Laboratory Inspections: A Helpful Guide to Improve Safety

Presented by

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On Behalf of the CEBC Safety Committee

Monthly Safety Meeting 01/14/2015
Monthly Laboratory Inspections

Use checklist as a guide.

Enter comments, FAILED questions, and optional photos online at:

cebc.ku.edu/lab-inspection-checklist
Assigned Lab Contacts

Lab 2 – Wenjuan Yan
Lab 3 – Maria Tenorio Serrano
Lab 4 – Dupeng Liu
Lab 7 – Shirley Xie
Lab 8 – Xin Jin
Lab 9 – Andrew Danby
Lab 10 – Michael Lundin
Lab 11-12 – David Minnick
Lab 17 – Anand Ramanathan

Labs 108, 109, 110 – Kirk Snavely
Lab 117- Ziwei Song
Lab 130 - Hyun-Jin Lee
Lab 130A – Xiaobin Zuo
Lab 130B - Amit Chaudhari
Lab 146 – Jianfeng Wu
Lab 149 – Tim McDonald
Lab 153 – Derek Butler

These researchers receive inspection results, and relay results to people working in that lab.
Goals Of Monthly Inspections

• Provide important feedback to lab personnel
• Help ensure labs are properly maintained
• See things with a second set of eyes
• Help ensure that all researchers and personnel are working in a safe environment
• Allow CEBC facility to comply with University, State, and Federal safety requirements
Successful Safety Inspection

• Be attentive and thorough
• Don’t be afraid to point out errors
• Bring Checklist with you to take notes on
• Take pictures if needed
• Communicate findings quickly to appropriate personnel
• Inspections are not limited to once a month!
Proper Inspection: Lab Cleanliness

What is Clutter?
- Glassware in sinks
- Trash on benchtops or in hoods, overflowing trashcans
  - Gloves
  - Kim-wipes
  - Empty vials
- Scattered tools throughout the laboratory
- Scattered papers, articles, and catalogues
- Opened boxes for equipment, empty equipment boxes, boxes used for storage placed in middle of benchtop

Ideal Lab Cleanliness
- Minimal unaccounted for items on benchtop or in hood
- Glassware cleaned and stored on drying racks or put away in cabinets
- Trash cans emptied regularly
- Tools stored in appropriate containers
- Boxes stored out of sight or out of way of experiments
- Benchtops clean of crust and debris
Proper Inspection: Lab Cleanliness - Counters and Cabinets

Sample boxes stored ontop of cabinets, while not cluttered are a potential fire safety hazard – Correct storage would be inside of a cabinet.

Waste papers, spatulas, test tubes, weighing paper all being ‘stored’ on the benchtop. These should be organized and removed from counter when not in use.
Proper Inspection: Lab Cleanliness – Sinks and Hallways

Dirty glassware in sink, glassware should not be left in sink or on counters for extended periods of time

Potential fire hazard as unused chairs block aisles in instrument lab
Proper Inspection: Lab Cleanliness – A Hazardous Workspace

• Lab space mainly occupied by clutter preventing useable work areas

• Open and empty boxes pose fire hazards – organize contents and discard boxes

• Old computers should be decommissioned and discarded – Contact Ed Atchison

• The CEBC currently has limited space – inefficiently used areas are a problem
Proper Inspection: Trash, Broken Glass, & General Waste

• Trash bins should be emptied regularly
  • It is ok to empty trash bins if they fill up before trash day
  • It’s also ok to put out half full trash bins if necessary
• Broken glass containers are not trash bins
  • Only Broken glass permitted
• Remove full “broken glass boxes” in a timely manner
  • Full glass boxes should be taped shut and placed in the dumpster.
Proper Inspection: Lab Cleanliness – Good Overall Tidiness

- No walkway Obstructions
- Organized benchtop
- No visible boxes
- No trash on floor or benchtops
- Cabinet doors are closed
Proper Inspection: Fume Hood / Bench top / Lab Drawers

Work Area vs. Storage Area

- Setting chemicals out on the benchtops is necessary for getting work done
- **But:** leaving chemicals out on the benchtops and in the hood overnight and for extended periods of time is improper.
- Keeping fume hoods clean and orderly is essential to an effective working environment

Hoods should not be used for:

- Storage of Chemicals
- Storage of Waste
- Storage of Old Samples
- Storage of Equipment

Clutter prevents the fume hood from operating properly and can cause additional hazards!
Proper Inspection: Fume Hood / Bench top / Lab Drawers

Clean Fume Hood: Inspection Pass

Messy Fume Hood: Needs Follow-up

Indicating a problem on the safety checklist does not punish a co-worker. Instead it indicates room for improvement. We become less sensitive to things we see everyday. Inspections point out safety hazards which we may have missed.
Proper Inspection:
Fume Hood / Bench top / Lab Drawers

- Just as with the fume hood, benchtops should be kept neat and orderly.
- Chemical and samples left on the benchtop create fire and spill hazards among others and prevent the workspace from being used effectively.

