NSTA SAFETY CHECKLIST FOR JOURNAL EDITORS AND REVIEWERS

January 2022

SAFETY ISSUES	SAFETY COMMENTS
Supervision	Direct supervision is required during all aspects of activities/demonstrations to make sure safety behaviors are followed and enforced.
Personal Protective Equipment or PPE	Safety glasses with side shields or indirectly vented chemical splash goggles as appropriate, a nonlatex apron, and nitrile gloves are to be worn during the setup, hands-on, and takedown segments of the activity. No latex-based products like gloves or aprons should be used given potential allergen issues. For additional information, see: "Personal Protective Equipment" https://www.nsta.org/personal-protective-equipment
Safety goggles vs safety glasses	Indirectly vented chemical splash goggles are to be worn with liquid hazardous chemicals/biologicals. Safety glasses with side shields or safety goggles are to be worn when working with solid physical hazards (e.g., glassware, springs, projectiles, hand and power tools, etc.). For additional information, see: "Eye Protection and Safer Practices FAQ" https://www.nsta.org/eye-protection-and-safer-practices-faq
Attire	Be sure to secure loose clothing, wear closed-toe shoes, and tie back long hair.
Food/Drink/Taste	Never eat or drink any food items used in a lab activity. Never taste any substance or chemical in the lab.
Waft	Never touch, taste, or sniff any chemicals in the lab. If trying to determine an odor, waft. To waft, hold the chemical in its container 15 cm away from your nose, and use your fingers to bring fumes from the container to your nose.
Waste product disposal	Follow your teacher's directions for disposing of waste materials. When working with chemicals, never pour them, either used or unused, back into their original container.
Sharps	Use caution when working with glassware, which can shatter if dropped and cut skin. Hand tools, scalpels, wires, bulbs, and other potential sharps can also cut or puncture skin.
Heat sources	Use caution when working with Bunsen or butane burners and/or hot plates. Heat sources can seriously burn skin and clothing. Never use alcohol lamps!
Projectiles	The trajectory or area where a projectile will fly or vehicle will travel should be marked off. Do not allow anyone to stand in the path of the projectile or vehicle. Remove any fragile materials in the line or path of the trajectory.
Electrical hazards	Use only GFI protected circuits when working with electrical equipment, and keep away from water or other liquid sources to prevent shock/electrocution/fire.
Large Magnets	Use caution when working with magnets which may have a very strong attractive force. Unsafe handling could cause jamming of fingers or skin in

	between magnets. This may lead to contusions and bruises. Two magnets in a collision may chip and produce projectiles creating an eye hazard.
Neodymium Magnets	Neodymium magnets should be at least 30 cm away from sensitive electronic and storage devices. These strong magnets could affect the functioning of pacemakers and implanted heart defibrillators. Neodymium magnets are also brittle. Colliding magnets could crack and create an eye hazard.
Slip/fall hazards	Immediately wipe up any liquid spilled on the floor or other surface so it does not become a slip/fall hazard.
Trip/fall hazards	Immediately pick up any items dropped or stored on the floor so they do not become a trip/fall hazard.
Spills	Notify the teacher immediately if you spill chemicals on yourself, the work surface, or floor.
Emergency eyewash use	Immediately use safety eyewash if a chemical is splashed in the eyes.
Emergency shower use	Immediately use emergency shower If a hazardous chemical is spilled or splashed on clothing or have a clothing fire.
Ventilation/Fume hood use	Make sure continuous flowing ventilation is operational and meeting the needs of removing hazardous vapors, fumes and particulate being produced in an activity/demonstration. A fume hood must be used with all lab activities/demonstrations where noxious/poisonous gases or vapors or flammable chemicals are produced or used.
Preserved dissections	Any preserved material used in dissections require indirectly vented chemical splash goggles, gloves and aprons. Also, there must be appropriate ventilation for off-gassing of preservatives.
Culturing of bacteria and other microorganisms	Culturing and use of live bacteria or other microorganisms is not recommended at the elementary/middle schools and introductory level high school science courses, given the potential biological hazards and health risks. See: Tips for the Safer Handling of Microorganisms in the Science Laboratory at: https://static.nsta.org/pdfs/TipsForSafeHandlingOfMicroorganisms20160412.pdf
Use of Soil	Only use commercially sterilized soil in hands-on activities, given soil secured from the out-of-doors may contain biological (bacteria, viruses, etc.), chemical (fertilizers, etc.) and physical (broken glass, etc.) hazards.
Use of Live Animals	Animals should only be used for observational purposes provided that they have been lawfully acquired, are housed in proper containers, and are handled in a humane way following the guidelines set forth in NSTA's position statement "Responsible Use of Live Animals and Dissection in the Classroom" - https://my.nsta.org/resource/5453#:~:text=Responsible%20Use%20of%20Live%20Animals%20and%20Dissection%20in,proper%20care%20and%20treatment%20of%20animals%2C%20as%20well.
Use of Poisonous Plants	Activities involving plants with poisonous oils (e.g., poison ivy) or saps (e.g., Oleander), and other plants known to be generally toxic to humans are not recommended, given the potential biological hazards and health risks.

