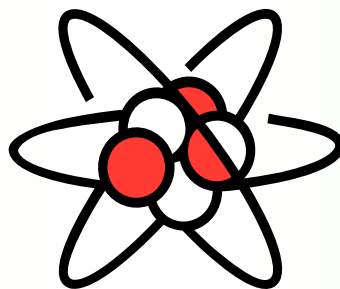




LABORATORY SAFETY ORIENTATION



Dr. Aylene Badilla Ramos

Laboratory Manager/Chemical Hygiene Officer

Department of Chemistry

Do accidents really happen in
the laboratory?



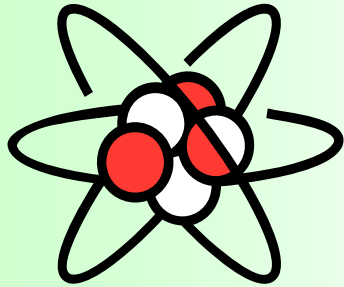
url: <http://www2.umdnj.edu/eohssweb/aiha/accidents/chemicalexposure.htm>



url: <http://www2.umdj.edu/eohssweb/aiha/accidents/chemicalexposure.htm>



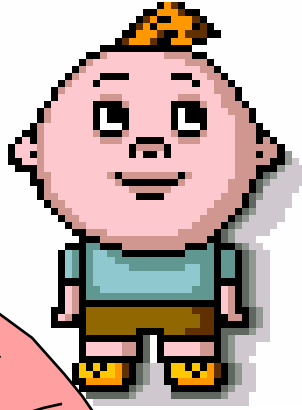
URL: <http://www.medicine.uottawa.ca/ehss-spe/eng/accidents.html>



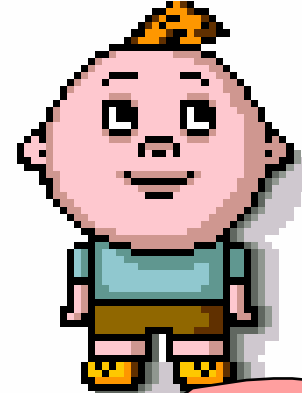
WHY TEACH LABORATORY SAFETY?

- **Students' safety**
- **Legal requirements**
 - EPA (RCRA), 40 CFR 261-262**
 - EPA (CWA)**
 - OSHA Lab Std (29 CFR 1910.1450)**
 - DOT**
- **Lifetime value for students**

WHO IS RESPONSIBLE?



NJCU



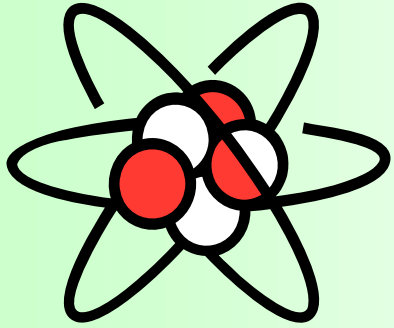
Instructor

Injury

death

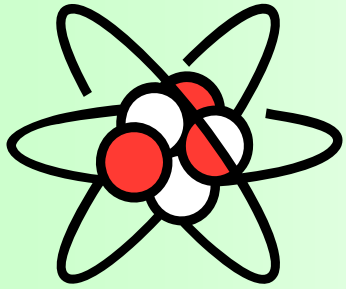


**permanent physical
damage**



SAFETY MEANS

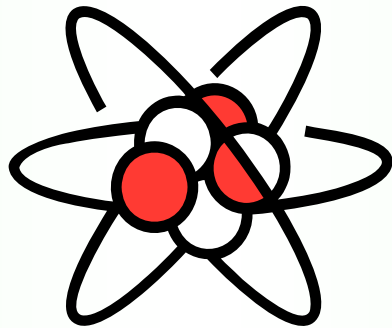
- **Recognition of Hazards**
- **Practicing precautions**
- **Good housekeeping/SOP**
- **Common sense**



SOURCES OF HAZARDS

- **Human errors**
- **Chemicals**
- **Hazardous Wastes**
- **Fire**
- **Electrical**
- **Bad work place condition**

