed expiration date, if not promptly disposed, shall be documented as regularly tested (e.g., ethanol-stabilized chloroform over 5 years old). Testing logs must include the date of testing, the manufacturer and lot of the chemical, the chemical inventory ID number or barcode, the method of testing, and the outcome. Contact labsafety@uky.edu for more information.
- Inappropriate or no secondary containers used for mercury containing devices.
Corrective Action: Use appropriate secondary containers for mercury containing devices.
- Integrity of chemical containers is compromised (e.g. cracked, corroded, and/or leaking).
Corrective Action: If chemical is still in good condition, move chemical to new container. If chemical not useable, place in appropriate secondary container and process for disposal.
- Liquid chemicals are stored improperly (i.e., no spill tray, not upright, on window ledges).
Corrective Actions: Storage of hazardous experimental chemicals on the floor should be avoided. If placed on the floor, chemicals must be stored within a spill tray or protective secondary bin and placed out of the way of foot traffic and electric utility panels. Chemicals must be stored upright. Chemicals may not be stored on window ledges.
- Oxidizers are stored on incompatible shelf material.
Corrective Action: Store chemicals on compatible shelf materials.

Electrical

- Damaged or frayed power cords are used in the lab.
Corrective Action: Repair damaged and frayed power cords.
- Energized cords are used without strain relief.
Corrective Action: Energized cords must be used with strain relief.

- Extension cords being used for permanent wiring.
Corrective Action: Do not use as permanent wiring. Unplug when not in use.
- Multiple power strips are being used inline.
Corrective Action: Disconnect power strips and plug into a wall outlet.
- Three-foot area around electrical panels obstructed.
Corrective Action: Keep 3-foot area around electrical panels free from obstruction.

CHP Manual

- Chemical inventory is not on-line or has not been reviewed for accuracy within last 12 months.
Corrective Actions: Corrective Action: University of Kentucky Department of Research Safety policy and best practices stipulate that an accurate chemical inventory, to be reviewed and updated no less than annually, is required for each location that stores chemicals with the following characteristics:
 - *Carcinogenic or otherwise harmful to human health
 - *Corrosive
 - *Flammable
 - *Oxidizing
 - *Reactive
 - *Toxic
 - *Harmful to the environment
 - *Liquids and gases under pressure, including liquid nitrogen tanks and compressed air cylinders.Research laboratories on campus are required to update their documented inventory on no less than an annual basis, utilizing the Chematix online inventory system (the same system utilized for generating E-trax chemical waste pickup tickets).
If you believe this finding is an error, please submit a screenshot/picture of your digital inventory, displaying the date of last reconciliation or entry to labsafety@uky.edu
- Information on lab door sign is incomplete, outdated, or incorrect.
Corrective Actions: Door signs must be placed on ALL entry doors to spaces that contain hazardous materials and/or equipment.
A compliant door sign shall accurately display:
 - PI/responsible individual and emergency contact information
 - Symbols for materials stored or used within the space: universal biological or radiological hazard symbols, GHS pictograms for chemicals and compressed gas cylinders

- Text or symbols indicating any other present hazards such as electrical, strong magnetic, noise, etc.
 - Required PPE and precautions required for or upon entry

Instructions for generating a new door sign are in the SciShield System, under the Research Tools menu, in the Document Library.
- No GHS compliant door sign is posted.

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 - Text or symbols indicating any other present hazards such as electrical, strong magnetic, noise, etc.
 - Required PPE and precautions required for or upon entry

Instructions for generating a door sign are in the SciShield System, under the Research Tools menu, in the Document Library. For more information, please visit researchsafety.uky.edu or contact labsafety@uky.edu
- The Chemical Hygiene Plan (CHP) ID page is not current and/or dated.

Corrective Actions: Update and sign the ID page. A Lab Specific CHP template is available in the SciShield System, under the Research Tools menu, in the Document Library.
- The lab does not have a Chemical Hygiene Plan.

Corrective Actions: Research with laboratory use of hazardous chemicals requires a documented Lab-Specific Chemical Hygiene Plan (29 CFR 1910.1450). A Lab Specific CHP template is available in SciShield System, under the Research Tools menu, in the Document Library. Please complete and store in your blue Lab Safety Manual Binder. For further information see: <https://researchsafety.uky.edu/chemical-safety/chemical-hygiene-plan>
- There are no SOPs available in the lab for procedures involving research chemicals that adversely affect human health.

Corrective Actions: Develop and maintain Standard Operating Procedures for work with hazardous chemicals in the Lab-Specific Chemical Hygiene Plan, including documentation that personnel are knowledgeable and trained on the SOP.
- Unable to locate the Lab Specific Safety Training documentation and/or lab personnel unaware of this requirement.

Corrective Action: Investigator must complete Lab Specific Safety Training documentation for all lab personnel. The Lab Specific Safety Training documentation form is available in SciShield System, under the Research



Tools menu, in the Document Library. Please complete and store in your blue Lab Safety Manual Binder.