

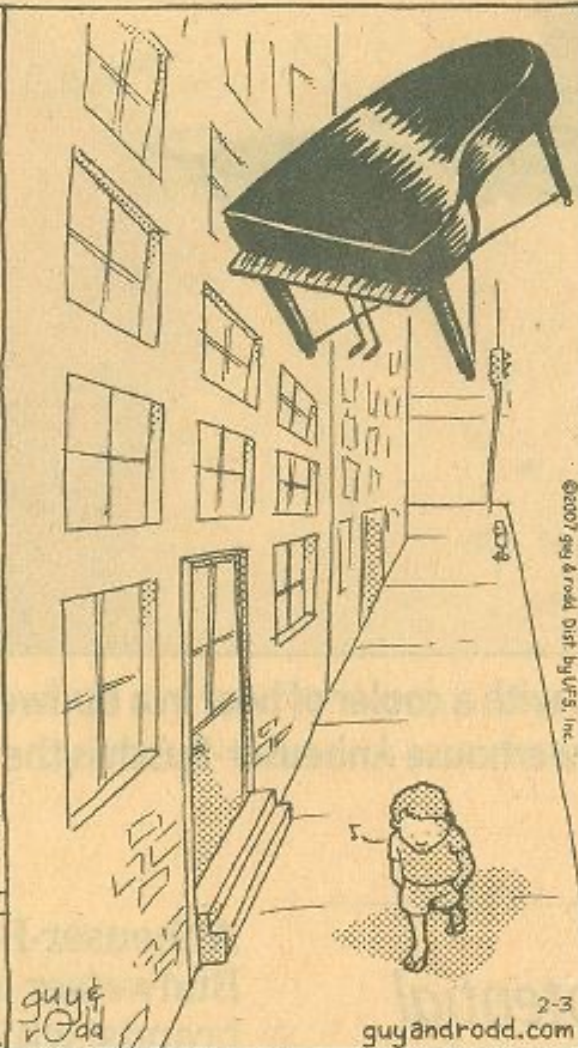
Safety Focus for Grads, Undergrads, High School Students

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Deputy Director, ES&H

Brevity

IT WAS
A HOT,
MUGGY DAY,
AND AT THE
LAST MINUTE
HE HAD
DECIDED NOT
TO WEAR
HIS PIANO-
RESISTANT
HAT.



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Topics

- COVID
- Expectations:
 - What is expected of you as a student?
 - What can you expect as a student?
- Basic Safety:
 - General Situational Awareness
 - Equipment Use
 - Material Handling
 - Electrical Safety Reminders
 - Heat Stress
- Bad day events
- What to do if injured
- Summary

COVID-19 Controls

- JLab is in MEDCON-1 (lowest level)
 - No COVID-19 Controls
 - You may still see folks voluntarily using protective face covers
- JLab has a Pandemic Response Plan and an advisory committee (Pandemic Response Team)
 - Occupational Medicine Physician monitors epidemiologic data
 - Results are reviewed with advisory group and recommendation go to management
- We are prepared

What Is Expected of You?

- To read, understand, and act in accord with lab safety policy...
 - **No activity is so urgent or important** that we will compromise our standards for environment, safety, and health. (*Bob (757-718-4397); Bill (757-636-0611)*)
 - Your work and your safety, as well as the work of those around you, depends on you
- To complete specified training
- To understand your work scope (remain within any restrictions or limitations); follow safety requirements
- To ask questions, STOP if you are not sure what to do

What Can You Expect?

- You will be assigned a JLab *Mentor/Supervisor* who will help you get “connected” to your planned activities safely and efficiently.
- The Mentor will:
 - Identify or ensure your training needs are identified and point you to training resources
 - Brief you on your work location, work and safety resources, emergency procedures
 - Point you to read and sign work control documents
 - Connect you with experienced persons in your work area
 - Help you have a meaningful experience at JLab

Questions About Expectations?

- Do you know what training you need to take?
 - How do you know; who told you?
- Who is your Sponsor, who is your mentor?
- What do you do if your activities at JLab change and
 - Take you to another location
 - Expand in scope
 - Result in a new JLab staff member as your work area contact
- What do you do if asked to engage in an activity for which you are unfamiliar or untrained?
- What do you do if you see something that appears unsafe?

