

Discussion and Notes

*Special labs or lab activities may require the availability of other types of fire extinguishers. A Halotron I® (BC) fire extinguisher is recommended for labs outfitted with computers or other technology equipment. Always have a Class D fire extinguisher or dry sand available when working with reactive metals.*

## Fire Extinguisher Safety and Training

The list of required safety equipment for any school science lab or chemical prep area always includes a portable, hand-held fire extinguisher. Portable fire extinguishers can help save lives and protect property when used to put out small fires or contain them until the fire department arrives. Having a fire extinguisher is thus your first line of defense in case of a fire.

### Should the Science Teacher Consider Fighting a Fire?

There is some controversy about this fundamental question. The number one priority is to make sure students and teachers will get out safely. Some fire professionals vigorously suggest that teachers, upon discovery of a fire, immediately notify the fire department, close all doors and windows in the affected area, and evacuate the premises.

***The alarm should not be delayed.*** Upon sounding the alarm, however, you may decide to fight the fire. Before making the fire-fighting decision, you have to quickly run through the following mental checklist.

- ◆ Is an extinguisher present and is it in good working order?  
*A broken or discharged extinguisher offers false security and no protection. Fire extinguishers must be inspected on a regular or monthly basis to ensure that they are in good working order.*
- ◆ Do you have the proper type of fire extinguisher for the kind of fire you are likely to encounter?  
*Flinn Scientific recommends equipping labs with ABC-type fire extinguishers. A dry-chemical, ABC-type fire extinguisher puts out the most common types of fires you will encounter in the science laboratory. Another benefit of an ABC fire extinguisher is that the effective range is twice as far as that of a carbon dioxide extinguisher — meaning you don't have to stand so close to the fire.*
- ◆ Can the fire be controlled using a portable fire extinguisher?  
*Only attempt to put out a fire if it is small, confined to a small space, and is not spreading. A small fire contained in a beaker or a wastebasket can be easily extinguished if you have practiced using a fire extinguisher. Many small fires can also be extinguished simply by placing a fire blanket over the fire. Be sure you have an unobstructed escape route in case the fire spreads. (Always keep your back to a clear exit.) If you are ever in doubt, evacuate the room immediately. Do not fight the fire.*
- ◆ Have you been trained on how to properly use a fire extinguisher?  
*If you have never used a fire extinguisher, the time to learn is before an emergency occurs. Ask your local fire department to provide a hands-on class on how to use a fire extinguisher. In most cases, the company that furnishes and inspects the fire extinguishers at your school will provide extinguishers at no charge for you to use in the training session. If you have never been trained in using a fire extinguisher, evacuate the room immediately. Do not fight the fire.*
- ◆ Are you, the science teacher, willing to use the fire extinguisher?  
*If you feel uneasy about fighting the fire, evacuate the room and wait for the fire department to arrive.*

If the answer to any of the above questions is no, the science teacher should evacuate the room immediately. Regardless of what action you take, always sound the alarm immediately in the event of fire.

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See page 1018 in your 2009 Flinn Scientific Catalog/Reference Manual for a sample floor plan and fire extinguisher coverage area.

*\*Disclaimer—The training described here contains only guidelines for the use of a fire extinguisher and is not meant to be comprehensive training.*

## Fire Extinguisher Location

The maximum travel distance to get to a fire extinguisher is 25 feet. Create a floor plan of the entire science area and plot the existing location of each fire extinguisher. Imagine a fire in various locations within the lab and estimate how far you would have to travel to reach a fire extinguisher. If the travel distance is more than 25 feet, consider adding an additional fire extinguisher to the room. Fire extinguishers should be located in key fire risk areas, including the laboratory, chemical storage room, and chemical prep area. The locations of all fire extinguishers should be clear of all obstructions and they should be marked with large, overhead signs. Students and teachers should know where all fire extinguishers are located. Fire extinguishers should always be placed near an exit.