SAFETY PRECAUTIONS/ PRACTICES



MSDS **MSDS**



**RIGHT-TO-KNOW
INFORMATION**

MATERIAL
SAFETY
DATA
SHEETS
VOL. 11
L-7



**RIGHT-TO-KNOW
INFORMATION**

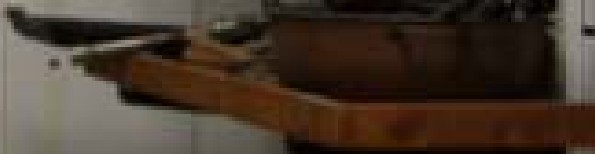
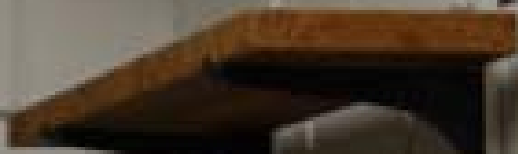
MATERIAL
SAFETY
DATA
SHEETS
VOL. 11
D-2



**RIGHT-TO-KNOW
INFORMATION**

MATERIAL
SAFETY
DATA
SHEETS
VOL. 11
K-C

MATERIAL
SAFETY
DATA
SHEETS
VOL. 11
K-C



MAZARD

98



DO NOT
PIPET LIQUIDS
BY MOUTH



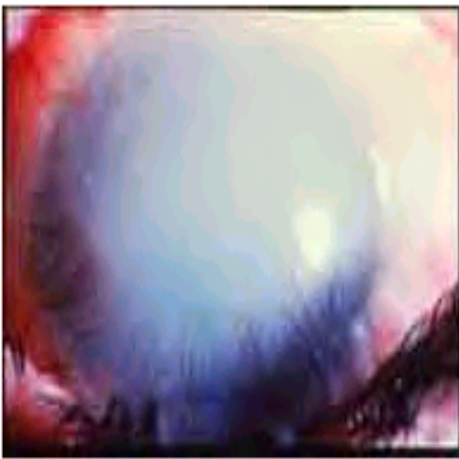


**MASK or
RESPIRATOR**

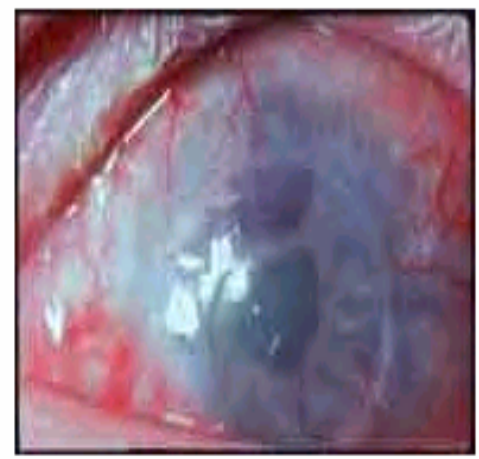
GOGGLES







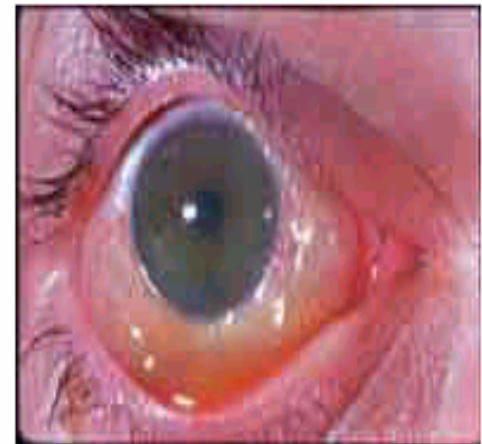
Severe Alkali injury



Severe Alkali injury



Mild alkali injury



Mild acid eye injury



Chemical burn from sulfuric acid

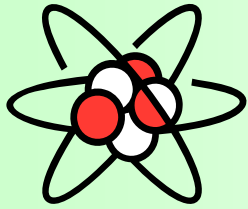


DO NOT apply water under high pressure-it will drive the chemical deeper into the tissue.