OPIMs	Activities that involve the use of human or animal blood / body fluids or other potentially infectious materials (OPIMs) [Blood typing, cheek cells, etc.] are not recommended, given the potential biological hazards and health risks.
Pipets	Avoid using mouth suction to fill pipets.
Chemical reactants and products	Always direct chemical vessels (e.g., test tubes, beakers, etc.) away from anyone when the vessels contain reactants and/or products. Unintended but dangerous projectiles can severely injure individuals in the immediate location.
Clay	Use caution when working with clay. Dry clay dust exposes users to silica dust which is a health hazard. Always keep clay moist!
Clean up	All work area surfaces, materials, equipment, etc. need to be cleaned and sanitized or disinfected at the completion of the lab activity.
Washing hands	Wash hands with soap and water first immediately after completing all lab activities (set-up, hands-on and take down). Then use a hand sanitizer.

NSTA Photo Safety Guidelines

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The following photos show examples of correct and in some cases, incorrect, applications of legal safety standards and better professional safety practices for use in NSTA publications. Applications are listed "alpha" with a short narrative description, followed by sample photos.

1. **Acid Shower:** An acid shower/eyewash should be shown with appropriate labeling in photos of whole laboratory views.

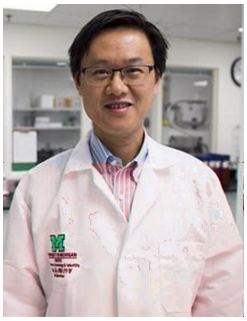
OK

Signage

2. **Attire:** Photos of teachers and students should be shown wearing appropriate protective safety attire.

All students and instructors shown in pictures should have appropriate safety attire, using the following guidelines:

A. **Body Protection:** Aprons or lab coats are to be used in photos when dealing with the potential splashing of hazardous liquids.



Lab Coat

Lab Apron

B. **Eye Protection:** The following rules apply to safety codes for eye protection:

i. **Chemical Splash Goggles:** Goggles fully cover the eyes with a tight perimeter. Venting is indirect. Use

in photos dealing with hazardous liquids (acids, bases, etc.) or solids (e.g. projectiles)

YES (Indirect vents)

YES (Indirect vents)

NO (Direct vents)

ii. **Safety Glasses/Spectacles:** Safety glasses look like regular glasses for vision correction but will have side safety shields near the eyes. Use in photos dealing with solids like projectiles, meter sticks, springs, etc. Not for use in photos showing hazardous liquids/chemicals!

C. **Foot Protection:** Close toed shoes or sneakers should be pictured worn when using materials which could fall and harm the feet; weights, tools, chemicals, etc. No open-toed shoes, sandals or flip-flops are permitted.

Closed toed – yes

Close toed - yes

Open toed/flipflop – no

D. **Hair:** Confine long hair (tied back off face) in photos.

Hair pulled back away from face.