ES&H Manual Ch. 2600 - Training

Training Course	Mentor/Supervisor	High School Student	Undergraduate Student	Graduate Student
Student Mentor Training MGT202	X			
Required as deemed appropriate to the Hazard (JTA)	X	X	X	X
GEN034 Annual Security Awareness	X	X	X	X
SAF099 Student Safety Training		X	X	
SAF100 EH&S Orientation	X	X	X	X
SAF103 Oxygen Deficiency Hazard	X*	X	X	X***
SAF801 Radiation Worker 1	X*	X**	X	X***

NOTES:

*If the mentor is providing routine oversight, the mentor must meet training requirements identical, or higher, to training required for student. If the mentor is not providing routine oversight, then the mentor-designated supervisor must meet training requirements identical, or higher, to training required for student.

**If High School Student is 18 years of age or older.

***Not required if doing computer work only.

All training is reviewed and updated per Jefferson Lab's Annual Review Program and updated regularly via the Job Task Analysis (JTA) program requirements. Graduate students are registered (or re-registered) on an annual basis.



ES&H Manual Ch. 2600 - General

Activity	High School Student	Undergraduate Student	Graduate Student
After-Hours Work	No unsupervised work before 7 AM and after 6 PM	Unsupervised computer work allowed. Other work allowed as approved by the DSO (no new activities or hazard exposures)	No general restrictions
Tour Escort*	Not allowed	Allowed	Allowed
Working Alone	Not allowed	Requires DSO approval	Allowed; limitations may be applied at the discretion of the local supervisor.

Situational Awareness

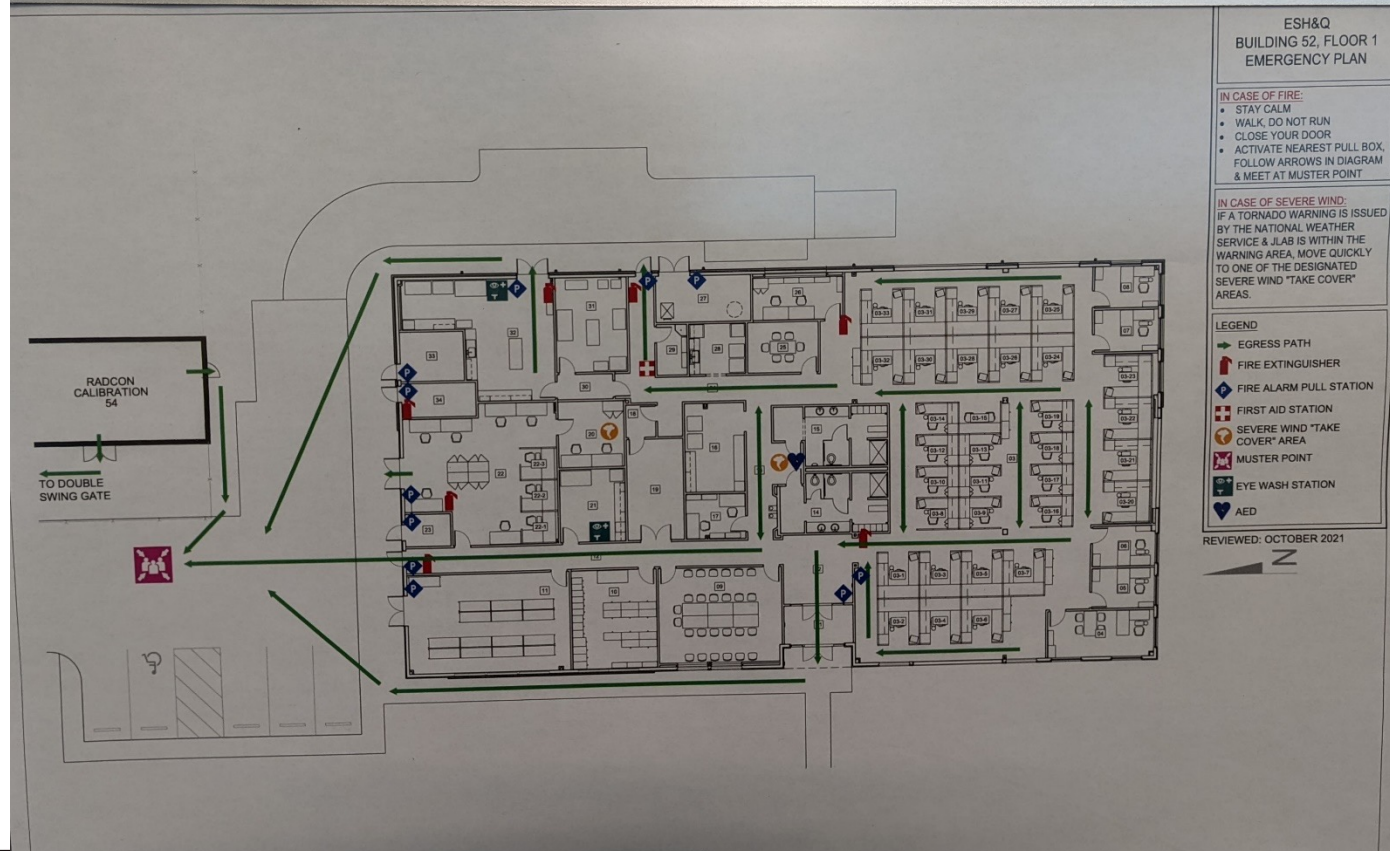
- Wherever you *go* in the lab, it is your responsibility to understand:
 - Fire exits, alarms, evacuation conditions, muster points
 - E.g. how we handle bad weather events
- Wherever you *do* in the lab, it is your responsibility to understand:
 - The hazards associated with your work, work of those around you
 - How to mitigate those hazards
 - Engineered safeguards (engineered processes and devices)
 - PPE (e. g. piano resistant hard hat)
 - Administrative controls (procedures and protocols)

