

Safety Exam
(Revised by Dr. Mohan May 2001)

Department of Chemistry
Illinois Wesleyan University

Your Name: _____

Your Research advisor: _____

Time allowed: 90 minutes

When you are finished, please hand this exam back to your research advisor or to **Dr. Mohan**. The exam will be graded and returned to you with a feedback.

Do not write essays! Be brief and to the point.

1. Shown below is a floor map of the chemistry department on the second floor. On the map indicate the location of the following:

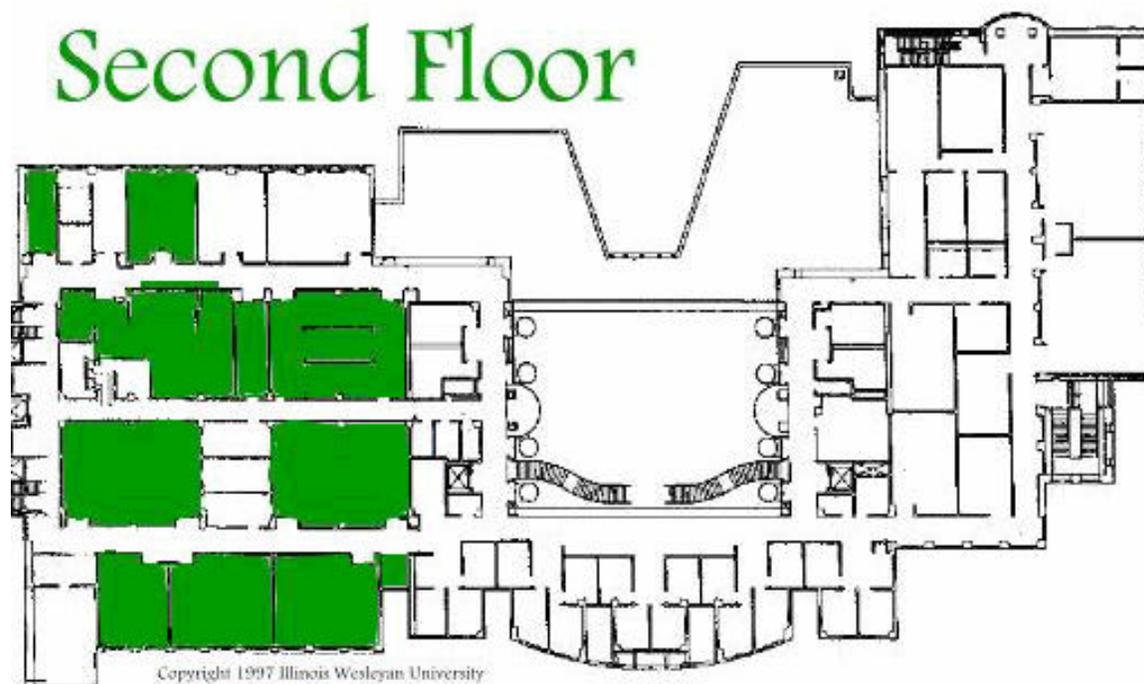
Emergency telephone (use the letter T to mark these)

Fire Extinguishers (Use the letter F to mark these)

Fire Alarm Panic Button (Use the letter P to mark these)

First aid Kits (Use the letter K to mark these)

Spill pillows (Use the letter S to mark these)



3. Define the term flash point in reference to flammable liquids.

4. You find some small pieces of sodium in a round-bottomed flask. You need this flask for an experiment. Describe exactly how you would destroy the residual sodium.

5. What is the hazard associated with distilling old samples of diethyl ether? What precautions must be observed if the ether has to be distilled?

6. You find a round bottomed flask with tarry residue that is known to be some organic compound. Describe how you will attempt to clean this residue or do you feel the flask should be discarded ?

7. You find a unlabeled flask containing a sweet smelling liquid. Describe how will attempt to dispose this liquid.

8. Why should glassware containing bromine be never rinsed with acetone ? Describe the recommended procedure for removing bromine in carbon tetrachloride contained in a flask.

9. Say whether the following are true or false and briefly explain your answer.

(a) The body of a rotary evaporator should not be protected with a safety net since this can obscure the vision of the condenser and the condensates.

(b) The largest size flask that should be used in most rotovaps is a 2 liter flask.

(c) It is OK to evacuate an Erlenmeyer flask.

(d) There a greater risk in evacuating a rotary evaporator with a vacuum pump (<0.5 mm Hg) than with a water aspirator (20 mm Hg)

(e) In a research laboratory it is OK to wear contact lenses provided additional safety glasses are worn.

10. Describe briefly how would bore a rubber cork.

11. What is the best solvent (isopropanol or acetone) for use in cooling baths containing dry-ice ?

12. What is the best way to heat flasks and round bottomed flasks containing flammable liquids ?

13. When should a blast shield be used ?

14. How should glass bottles containing solvents be carried around in the hallways ?

15. What is the best container to collect waste solvents ?

16. Describe how you would clean up the following spill. A one liter bottle of a flammable organic liquid spills on the floor in your lab accidentally. Be specific. Say where the equipment to handle the spill is in the lab you work in.

17. Major damage to equipment has often resulted from flooding. How can this be avoided? List three steps.

18. What would you do if there is a mercury spill (as is common when a thermometer breaks)?

19. What common substance can react explosively with Teflon (there are many Teflon objects in the lab such as stirrers, tubing etc.) at high temperatures?

20. What special precautions must be observed when running overnight reactions or reactions that have to be left unattended for some length of time ?

21. Tell exactly what you would in the following situations:

(a) Your lab partner has accidentally cut himself/herself and you are unable to stop the bleeding by applying pressure.

(b) A large flask containing 2 L of hexane exploded and there is a major fire in the hood and outside it. You realize that you can't put the fire out.

- (c) Your lab mate just stepped out and a toxic chemical spilled over your head and shoulders as a result of which you are experiencing a severe burning sensation.**
- (d) Your lab mate received a severe electric shock. You call campus security and there is no response.**