

**Secondary Methods: Science**

**EDUC 367**

Science Safety Test

(NSTA Standards Addressed 9a, b, c and d)

- \_\_\_\_\_ 1. Flammable materials, like alcohol, should never be dispensed or used near
- A. an open door.
  - B. an open flame.
  - C. another student.
  - D. a sink.
- \_\_\_\_\_ 2. Approved eye protection devices (such as goggles) are worn in the laboratory
- A. to avoid eye strain.
  - B. to improve your vision.
  - C. only if you don't have corrective glasses.
  - D. any time chemicals, heat, glassware or projectiles are used.
- \_\_\_\_\_ 3. You are heating a substance in a test tube. Always point the open end of the tube
- A. toward yourself.
  - B. toward your lab partner.
  - C. toward another classmate.
  - D. away from all people.
- \_\_\_\_\_ 4. You are heating a piece of glass and now want to pick it up. You should
- A. use a rag or paper towels.
  - B. pick up the end that looks cooler.
  - C. use tongs.
  - D. pour cold water on it.
- \_\_\_\_\_ 5. When gathering glassware and equipment for an experiment, you should
- A. perform the experiment so you know what your students will experience.
  - B. examine all glassware to check for chips or cracks.
  - C. clean any glassware that appears dirty.
  - D. All of the above.
- \_\_\_\_\_ 6. You want to place a piece of glass tubing into a rubber stopper after the tubing has been fire polished and cooled. This is best done by
- A. lubricating the tubing with water or glycerin.
  - B. using a towel or cotton gloves for protection.
  - C. twisting the tubing and stopper carefully.
  - D. all of the above.
- \_\_\_\_\_ 7. Personal eyeglasses provide as much protection as
- A. a face shield.
  - B. safety glasses.
  - C. splashproof chemical goggles.
  - D. none of the above.

- \_\_\_\_\_ 8. Long hair in the laboratory must be
- A. cut short.
  - B. held away from the experiment with one hand.
  - C. always neatly groomed.
  - D. tied back or kept entirely out of the way with a hair band, hairpins, or other confining device.
- \_\_\_\_\_ 9. In a laboratory, the following should not be worn.
- A. loose clothing.
  - B. dangling jewelry.
  - C. sandals.
  - D. all of the above.
- \_\_\_\_\_ 10. The following footwear is *best* in the laboratory.
- A. sandals
  - B. open-toed shoes
  - C. closed-toed shoes
  - D. shoes appropriate for the weather
- \_\_\_\_\_ 11. When you finish working with chemicals, biological specimens, and other lab substances, always
- A. treat your hands with skin lotion.
  - B. wash your hands thoroughly with soap and water.
  - C. wipe your hands on a towel.
  - D. wipe your hands on your clothes.
12. Please describe the function, appearance, and proper location of a GFI/GFCI outlet.
13. What should you do if a fire occurs in your classroom?
14. List the 4 types of fire extinguishers and types of fire each extinguishes.
15. Which type of fire extinguisher is best to have in a middle or high school lab?

16. Describe the proper technique for using a fire extinguisher to fight a fire.
17. What are P-List chemicals? (No need to list them, just tell why the designation is important.)  
Where could you find a list of these chemicals? (Be specific. Do not tell me to use the internet.)
18. What is the current thinking on wearing contact lenses when working with chemicals?
19. Describe any situations where students may have access to the chemical storage area.
20. How will your students address safety in their lab reports?
21. How will you address safety concerns in your lesson plans?

22. List and explain the three legal duties an Ohio science teacher must follow.
23. How should chemicals be stored?
24. Describe the proper technique for using a fire blanket. Include the positioning of the fire victim, and what would happen if the victim was in the wrong position.
25. You have a student that says he might have gotten HCl on his arm. What should you do?
26. How should you dispose of chemicals after your students finish their lab experience?
27. List 5 cautions to take when using plants and animals in the classroom.
28. What considerations do you need to address when choosing the arrangement of your classroom?

29. Use the attached MSDS sheet to answer the following questions.

- a. What kind of protective gear should students use when working with HCl?
- b. How should HCl be stored?
- c. In what is HCl soluble?

**30. Read the following excerpt from a legal case.**

The plaintiff had recently relocated to the defendant school and was enrolled in chemistry. It had previously been acceptable for chemistry students to dismiss early from study hall to go to the chemistry laboratory for the sole purpose of setting up apparatus and chemical containers to be used that day in laboratory. On the day when the accident occurred, the newer student (the plaintiff) accompanied five other boys to obtain the key for the chemical storage area. The chemical storage area was kept locked and keys were carried by the chemistry teacher and the principal.

The chemistry teacher (teaching algebra at the time) provided the key to the group of boys who then proceeded to the chemical lab. Despite the understanding held by the other boys, the plaintiff intentionally searched for the three ingredients to make gunpowder, announcing to the other boys that he would make gunpowder. Two of the three required ingredients were found (saltpeter and sulfur) but there was no charcoal. Initially the plaintiff mixed the saltpeter and sulfur with manganese dioxide and ignited a small amount of it. It only “fizzled” so the plaintiff testified that he looked for something else to make it “stronger.” He found and added red phosphorous to the beaker (with the other chemicals) and began mixing it. The other boys testified that each of them warned him not to do it, one specifically indicating that the plaintiff would “kill us all.”

The plaintiff ignored their warnings and continued mixing the chemicals until they spontaneously and violently reacted, blowing up in the beaker. The resulting explosion resulted in the loss of the plaintiff’s hand, loss of one eye, and extensive punctures and subsequent surgeries to remove broken glass from his abdomen and chest.

**Discuss the situation, and how the teacher did/did not address each of the three duties of care. How could the situation have been prevented?**