Situational Awareness?



Situational Awareness

Evacuation Plan



Situational Awareness

ESH&Q BUILDING 52, FLOOR 1 EMERGENCY PLAN

IN CASE OF FIRE:

- STAY CALM
- WALK, DO NOT RUN
- CLOSE YOUR DOOR
- ACTIVATE NEAREST PULL BOX, FOLLOW ARROWS IN DIAGRAM & MEET AT MUSTER POINT

IN CASE OF SEVERE WIND:

IF A TORNADO WARNING IS ISSUED BY THE NATIONAL WEATHER SERVICE & JLAB IS WITHIN THE WARNING AREA, MOVE QUICKLY TO ONE OF THE DESIGNATED SEVERE WIND "TAKE COVER" AREAS.

LEGEND

- ➔ EGRESS PATH
- 🔥 FIRE EXTINGUISHER
- 🚒 FIRE ALARM PULL STATION
- 🏠 FIRST AID STATION
- 🌪️ SEVERE WIND "TAKE COVER" AREA
- 👤 MUSTER POINT
- 🚰 EYE WASH STATION
- ❤️ AED

REVIEWED: OCTOBER 2021



Equipment Use

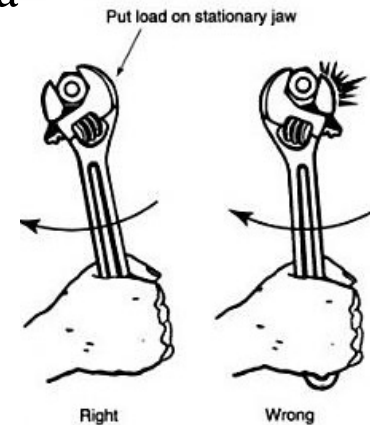
- Ladders

- Check the label and rating, working order, and select best height
- Look at the step treads; then look at your own work shoes: *got a good match for traction?*



- Hand tools

- Right tool for the job?
 - Improperly sized tools make work harder, not easier or safer
- Good working order?
 - Includes tool handles and guards
 - Includes wheels, bits, blades
- Do you know how to use it safely?
 - This includes tool orientation to the workpiece



Ladder Safety



It seemed like a good idea at the time...

Tool Use Basics ☺



**Note the
proper use
of hearing
protection
by circular
saw
operator...**

Tool Use Basics, cont'd.

