

General Directions for

Lab Specialists or Science Assistant Principal

Laboratory Safety Equipment Inspection (see page 127 in *Appendix*)

1. Inspect eyewash stations, safety showers, fume hoods, fire blankets and fire extinguishers, and ensure that the results align with the results of the inspections that teachers have done of this equipment. Ask the custodian to inspect and service as needed.
2. Maintain a written or digital log of annual inspections, maintenance, and replacement of laboratory safety equipment, including eyewash stations, safety showers, and fire blankets.
3. Eyewash stations must conform to American National Standards Institute (ANSI) Z358.1-2014 standards. Plumbed eyewash stations are recommended and should provide tepid water (60°F-100°F) for 15 minutes of flushing at a rate of 0.4 gallons per minute.
 - The eyewash station must be located in a strategic place in the room no more than 10 seconds from a hazard.
 - The eyewash station must be activated weekly and have an annual maintenance check.
 - Plumbed eyewash stations should be run for two to three minutes per week to ensure clean water is available for emergencies and inspected for issues at least once a month.
 - Non-plumbed eyewash stations that use bottled eyewash solution are not ideal, but may be used in locations that lack plumbing. Eyewash stations that use bottled eyewash solution should be checked routinely to ensure that they are in working order and that the bottled eyewash solution has not passed its expiration date. Bottled eyewash solution should be replaced every two years.
4. **Safety showers.** Where more than five gallons (19 L) of corrosive liquid or flammable liquid are stored, handled, or used, suitable facilities with fixed overhead or flexible hand-held showers shall be provided. Such shower shall be within 25 feet (7620 mm) of the laboratory unit and storage room door and shall be maintained in good working order, and readily accessible at all times.

A tag must be affixed to the safety shower ring showing the date of the annual test.

Safety showers must conform to ANSI Z358.1-2014 standards. The emergency safety shower must be in a convenient place no more than 10 seconds from a hazard. It must provide 20 gallons of water per minute for 15 minutes, (American National Standard Institute, www.ansi.org). The safety showers must be activated weekly and have an annual maintenance check.

For further information on ANSI-358.1 Compliance, go to: <http://www.gesafety.com/downloads/ANSIGuide.pdf>.

5. Fire blankets, while no longer required, are still present in many classrooms. If you have do have fire blankets in classrooms, they must be inspected for rips and tears. Fire blankets that were purchased prior to 1980 may contain asbestos. If this is the case or you are unsure, dispose of the blanket immediately. Disposal must be handled through NYC School Construction Authority-approved asbestos removal contractors (<http://www.nycsca.org/>).
6. Per OSHA regulations, first aid kits must be inspected annually to ensure that all supplies are present, and to ensure that no items have expired. For more information, see [First Aid Kits](#) on page 36.
7. A tag indicating proper face velocity must be affixed to all **fume hoods**. Testing must be done annually at a 12" to 18" sash height, with a minimum face velocity of 80 feet/minute and a maximum of 120 feet/minute (NFPA 45). A maximum of 150 feet/minute in existing hoods is allowed where required (OSHA Standard). Face velocities out of range will require ASHRAE 110 testing.
8. **Fire extinguishers** must be placed according to NYC Fire Department code. All fire extinguishers are labeled according to class. No point shall be farther than 50 feet from an extinguisher. Fire extinguishers must be located in conspicuous locations, where they will be readily accessible and immediately available for use. These locations must be along normal paths of travel. Fire extinguishers are not allowed to be stored on the floor. For further information on portable fire extinguishers, go to: www.nyc.gov/html/fdny/pdf/cof_study_material/d_10_st_mat.pdf.

ABC-rated fire extinguishers are sufficient for most labs. Class D fire extinguishers are required if you store water-reactive metals, such as sodium and potassium (see NFPA 484). Although Class D fire extinguishers are helpful in extinguishing water reactive materials, they are also extinguished by CO₂ extinguishers and if these are not available an ABC extinguisher would do. However, only a Class D fire extinguisher will suppress a flammable solid or combustible metal fire.

As per NFPA 484, the use of fine, dry sand, preferably less than 20 mesh, or other approved powder (see below) is an effective method of isolating incipient fires in combustible aluminum dust. An ample supply of such material should be kept in covered bins or receptacles located

in the operating areas where it can be reached at all times. A long-handled shovel of non-sparking metal should be provided at each such receptacle to afford a ready means of laying the material around the perimeter of the fire.

Approved powders include Met-L-X, dry flux, dry soda ash, and dry sodium chloride.

The chemical storage room must have an ABC-type fire extinguisher near the door that is placed at least 40 inches off the floor (mounted on wall) and accessible at all times. It is preferable that fire extinguishers be placed on the outside of a prep room or chemical stock room; however, to prevent accidental use or vandalism, they can be placed inside the prep or chemical storage rooms. All extinguishers need an annual inspection and monthly charge inspection on the gauge and must be in good working order at all times.