E. **Hand Protection:** Non-latex gloves are required in pictures when dealing with hazardous materials that may be harmful to the skin, too hot or too cold to handle, etc.

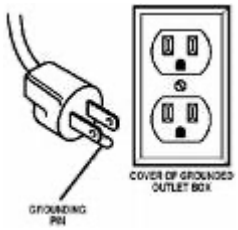
Different types of lab gloves

3. **Electrical Receptacles:** Electrical receptacles should be pictured with only one plug/outlet.

No – Overloaded circuit!

4. **Electricity:** No extension cords should be shown, no frayed or damaged wires, loose cords (trip hazards), no missing prongs, and no contract with metal or water. No metal jewelry should be pictured when working with electrical devices.

No – ground missing



Yes – three prongs O

5. **Eyewash Station:** A plumbed (permanent plumbing) eyewash station should be pictured with appropriate signage in photos of whole laboratory views.

OK

OK

OK

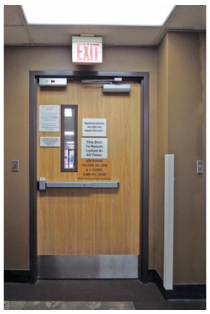
No – portable eyewash

No- portable eyewash

OK - Signage

OK – Signage

6. **Fire Evacuation:** Labs should have posted evacuation floor plan, unobstructed exits/egress and signage on exits shown in whole laboratory photo views.



7. **Fire Suppression Equipment:** An A-B-C fire extinguisher with appropriate labeling should be shown in photos of whole laboratory views.

8. **Fire Blanket:** A well labeled fire blanket box or canister should be pictured in whole laboratory views.

9. **Flammable/Combustible Liquids:** Flammable/combustible liquids should be pictured in appropriate storage cabinets and labeled.

10. **Food/Drink:** no occupant in a laboratory photo should be shown eating or storing food or drink.

11. **Fume Hood:** – Fume hood shown in pictures should be clutter free and not used for storage. Front sash should be down most of the way when operated.

12. **GFCI:** All circuitry pictures in laboratories should reflect GFCI protection.

Permanent

Portable

13. **Heavy Metal (Mercury):** No mercury type labware should be pictured (e.g., thermometer, barometer, psychrometer, manometer, sphygmomanometer).

Mercury thermometer

Mercury sphygmomanometer

14. **Housekeeping:** Laboratory pictures should be clear of clutter and well organized to reduce the possibility of an accident, slip/trip fall hazards, and more.

15. **Ionizing Radiation:** Radioactive materials should only be used if encapsulated in plastic sealed packets. All samples pictured are to be labeled. Signage should be posted.

16. **Labeling:** All containers pictured are to be labeled with information about their contents: chemical name, type of hazards, etc.

NFPA Labeling Stickers

Labeled chemical bottles

17. **Microbes:** No laboratory photos should show occupants being exposed to bacteria, mold or other microorganism cultures directly. Petri plate should be sealed with tape. No live microbe work for K-8 levels or high school general biology. Students should only deal with live microbes (bacteria, fungi, mold) under the strictest safety conditions in advanced high school biology courses.

Bread mold or other live microorganisms must be in sealed Petri plate and taped securely.

18. **Non-ionizing radiation:** Lasers and laser pointers are examples of non-ionizing radiation. Safety procedures need to be followed in pictures when using lasers; e.g. special eye protection, signage on the entrance. Students should not be shown using use laser pointers below high school level.

Laser uses with eye protection

19. **Refrigerators:** All lab or prep room refrigerators pictured must be labeled "chemical or biological storage only: No Food for Consumption!"

20. **Respiratory Protection:** Any activity requiring the need of respirators or face masks (particulate respirators) should not be used/pictured. Exception is face mask relevant for COVID protection.

Should never be pictured in lab work for K-12 grades!

21. **Shut-off Controls:** There should be well labeled emergency shutoff controls for utilities such as gas, water and electricity in photos showing whole laboratory views.

ELECTRICAL
POWER
SHUT-OFF