- Note the use of a “spotter” to ensure worker is not inadvertently “stepped on” during work



- Note the use of state-of-the-art self-contained breathing apparatus

Manual Material Handling

- MMH Problem areas:
 - Awkward postures (e.g., bending, twisting)
 - Repetitive motions (e.g., frequent reaching, lifting, carrying)
 - Forceful exertions (e.g., carrying or lifting heavy loads)
 - Pressure points (e.g., grasping [or contact from] loads, leaning against parts or surfaces that are hard or have sharp edges)
 - Static postures (e.g., maintaining fixed positions for a long time)

Use Team Lift: Try to find a coworker of roughly same height to help with lift



*Team lifting can reduce the load in half.
Discuss your lifting plan so you
don't make surprise movements.*

Manual Material Handling, cont'd.

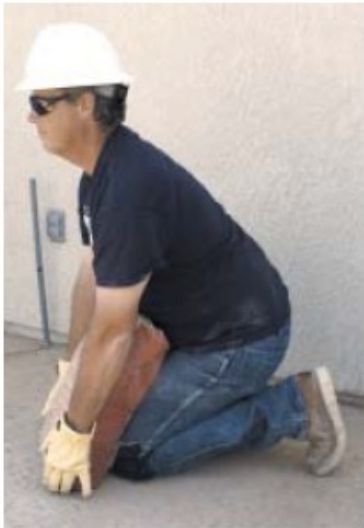
- Plan the lift:
 - Wear appropriate shoes to avoid slips, trips, or falls
 - If you wear gloves, choose the size that fits properly
 - Depending on the material the gloves are made of more force may be needed to grasp and hold objects: a single pair of heat-resistant gloves can reduce your grip strength up to 40 percent
 - Lift only as much as you can safely handle by yourself
 - Keep the lifts in your power zone (i.e., above the knees, below the shoulders, and close to the body), if possible
 - Use extra caution when lifting loads that may be unstable

Manual Material Handling, cont'd.

- When lifting:
 - Get a secure grip
 - Use both hands whenever possible
 - Avoid jerking by using smooth, even motions
 - Keep the load as close to the body as possible
 - To the extent feasible use your legs to push up and lift the load, not the upper body or back
 - Do not twist your body. Step to one side or the other to turn
 - Alternate heavy lifting or forceful exertion tasks with less physically demanding tasks
 - Take rest breaks

Manual Material Handling, cont'd.

Picking up a sack of ready-mix concrete:
A great example – flexible, can be powdery or slippery, weight at limit for unassisted pickup.



Lean the sack onto your kneeling leg.



Slide the sack up onto your kneeling leg.



Slide the sack onto the other leg while keeping the sack close to your body.



As you stand up, keep the sack close to your body.



Electrical Safety Reminders

- Jefferson Lab has a number of electrical hazards you may encounter
 - *Do not throw breaker switches* (without training and specific authorization to do so)
 - If you use extension cords, make sure they are in good shape (unbroken insulation, legible manufacturer's label, ground pin is present)
 - Use GFCI protection with power tools
 - Report broken electrical outlets or outlet covers to your local supervisor
 - Do not diagnose problems with any electrical or electronic system – notify your Mentor



Heat Stress

- If you work outside, you may be subject to heat stress
- Avoid the symptoms
 - Routine hydration – make it part of the work prep and plan
 - Webstock Bottled water:
Vendor = FORSUP (Forms & Supply)
Part# NLE101243 = 24 cnt
 - Work breaks in the shade/work indoors during hot part of day
 - Workplace measurements by IH to evaluate specific work areas
 - If you need more information, talk to Dick Owen
(rowen@jlab.org)