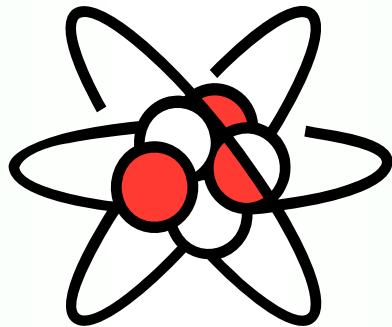


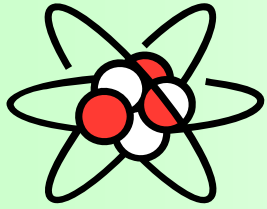


SUMMARY: SAFETY PRACTICES

- Understand experiments**
- Follow safety procedures/never work alone**
- Wear suitable clothing/protective equipment**
- Know where and how to operate safety equipment**
- Practice good housekeeping/personal hygiene**
- Report dangerous activities or situations**
- Use common sense always / think safety first**

GOOD HOUSEKEEPING PRACTICES





BASIC HOUSEKEEPING RULES

- **Keep/use only the glassware/chemicals you need**
- **Clean all glassware promptly**
- **Clean all minor spills promptly with PPE**
- **Keep your area clean/remove unnecessary objects**
- **Dispose of waste as directed by your instructor**



