FLINN SCIENTIFIC, INC

Science Department Safety Training Notes

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Discussion and Notes

You may wish to pass out inspection forms a day ahead of time and have teachers bring the completed forms to the meeting.

If a more detailed safety inspection of the laboratories and storage/preparation areas is required, Flinn Scientific has a Laboratory Safety Inspection Kit available (Catalog No. AP4851). This kit will allow you to identify existing and potential safety problems and will help you properly document any problems. Complete details may be found on page 1007 of the 2007 Flinn Scientific Catalog/Reference Manual.

Five-Minute Safety Inspection

With the holidays approaching, this is a perfect time to inspect the safety equipment in the school science labs. Our "Five-Minute Safety Equipment Inspection" can be used to quickly and easily evaluate the readiness of the safety equipment in each lab. 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 the safety inspection checklists. Ask each teacher to go to his or her lab and conduct the inspection. Afterwards, collect the forms and discuss any problems. Review the "Policy and Procedures Guide" provided at the end of this safety training 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 principal for prompt action.

It is important to keep a copy of these safety training notes and a signed attendance sheet to verify that regular safety training meetings are being held. The sign-up sheet is almost as important as the training notes and is usually the first thing that is requested and reviewed by regulatory inspectors. A copy of the signup sheet that we suggest using may be found at www.flinnsci.com/Sections/Safety/SNotes/signup.pdf.

Materials (one per staff member)

- Flinn Scientific Science Department Safety Training Notes, Volume 8-5
- Sign-up Sheet (one for group)

Questions for Discussion

1. How often should we inspect safety equipment?
2. What is the proper procedure for notifying the science department chairman or school administrator that a safety problem exists?
3. How quickly should we expect a safety problem to be repaired?
4. Should we perform a more detailed safety inspection in order to develop a comprehensive multiyear safety plan?

We Welcome Your Comments

Do you have any suggestions for topics that you would like to see covered in these Science Department Safety Training Notes? We really want to hear from you! Please e-mail us at flinn@flinnsci.com with your comments or suggestions.

Next Month's Topic

Safe Storage and Handling of Lab Chemicals

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Flinn Scientific 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.

Room Number _____

Date_____

Inspector_____

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 available? _____

   _____

For those questions where the answer was no, you have now identified a problem that needs to be corrected. For every question asked on the 5-minute safety inspection checklist, we have provided the correct procedure, policy or equipment to solve the problem.

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

For every question on the safety inspection checklist, we have provided the correct procedure or policy to solve the safety problem. Please call Flinn Scientific at 1-800-452-1261 if you have any questions or would like more information.

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 CO_2 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.

Product suggestion:
Fire Extinguisher, ABC type, 15 lbs. Catalog No. SE3001, $96.71

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, Catalog No. SE3006, $102.95
Fire Blanket only, Catalog No. SE3007, $51.85

An inexpensive option is to purchase a 100% wool camping or utility blanket from an Army/Navy surplus store. The blanket must be 100% wool.

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 water for at least 20 minutes. A portable eyewash will last less than five minutes and is not suitable for school 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, connects to a gooseneck faucet, Catalog No. SE1040, $96.50
Eyewash, Economy, wall mount, Catalog No. SE2514, $189.15
Eye/face wash, wall mount, Catalog No. SE1010, $251.25
Eyewash, swivel, Catalog No. AP1905, $316.70
Eyewash/body drench combination, wall mount, Catalog No. AP2264, $383.80
Eyewash/body drench combination, bench mount, Catalog No. AP8731, $407.65

Please consult the *2007 Flinn Scientific Catalog/Reference Manual* for detailed descriptions of each eyewash.

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 where teachers 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 hand-held body drench.

Product suggestions:
Shower, ceiling mounted, Catalog No. SE1020, $265.15
Shower, wall mounted, Catalog No. SE1021, $275.55
Shower/eyewash combination, Catalog No. SE1025, $890.00
Body Shower Drench, Catalog No. SE1013, $209.30
Body Shower/Drench/Eyewash, wall mounted, Catalog No. AP2264, $383.90
Body Shower/Drench/Eyewash, bench mounted, Catalog No. AP8731, $407.65

Consult the *Flinn Scientific Catalog/Reference Manual* for complete detailed descriptions.