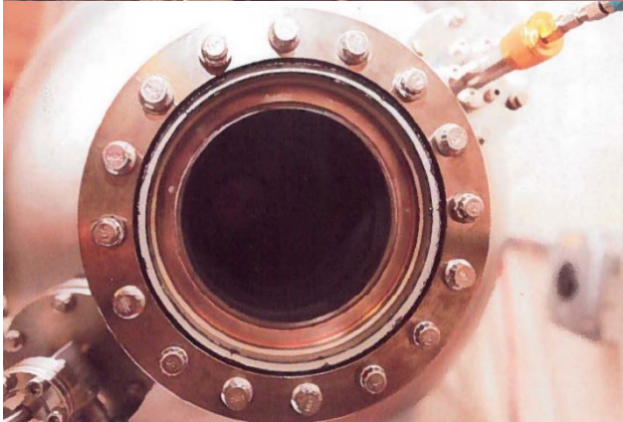
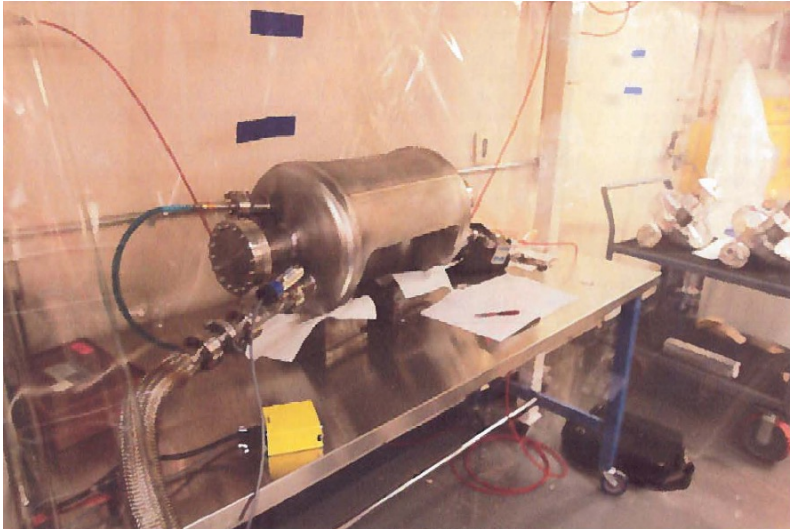
Heat Index 104 – 115°F	DANGER Muscle Cramps, and/or Heat Exhaustion likely Heat Stroke probable for at-risk workers	Text page sent to Supervisor/SOTRs 104°F Implement <u>STAGE 3</u> Process Steps. <u>Limitations of work activity are certain.</u>	<i>If remainder of work day is 2-hours or more.</i>
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When do most of our “bad day” events occur?

- Changing work-flow or work scope
 - If it isn't going like you planned, stop and reevaluate with coworker, supervisor
 - If you encounter a new or unanticipated hazard, stop and reevaluate
- Find your JLab Mentor/Supervisor and talk with them
- If, for any reason, you are uncomfortable with your Mentor /Supervisor's response, see your Division Safety Officer https://mis.jlab.org/mis/portal/dso_list.cfm?noheader=1.
- Watch out for your co-worker
 - They may not thank you, but you can save them injury
- Nothing we do is so important that we compromise safety

Bad day event example

- [ACC-12-0711](#) - Experimental RF Cavity Vacuum Window Failure (report date Aug. 12, 2012)



Student built assembly to mentor specifications; only a picture supplied by the manufacturer... Student ignored suggestions from JLab staff. Operated for the first time in front of mentor – failed by ejecting glass shards, minor injury, but... *major near miss*


Examples of improper student actions

- While most of the students at JLab are mentored and supervised well, JLab staff noted students taking unnecessary personal in 2016.
 - Dispensing liquid nitrogen into a dewar without the proper face protection
 - Standing on a table while pouring nitrogen into a piece of equipment and without proper cryogenic PPE
 - Transporting heavy object using a (top-heavy) cart while wearing flip-flops
 - Using a DREMEL® tool without safety glasses
- Any of these could have lead to serious injury!
- Follow training and guidance from Mentor/Supervisor!

What to do if injured

- What you need to do:
 - Report First Aid events to your Mentor or Supervisor
 - Report Injuries to your Mentor or Supervisor
 - Report near misses to your Mentor or Supervisor
- What the Lab will do:
 - Get you the help you need
 - Learn from your experience
 - Share Lessons Learned with others who may benefit

Summary

- We generally work very safe! This is good!
 - However, the way we treat ourselves and our tools in our workplace still results in incidents and injuries that are *preventable* and *avoidable*!
- These injuries occur typically because we go beyond the scope of the job without stopping to reevaluate what the safety implications are!
- Continuous questioning is key,  but:
 - Don't freelance – stay within the defined scope of your taking
 - Don't let your work environment or impatience dictate safety outcomes – if things aren't going as expected, STOP!
 - Get supervision or expert help involved *before* restarting