FIRST AID KIT

MAINTENANCE RECORD





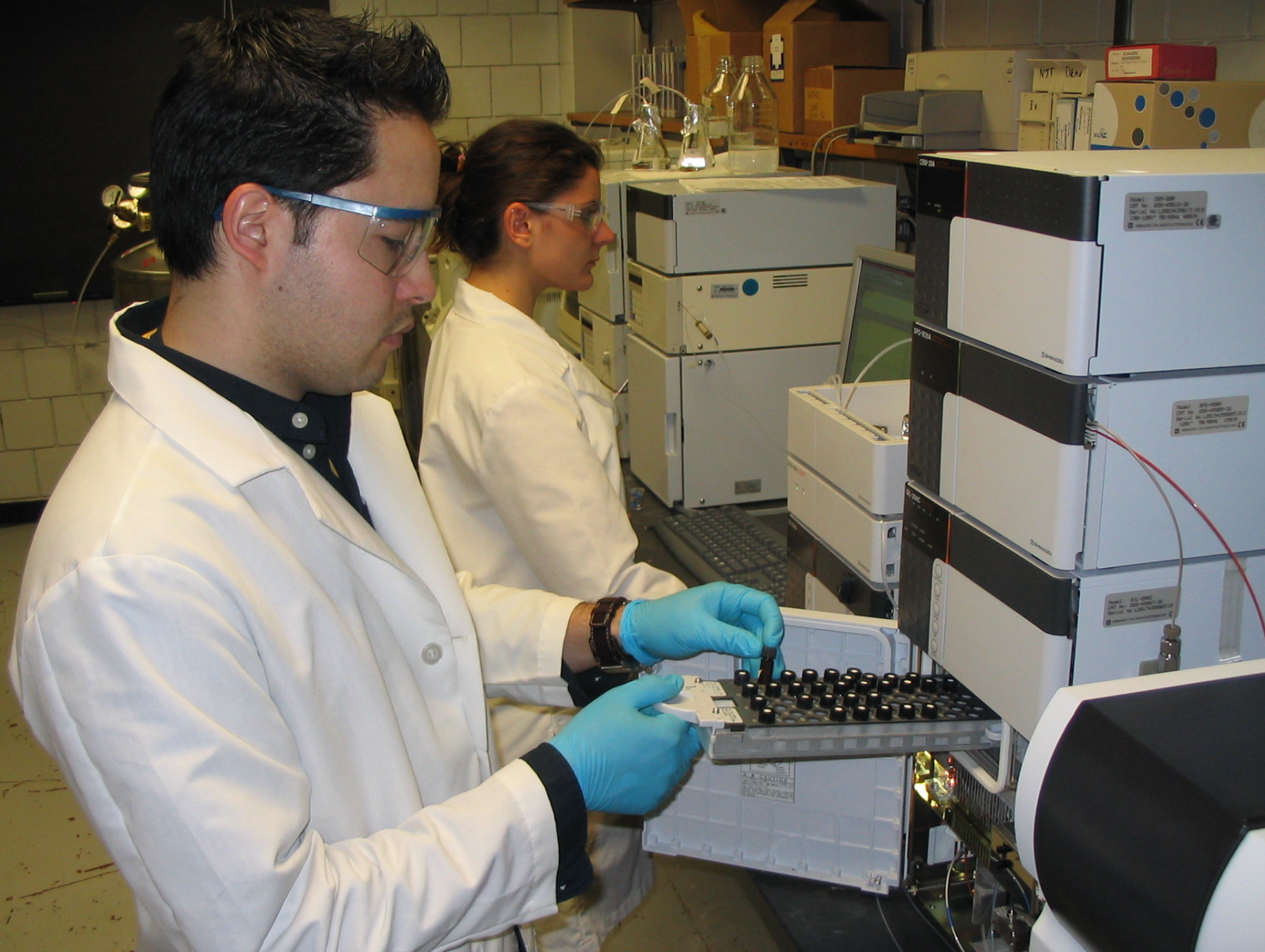
DO NOT
THROW
SOLIDS IN SINK

NOTICE



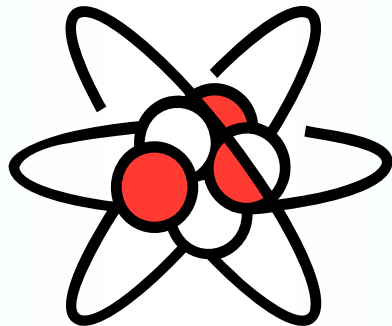
NO SMOKING

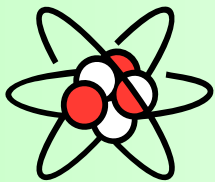
CAUTION
FLOOR IS SLIPPERY





PROPER CHEMICAL HANDLING





SAFE CHEMICAL HANDLING

- Be careful, stay alert and follow directions
- Use PPE
- Understand bottle labels/MSDS
- Practice good chemical hygiene
e.g. Never do mouth contact with lab materials
- Treat odor with caution
- Only use equipment that is in good condition
- Never leave work unattended
- Understand chemical labeling convention/
compatibility



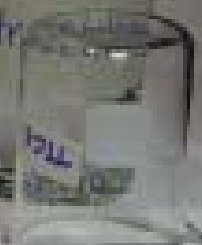
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) LABEL