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 teachers 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, Catalog No. SE240, $41.80

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 teacher 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 color 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. Below is a list of safety equipment requiring 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, Catalog No. SE320, $15.35
Fire Extinguisher Sign, 7″H × 17″W, Catalog No. SE1916, $16.25
Fire Blanket Sign, 3.5″H × 14″W, Catalog No. SE331, $10.35
Eyewash Station Sign, 7″H × 17″W, Catalog No. SE1911, $16.25
Emergency Shower Sign, 7″H × 17″W, Catalog No. SE1912, $16.25
First Aid Kit Sign, 3.5″H × 14″W, Catalog No. SE1915, $10.35
Personal Safety and Emergency Equipment Signs, Set of nine signs, 8½″H × 11″W, Catalog No. AP4519, $19.10

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 used.

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

Product suggestions:
E-Z Pour Spill Control Kit, Catalog No. SE102, $39.95
E-Z Pour Base Neutralizer, Catalog No. SE107, $31.95
Flinn Spill Control Center, Catalog No. AP6448, $197.35
Absorbent Spill Pillows, 250-mL size, Catalog No. SE150, $72.15/20
Sand, 25 lbs., Catalog No. S0005, $27.95
Super Sorb® Absorbent, 20 lbs., Catalog No. SE101, $25.50
Neutralizer, Sodium Carbonate/Calcium Hydroxide Mixture, 25 lbs., Catalog No. SE106, $45.70

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

Fume hoods should be tested every three months. A fume hood should have a face velocity of 100 feet/minute.

First of all, never assume a fume hood is operating efficiently just because you hear the motor running. The only way to test a fume hood is using either a velometer (aka Vaneometer) or a smoke bomb.

Testing a fume hood with a velometer is simple. Lower the sash to within 10–12″ of the bench top. Keep the velometer level and take 4–5 readings at various locations across the opening of the fume hood.

To test the hood using smoke bombs, place a smoke bomb at or near the center of the fume hood and light it. With the fume hood on, the smoke should move immediately to the back of the fume hood and then up and directly out of the fume hood exhaust stack. While you will not get an exact measurement of the air velocity in the fume hood, you will have a better idea of whether the fume hood is operating efficiently.

Another great reason to test a fume hood using a smoke bomb is to discover where the smoke goes. The smoke should go directly out-of-doors. The only way to know for sure is to have someone on the rooftop monitor where the smoke comes out. If you perform a smoke bomb test, notify the fire department and your principal in advance so they don't respond to your "smoke."

Reasons for poor fume hood performance include inadequate motor/blower size, a damaged motor, inadequate vent piping, or a blockage in either the vent or on the roof where the fume hood vent stack is located (e.g., bird's nest).

Product suggestions:
Velometer, Catalog No. SE4055, $69.20
Smoke Generator, 30-second, Catalog No. SE5010, $8.95/Pkg. of 2

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

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

All goggles should be marked with the code ANSI code Z87.1 or Z87+ on either the goggle frame or the lens. Goggles that are not Z87.1 approved should be discarded. Enough goggles should be available for every student in the classroom.

Students using laboratory chemicals should always wear chemical-resistant aprons. Aprons should be available for all students and should loosely fit students' bodies. The apron should cover from the top of the student's chest down to above the knees. Rubber or heavy-duty plastic aprons work fine for school science laboratories.

Product suggestions for goggles:
Goggles, Chemical Splash, Catalog No. AP3306, $6.45 each
Goggles, Chemical Splash, Fog-Free Lens, Catalog No. AP3309, $7.65 each
Flinn Visor Goggles, Catalog No. AP1362, $7.10 each

Product suggestions for aprons:
Apron, Plastic, Medium-Duty, Catalog No. AP7120, $5.30 each, $61.08/12
Apron, Rubberized, Medium-Duty, Catalog No. AP7125, $9.40 each, $104.88/12