

Discussion and Notes

Five-Minute Safety Inspection

Our “Five-Minute Safety Equipment Inspection” can be used to quickly and easily evaluate the readiness of laboratory safety equipment. According to the OSHA Laboratory Standard, safety equipment should be checked on a regular basis. It is a good policy to document all safety inspections. If problems are found, repairs should be made promptly.

Pass out safety inspection checklists to instructors and ask them to conduct inspections of their labs. Afterward, collect the forms and discuss any problems. Review the “Policy and Procedures Guide” provided at the end of this safety note. The guide summarizes the safety equipment requirements and the appropriate policy information for every question on the inspection checklist.

The inspection results should be compiled and a written summary or report sent to the administration for prompt action if needed.

It is important to keep a copy of these safety notes and a signed attendance sheet to verify that regular safety training meetings are being held.

Prevent Accidents—Become Flinn Certified in Safety

Make plans now to become Flinn Safety Certified by completing the free online Flinn Scientific Canada Laboratory Safety Course. This course covers every major topic related to school laboratory safety and will ensure that you know how to prevent common laboratory accidents when working with flammable liquids, corrosive chemicals or other hazardous chemicals. Visit the Flinn website at <https://labsafety.flinnsci.ca/> to get started!

Thank You for Your Support

Please continue to support our efforts to improve safety in science labs by ordering your science supplies and laboratory chemicals from Flinn Scientific Canada.

Flinn Scientific Canada Five-Minute Safety Equipment Inspection

Answer yes or no to each question. A comment section is provided to identify any equipment that needs to be repaired or replaced.

Lab/Room Number _____

Date _____

Inspected by _____

1. Do you have a 15-lb. ABC type fire extinguisher? _____

2. Do you have a fire blanket? _____

3. Do you have an eyewash that treats both eyes at the same time, provides a continuous wash for 20 minutes and is supplied with water from a clean water source?

4. Do you have a safety shower or body drench? _____

5. Do you have a first aid kit? Is it completely stocked? _____

6. Do you have safety placards (signs) prominently posted next to all required safety equipment?

7. Do you have spill control equipment? _____

8. Has your fume hood been tested within the last three months and does it have a face velocity of 100 ft/minute?

9. Are an adequate number of goggles and aprons or labcoats available? _____

For any questions with the answer as no, you have now identified a problem that needs to be corrected. Please see the attached Policy and Procedures Guide for recommended actions and equipment to solve the problem.

Flinn Scientific Canada Five-Minute Safety Equipment Inspection Policy and Procedures Guide

For every question on the safety inspection checklist, we have provided a recommended procedure or policy to solve the safety problem. Equipment suggestions are also given. Please call Flinn Scientific Canada at 1-844-200-1455 if you have any questions or would like more information. Please consult the current *Flinn Scientific Canada Catalogue/Reference Manual* or visit www.flinnsci.ca for detailed descriptions of the suggested products.

1. Do you have a 15-lb. ABC type fire extinguisher?

ABC dry chemical fire extinguishers are your best choice for the science laboratory. In comparison with CO₂ fire extinguishers, the ABC fire extinguisher treats more types of fires, is safer and has a much longer “shooting distance” or range of stream. Always use ABC dry chemical fire extinguishers in science labs and in all chemical preparation and storage areas. Fire extinguishers must be easily accessible and unobstructed.

2. Do you have a fire blanket?

There should be a fire blanket in every laboratory, chemical storage or preparation area and any other rooms where chemicals are stored or used. A fire blanket is an essential safety aid—it can be used in many different accident situations. The fire blanket can be used to extinguish a fire involving a person, contain and control any type of event or spill (like a bench fire or acid spill), warm a victim in shock or raise a victim’s head or legs while awaiting medical attention. The fire blanket must be easily accessible and unobstructed.

Product suggestions:

Fire Blanket with Case, Catalogue No. SE3006

Fire Blanket only, Catalogue No. SE3007

An inexpensive option is to purchase a 100% wool camping or utility blanket from a surplus store.

3. Do you have an eyewash that treats both eyes at the same time, provides a continuous wash for 20 minutes and is supplied with water from a clean water source?