Clohexanone

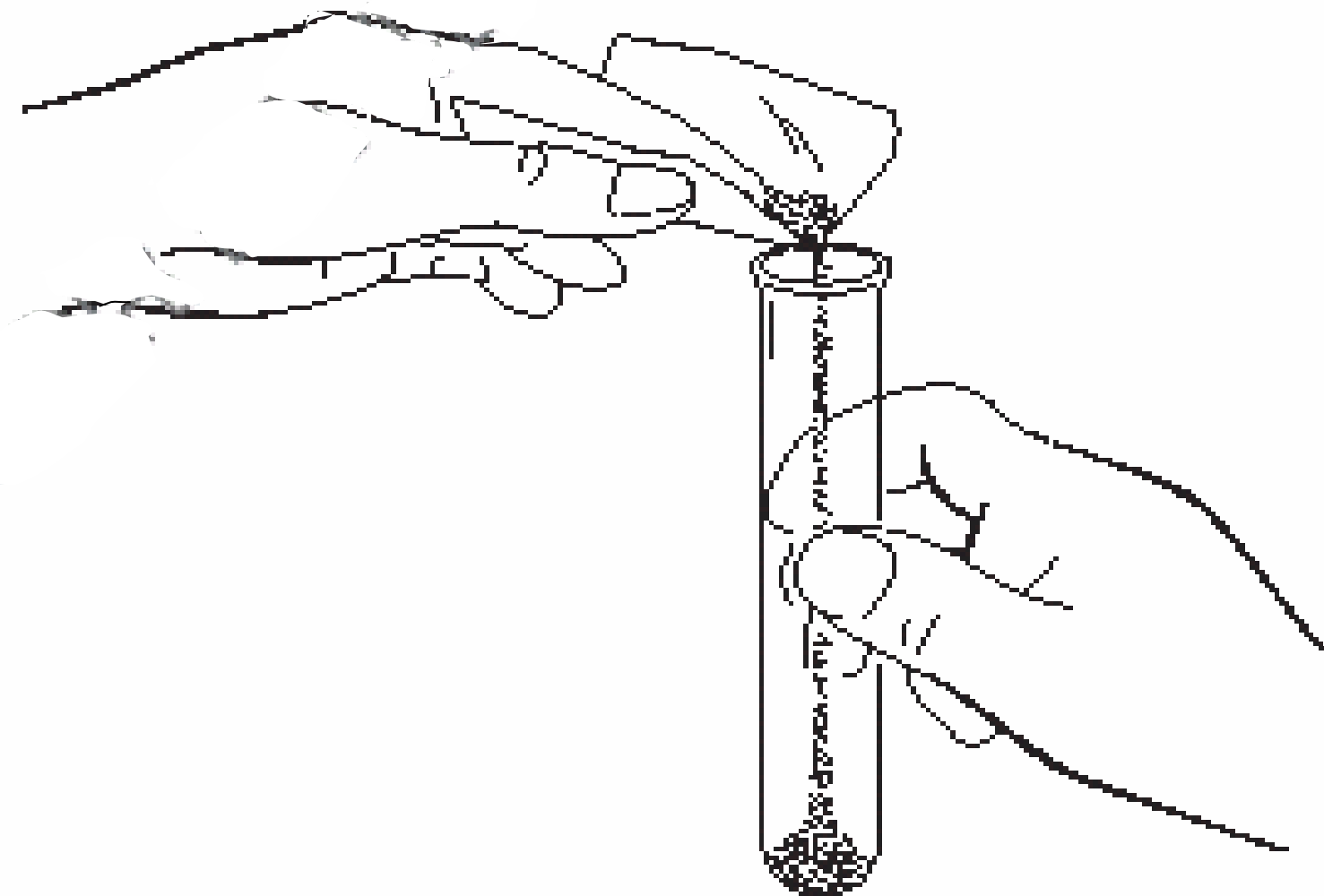
Clohexanone

Red label with orange boxes

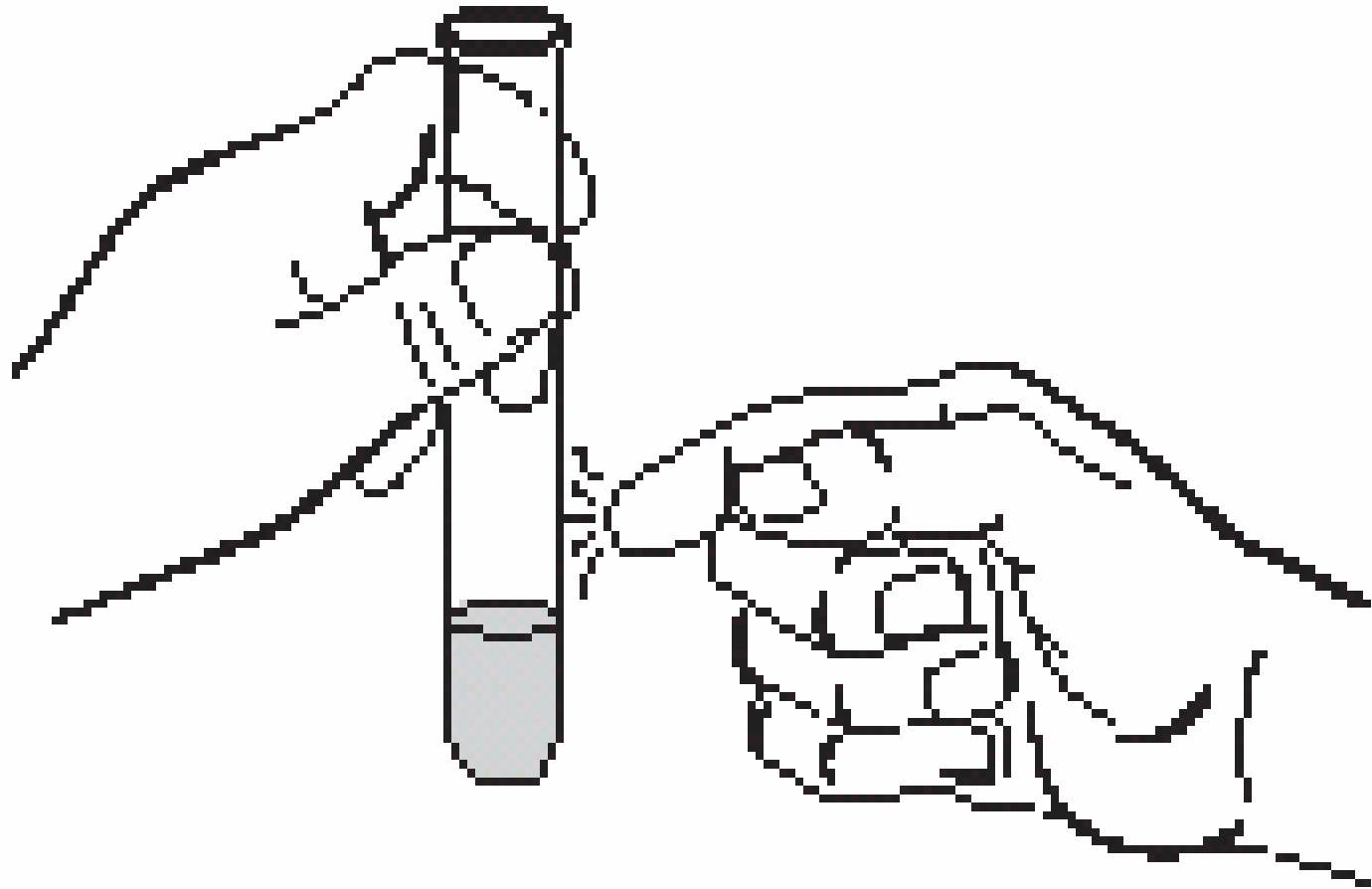