*Point out the location of the fire extinguisher in the room where you are meeting. Does it meet all of the above criteria?*

## How to Use a Fire Extinguisher\*

A simple way to remember how to use a fire extinguisher is to recall the word PASS. **P**ull the pin, **A**im the extinguisher nozzle at the base of the fire while standing back 8–10 feet, **S**queeze the lever that releases the extinguisher contents, and **S**weep the extinguisher from side to side at the base of the fire. Pressing the lever in short bursts will help you control the fire. With a little bit of practice you will quickly learn how to efficiently put out a fire. Most portable fire extinguishers will discharge completely in less than 10 seconds.

*With a fire extinguisher in your hand, review and simulate the steps of fighting a fire at the present time.*

## Maintenance of Fire Extinguishers

Inspect the fire extinguisher every month to make sure it is in good working order. Verify that the fire extinguisher is fully charged and has not been tampered with. Always have a fire extinguisher recharged after use, regardless of how long it was used.

*Conduct an inspection of the extinguisher you are using as part of this safety review. Look at the pin and the pressure gauge (for an ABC-type fire extinguisher).*

## Discussion Questions

1. Do all teachers know how the fire department should or will be notified? Is there a telephone or pull-switch alarm nearby?
2. Review the evacuation plan for the school. Is the plan practiced on a yearly basis?
3. Are all students trained in fire safety issues relating to the science labs?
4. Discuss the school policy or chemical hygiene plan instructions related to fire extinguisher use.

## Flinn Scientific Values Your Support

Flinn Scientific has provided these Science Department Safety Training Notes. Without your orders, the safety training notes and the indispensable *Flinn Scientific Catalog/Reference Manual* would not be possible. Please continue to support our efforts to improve safety in school science labs by sending Flinn Scientific your valuable orders.

## Next Month's Topic

### Toxicology Primer



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## Fire Extinguisher Safety and Training

All science teaching staff should be trained in how to use a fire extinguisher. In addition to reviewing today's Safety Training Notes, we encourage you to contact your local fire department and ask them to conduct hands-on training with your staff to put out a real fire. (If possible, pick a day that is calm with little wind.) Training should be done in an open athletic field away from all buildings and cars. Training for a staff of 12 teachers will take about one hour. The fire department will bring a large shallow pan in which they will start a fire. The school will need to provide the fire extinguishers. In many cases, a phone call to the fire protection company that leases, inspects, and refills the extinguishers at your school will persuade them to loan you 4–5 units that you can use for training. The company typically will donate the cost to recharge the extinguishers. This type of hands-on training is invaluable. Most teachers will never forget the experience and, more importantly, they will be ready to use a fire extinguisher if necessary.

The safety meeting should take approximately 6–8 minutes to present. The discussion period will vary depending on issues that need to be addressed.

It is important to keep a copy of these safety training notes and a signed attendance sheet to verify that regular safety training meetings were 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 sign-up sheet that we suggest using may be found at [www.flinnsci.com/Sections/Safety/SNotes/signup.pdf](http://www.flinnsci.com/Sections/Safety/SNotes/signup.pdf).

### Materials (one per staff member)

- ◆ Flinn Scientific Science Department Safety Training Notes, Volume 9–8
- ◆ ABC Dry Chemical Fire Extinguisher (one for the group)
- ◆ Sign-up Sheet (one for group)

### Additional Questions for Discussion

1. What type of inspection and maintenance schedule does the school follow for fire extinguishers?
2. Are flammable liquids under control and properly stored in approved and dedicated flammables cabinets?
3. Do student safety rules include fire safety issues?
4. Are students using the lowest possible fire risk equipment when heating substances in the laboratory (e.g., hot plates and hot water baths)?
5. Does your school have class D fire extinguishers available for when reactive metals such as sodium, potassium, lithium or magnesium are used?

### We Welcome Your Comments

Are the Science Department Safety Training Notes useful to you? Are they working for you and your department? Do you have any suggestions for topics that you would like to see covered or for how we can improve these notes? We really want to hear from you! Please e-mail us with your comments and suggestions. Our e-mail address is [flinn@flinnsci.com](mailto:flinn@flinnsci.com).