An ANSI-approved eyewash is a critical piece of safety equipment for all labs or storage areas where chemicals will be used. An eyewash must treat both eyes at the same time, provide a continuous wash for 20 minutes and have its water come from a clean water source. The eyewash should be visible, easily accessible and unobstructed.

Portable eyewashes or eyewash bottles usually treat only one eye. If you get a splash in both eyes, you have to decide whether you will save the right eye or the left eye—a choice no one should ever have to make. Eyecare professionals say that when a splash occurs, the eyes should be irrigated with clean water for at least 20 minutes. A portable eyewash will last less than five minutes and is not suitable for lab use.

Portable eyewashes can also be tampered with and contaminated. You don’t want to aggravate a possible eye injury using poor quality or contaminated water. Having permanently plumbed eyewashes connected to a clean water source is absolutely critical.

Product suggestions:

Eyewash, Economy, wall mount, Catalogue No. SE2514

Eye/face wash, wall mount, Catalogue No. SE1010

Eyewash, swivel, Catalogue No. AP1905

Eyewash/body drench combination, wall mount, Catalogue No. AP2264

Eyewash/body drench combination, bench mount, Catalogue No. AP8731

Eyewash, connects to a gooseneck faucet, Catalogue No. SE1040

4. Do you have a safety shower or body drench?

A safety shower or body drench is an important safety device to provide a flow of water to handle body splashes. Showers and body drenches are especially important in the chemistry laboratory and chemical storage rooms. If a shower cannot be purchased, a less expensive body drench should be considered. The body drench is like a mini shower—it can direct water to a specific location on the body and may be used as a crude secondary eyewash if hands-free operation is available. The safety shower/body drench must be easily accessible and unobstructed.

We are aware of cases in which instructors have had to crawl up on top of a laboratory bench and place their feet into a small sink to rinse a chemical splash to the legs. Be prepared! Consider installing either a full body shower or a handheld body drench.

Product suggestions:

Emergency Shower, Ceiling Mount, Catalogue No. SE1020

Emergency Shower, Wall Mount, Catalogue No. SE1021

Emergency Shower/Eyewash Combination, Catalogue No. SE1025

Body Shower Drench, Catalogue No. SE1013

Emergency Body Shower/Drench/Eyewash, Wall Mount, Catalogue No. AP2264

Emergency Body Shower/Drench/Eyewash, Swivel Bench Top, Catalogue No. AP8731

5. Do you have a first aid kit? Is it completely stocked?

First aid kits with supplies to treat minor cuts or burns are a helpful safety aid in cases where school policy allows instructors to provide basic first aid treatment. Some schools have medical professionals on staff to provide medical treatment.

Having a first aid kit in every science laboratory is useful for providing basic medical assistance.

Product suggestion:

First Aid Kit, for 50 people, Catalogue No. SE1083

First Aid Kit, for 25 people, Catalogue No. SE1082

6. Do you have safety placards (signs) prominently posted next to all required safety equipment?

Visibility of safety equipment is critical for prompt action. The instructor should be able to stand in any location in the laboratory or storage area, make a visual sweep around the room and immediately locate every safety aid.

Some equipment, like a fire extinguisher, may stand out because of its red colour and cylindrical shape. Do not make the assumption that everyone will identify the red cylindrical shape as a fire extinguisher.

All safety equipment must be clearly marked with signs identifying their location. Following is a list of safety equipment that require signs:

Fire Extinguisher

Fire Blanket

Eyewash

Safety Shower

First Aid Kit

Spill Control Equipment

Master Utility Controls

Signs can either be homemade or purchased.

Product suggestions:

Fire Extinguisher Sign, 24" H × 4" W, Catalogue No. SE320

Fire Extinguisher Sign, 7" H × 17" W, Catalogue No. SE1916

Fire Blanket Sign, 3½" H × 14" W, Catalogue No. SE331

Eyewash Station Sign, 7" H × 17" W, Catalogue No. SE1911

Emergency Shower Sign, 7" H × 17" W, Catalogue No. SE1912

First Aid Kit Sign, 3½" H × 14" W, Catalogue No. SE1915

Personal Safety and Emergency Equipment Signs, Set of nine signs, 8½" × 11", Catalogue No. AP4519

7. Do you have spill control equipment?

No matter what precautions you take, sooner or later an accidental chemical spill will occur. What will you use to contain, control and clean up the spill? Proper spill control equipment should be available in every science laboratory, preparation area and storeroom where laboratory chemicals are stored or handled.