Tetrahydrofuran



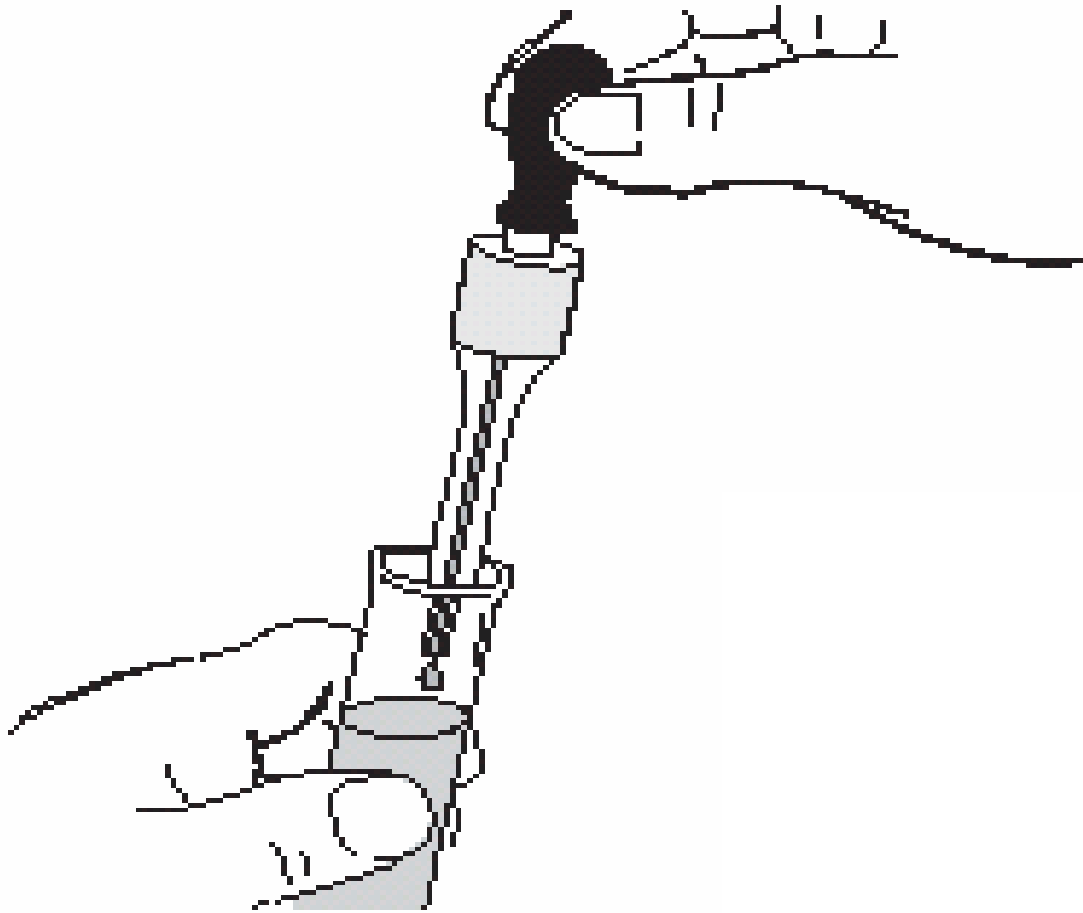
TRANSFERRING A SOLID IN A TEST TUBE