Types of Fire Extinguishers

Class of Fire	Water A	Dry Chemical ABC	Carbon Dioxide BC	Powder D
CLASS A Ordinary combustible materials like paper, wood, fabric, and usual trash	Yes	Yes	No Offers very little protection	No
CLASS B Flammable liquids (such as alcohols, ketones, etc.)	No	Yes	Yes But offers little protection	No
CLASS C Electrical equipment	No	Yes	Yes Only if it does not have a metal delivery hose	No
CLASS D Water-reactive chemicals, flammable solids, and combustible metals ¹	No	No	No	Yes

¹ NFPA 484 and other industry literature including SDS sheets indicate that sand and sodium chloride are just as good in suppressing these types of fires. Instead of purchasing Class D fire extinguishers, provide an ample supply of dry sand or sodium chloride (in fire buckets) placarded as "Use with Fire Suppression Only" FC901.4.3.

Maintenance and Usage of Laboratories and Prep/Demonstration Rooms

1. Confirm with the custodian that they are checking fire extinguishers monthly to ensure that they remain located in necessary places and are in good working condition. Fire extinguishers should also be inspected annually by an FDNY-certified professional inspector. As per Fire Code section 901.6.3.1, it shall be unlawful for any person engaged in the business of servicing portable fire extinguishers to service portable fire extinguishers without a portable fire extinguisher servicing company certificate issued by FDNY.
2. Inspect all spill cleanup kits and replenish chemicals if necessary.
3. If the school has active gas lines in any preparation rooms or laboratories, inspect gas jets for blockages caused by papers and other items. Remove, if possible, or have the gas jets serviced by the local gas company.
4. Notify the principal or principal's designee of the existence or development of any hazard.
5. Inspect student-made projects for safety hazards before these projects are demonstrated in the classroom.
6. Make sure that all rooms containing chemicals are properly ventilated and that there is no flame in the room when using flammable and/or volatile liquids such as alcohol.

FUNCTIONAL RESPONSIBILITIES

Preparation Room and Equipment Safety

- Close and lock the preparation room whenever it is not under the direct supervision of a licensed [laboratory specialist](#) or science teacher.
- Order protective eye goggles or face shields that comply with ANSI Z-87.1-2015 (American National Standard Institute, www.ansi.org).
- Advise teachers and students that these are available whenever necessary, and that goggles must be worn by all students and teachers during all science investigations using chemicals or potential projectiles.
- Inspect new equipment for hazards. Report any problems to the vendor and/or supervisor.
- Inspect used equipment to make sure it is in good working condition, particularly electric wires, plugs, and glassware that will be handled by students.
- Maintain a system for reporting broken or damaged equipment, and for ensuring that such equipment is either repaired by appropriate personnel or properly disposed of.

- Employ appropriate safety standards and methods in the storage and use of all supplies.
- Keep tools and sharp-edged instruments in good condition and stored in locked cabinets.
- Explosion-proof refrigerators should be used. No food or beverages should be stored in refrigerators used for instructional purposes. For more information, see [Refrigerators and Other Appliances](#) on page 46.
- Secure all compressed gas cylinders when in use. Secure them to a hand truck while transporting them.
- If the proper equipment is not available for a safe experiment or demonstration, **do not attempt the experiment or demonstration.**

Safety Procedures with Staff and Students

- Advise teachers regarding safety precautions required for the proper use and manipulation of specialized equipment and supplies. Suggest the use of plastic beakers, graduated cylinders, and other containers, rather than glass, for students with limited motor control, including younger students.
- In cooperation with the teacher, perform the actual procedures of each laboratory experiment or demonstration prior to the class session to see that all materials and apparatus work properly and safely.

Chemical Safety

(For more details, see [Chemical Safety](#) section on page 76.)

- Chemicals provided for student use should be put into smaller, labeled containers. The warnings and hazards on the SDS (also on the original containers) should be copied onto the new labels. If chemicals are kept at the teacher's desk, a large, clear sign for each chemical used should be posted at each bin.
- Review student laboratory experiments periodically for current safety practices. Disseminate information regarding any new safety regulations.
- In case of an emergency, have SDS readily available for hazardous chemicals used in laboratory experiments.
- Make sure a copy of your school's Chemical Hygiene Plan is available. You can find the Chemical Hygiene Plan on the [NYCDOE Employee Safety and Health](https://infohub.nyced.org/nyc-doe-topics/human-resources/employee-safety-and-health) website (<https://infohub.nyced.org/nyc-doe-topics/human-resources/employee-safety-and-health>), or you may contact the NYCDOE Office of Occupational Safety and Health for a copy of the Chemical Hygiene Plan at (718) 935-2319. This plan is required under OSHA's Laboratory Standard Regulation (29 CFR1910.1450).

- Know how to manage chemical spills and make sure the proper personal protective equipment, (including goggles, gloves, aprons/lab coats, and face shields) and spill kits are available. Refer to the section entitled [Handling Chemical Spills](#) on page 81 for more information.
- Know how to handle chemical waste. Refer to the section entitled [Hazardous Waste Management](#) found on page 234.

Safe Transport of Science Equipment

- Use safety precautions in the transportation of all equipment and supplies to and from the science classrooms and laboratories.
- Transport long glass rods and tubing in a vertical position, observing door heights and other clearances.

Classroom Science Safety

- Make sure that a fire extinguisher and fire blanket are included in classrooms that are being used as science laboratories (non-science rooms).
- A current copy of the American Red Cross Standard First Aid should be kept with each first aid kit, as well as emergency telephone numbers and SDS.
- Post first aid charts including CPR and Heimlich maneuver.
- Make sure Fire Drill Exit Route is posted and communicated to staff and students regularly.
- Report any injury or accident to supervisor.