A good spill control kit will have sand to contain the spill, an inorganic cat litter-type material to absorb a liquid spill and sodium carbonate to neutralize an acid spill.

Product suggestions:

E-Z Pour Chemical Spill Kit, Catalogue No. SEJ102

E-Z Pour Base Neutralizer, 2.5 kg, Catalogue No. SEJ107

Spill Control Center, Catalogue No. APJ6448

Absorbent Spill Pillows, 250-mL size, Pkg. of 20, Catalogue No. SE150

E-Z Pour Sand, Catalogue No. SEJ105

Absorbant, Super Sorb®, 20 lbs., Catalogue No. SEJ101

E-Z Pour Acid Neutralizer, Catalogue No. SEJ103

8. Has your fume hood been tested within the last three months and does it have an average face velocity of 100 ft/minute?

Fume hoods should be tested every three months. The recommended average face velocity is 100 feet per minute (fpm) with a variance of $\pm 20\%$ of average.

Never assume a fume hood is operating efficiently just because you hear the motor running. Regular testing of the fume hood is the only way to ensure that it is working properly. To verify proper functioning of a fume hood you can measure face velocity with a velometer or a smoke generator.

Testing a fume hood with a velometer (or air flow meter) is relatively simple. Lower the fume hood sash to its working height (typically 10"–12" inches above the bench top) and take 3–4 readings with the velometer at various locations across the opening of the fume hood. The average of these readings should be 100 fpm (feets per minute).

To test the fume hood using smoke generators, clear the interior of the hood of all equipment and bottles. With the hood fan on, place a smoke generator at or near the center of the hood and ignite it. The smoke should move to the back of the hood and be exhausted to the outside of the building (for ducted fume hoods). In addition to observing how well the hood contains the smoke, watch the flow patterns within the hood for any disruption in the air flow pattern. While this method does not provide a measurable result, it does give you a visual indication of how your fume hood is functioning and if there are any leaks.

Another great reason to test a fume hood using a smoke generator is to discover where the smoke goes. For ducted fume hoods, the smoke should go directly outside. When using a smoke generator in a fume hood, position someone where they can see the roof to observe the exhaust point of the hood and verify that the smoke is being exhausted through the stack.

When performing a smoke generator test in your fume hood, be sure to notify the fire department and your principal in advance in case the hood does not function properly and sets off the fire alarm system or neighbors report smoke coming from the building.

Reasons for poor fume hood performance include inadequate fan size, a damaged fan, narrow ducting, deteriorating ducting or blockage within the duct or at the exhaust point (e.g., bird's nest).

Product suggestions:

Velometer, Catalogue No. SE4055

9. Are an adequate number of goggles and aprons or lab coats available?

It is important to have a firm goggle policy. Flinn Scientific Canada recommends the following simple safety rule regarding goggles: "Anytime chemicals, heat or glassware are used, students and instructors must wear their goggles." There should be no exceptions to this rule.

All goggles should be marked with the ANSI code Z87 or Z87+ on the goggle frame. Goggles that are not Z87 or Z87+ approved should be discarded. Enough goggles should be available for every student in the classroom. At the collegiate level, students may purchase approved goggles to bring to lab. The Z87 and Z87+ markings describe the impact and coverage protection provided by goggles. (Z87+ corresponds to high-impact protection.) The ANSI designation (D3) is used for goggles that pass an independent splash test.

Students using laboratory chemicals should always wear chemical-resistant aprons or lab coats. Aprons and lab coats should be available for all students and should loosely fit students' bodies. The apron or lab coat should cover from the top of the student's chest down to above the knees.

Product suggestions for goggles:

Goggles, Chemical Splash, Catalogue No. AP3306

Goggles, Chemical Splash, Fog-Free Lens, Catalogue No. AP3309

Product suggestions for aprons:

Apron, Plastic, Medium-Duty, Catalogue No. AP7120

Apron, Rubberized, Medium-Duty, Catalogue No. AP7125