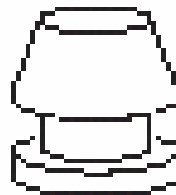
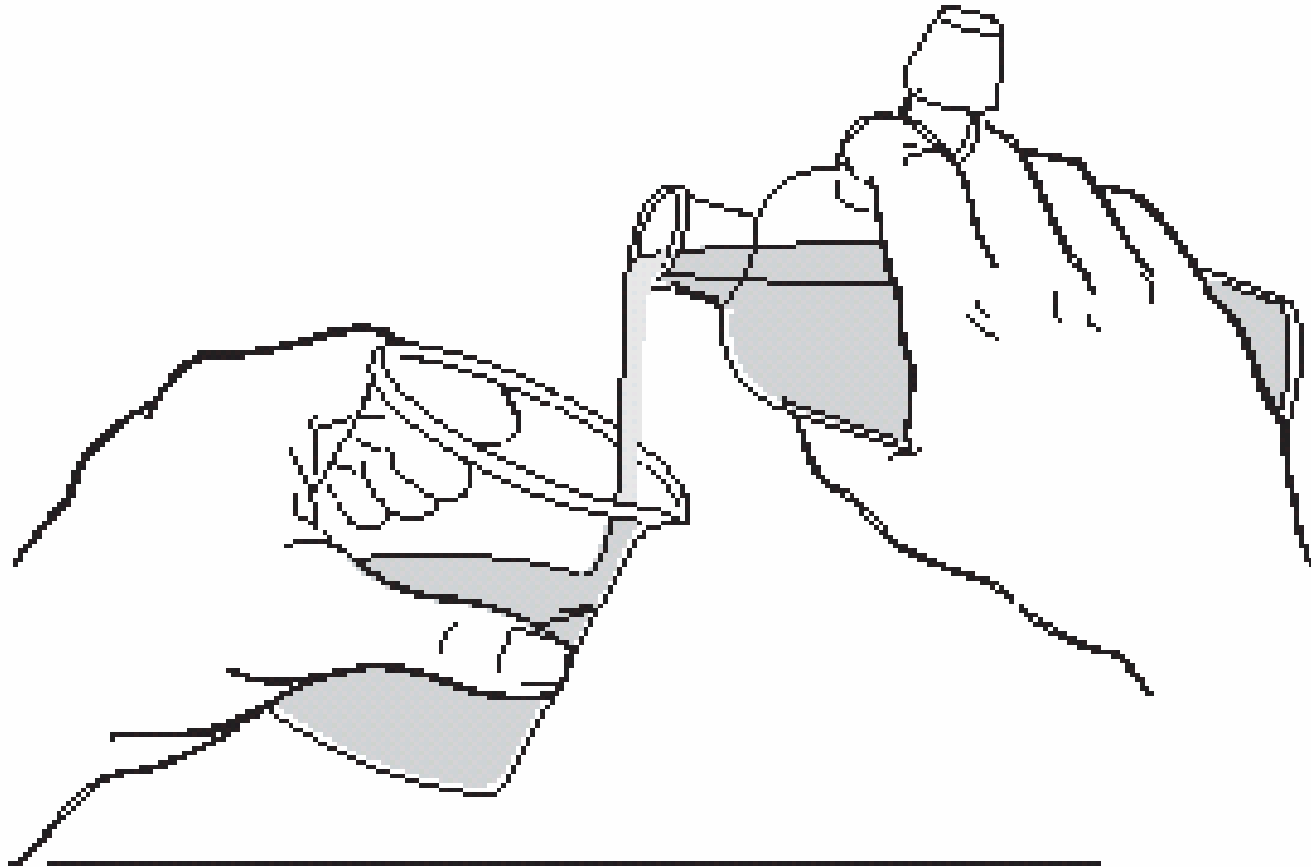
MIXING THE CONTENT OF A TEST TUBE