Benchtops should not be used for:
- Storage of Chemicals
- Storage of Waste
- Storage of Old Samples
- Storage of Equipment
- Storage of Dirty Glassware

Clean Bench with work in progress Needs Follow-Up: Improper chemical storage

We all forget samples, chemicals, and other items on the benchtop. Periodic inspections and regular cleaning prevents the buildup of hazardous lab conditions.  

**Indicating benchtops need organizing helps identify easily missed hazards!**
Proper Inspection:
Fume Hood / Bench top / Lab Drawers

Just because it’s not on the countertop doesn’t mean there isn’t a problem!

How many of our labs have drawers that look like this?

Cleaning and organizing lab drawers is important for lab safety.

However, most of the drawers in our labs look just like this one.

Drawers should be organized and labeled to add organization and prevent items from getting lost.
Proper Inspection: Hazardous Waste / Identification

The Environmental Health and Safety department (EHS) sets out clear instructions on how to properly handle, label, and store hazardous and unwanted waste.

State and Federal inspectors periodically show up for unannounced laboratory inspections. Unlabeled waste is a common and expensive problem identified.

Be Sure To:

- Use appropriate hazardous waste labels on all waste containers and when possible use EHS provided containers.
Proper Inspection: Hazardous Waste / Identification

This photo shows properly labeled EHS hazardous waste containers.

During an inspection make sure hazardous waste containers have the appropriate label on them and that the top half is properly filled out.

Labels can be found on the EHS website [www.ehs.ku.edu](http://www.ehs.ku.edu)

Also confirm that the waste containers are not overly full.

Only one waste container for each “type” of waste is allowed.
Proper Inspection: Hazardous Waste / Sample Identification

Proper Sample Labeling and Storage

• Samples should be labeled with the following when possible:
  1. Contents
  2. Lab notebook page
  3. Initials
  4. Date

• Be sure to store samples in an appropriate and organized manner

• During an inspection check to see that samples appear to be properly labeled and that the storage is acceptable.

• Indicate areas of improvement if problems exist!
Proper Inspection: Storage of Chemicals-Derek

Where not to find chemicals

• Chemicals should not be stored on benchtop
• In random cabinets and drawers
• Improperly labeled vials/bottles
• On the floor

Proper homes for Chemicals

• Properly labeled cabinets
• Properly labeled vials/bottles
• Flame cabinets if flammable
• Freezers and refrigerators as needed by chemical
Proper Inspection:
Storage of Chemicals and Samples

Samples should be organized and stored properly. Old samples should be discarded promptly to avoid accumulation.

Store bought chemicals stored on benchtop may pose serious fire hazards. Return chemicals to their appropriate cabinets when finished.
Proper Inspection: Correct Storage of Chemicals and Samples

Purchased chemicals arranged by hazard class and contain the CEBC inventory label.

Experiment vials labeled for easy identification
Proper Inspection: Eyewash, fire extinguisher, spill kit

These three items are almost always present and functioning properly but double checking is of highest priority since they are used in cases of extreme emergency!

Eyewash should be tested for 2 minutes. Turn on at beginning of inspection and let run till you are finished!

Locate the spill kit, note it may be hanging on the wall or in a bucket as shown here

Locate the fire extinguisher and make sure its not obstructed
Proper Inspection: Electrical Hazards

Common Electrical Hazards to look for:
• Piggybacked power strips
• Rats nest of wires
• Exposed electrical lines
• Leaky water lines, sinks

Safe electrical Practices:
• Power lines crossing floors taped and secured
• Properly grounded wires
• Properly used extension cords
• Report water leaks ASAP
Proper Inspection: Personal Protective Equipment

All CEBC personnel should constantly have an eye open for safety hazards.

If someone isn’t following proper safety protocol tell them immediately!

• Wear safety glasses at all times in labs (prescription glasses must have side covers!)
• Wear lab coats when working with chemicals
• Wear appropriate gloves for the chemistry being performed.

Accidents happen when we least expect them. Support a culture of safety at the CEBC and protect your fellow researchers!
Proper Inspection: MSDS, log books, experiment in progress, contact info, etc.

1. Identify the location of the **MSDS sheets** for the top 10 most used chemicals in the lab.

2. If experiments are being conducted locate **experiment in progress signs** and ensure they are up to date.

3. For shared equipment locate **log books**.

4. Check door before walking into the lab to ensure proper **contact info signs** are posted.

5. Also check to ensure **bi-weekly inspections** are up to date.
Summary

• Safety inspections are here to help, not to be a pain
• Safety is everyone’s responsibility
• Always be in inspection mode
  – If you think something is unsafe, it probably is
• Regular cleaning prevents future headaches (and costly fines)