TRANSFER OF A LIQUID USING A DROPPER

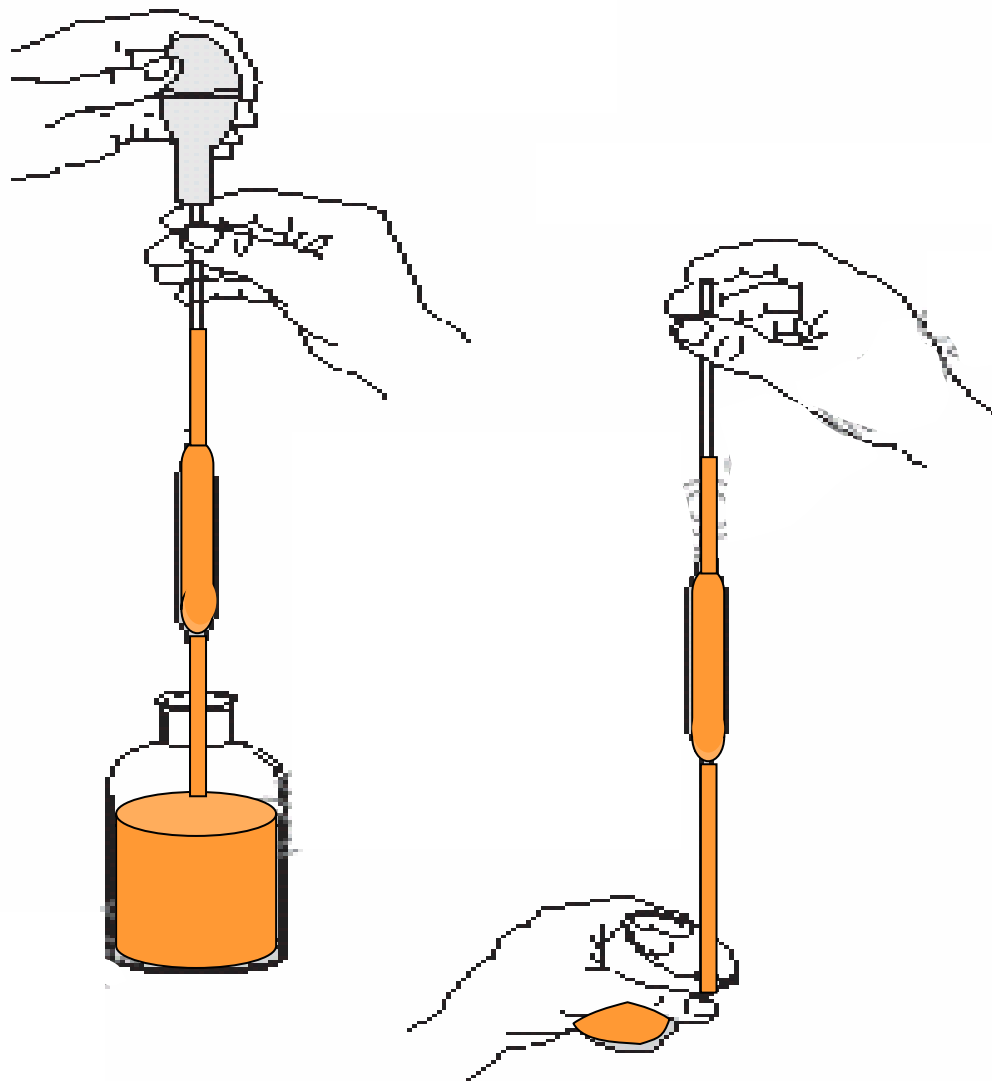


POURING LIQUIDS FROM A BOTTLE

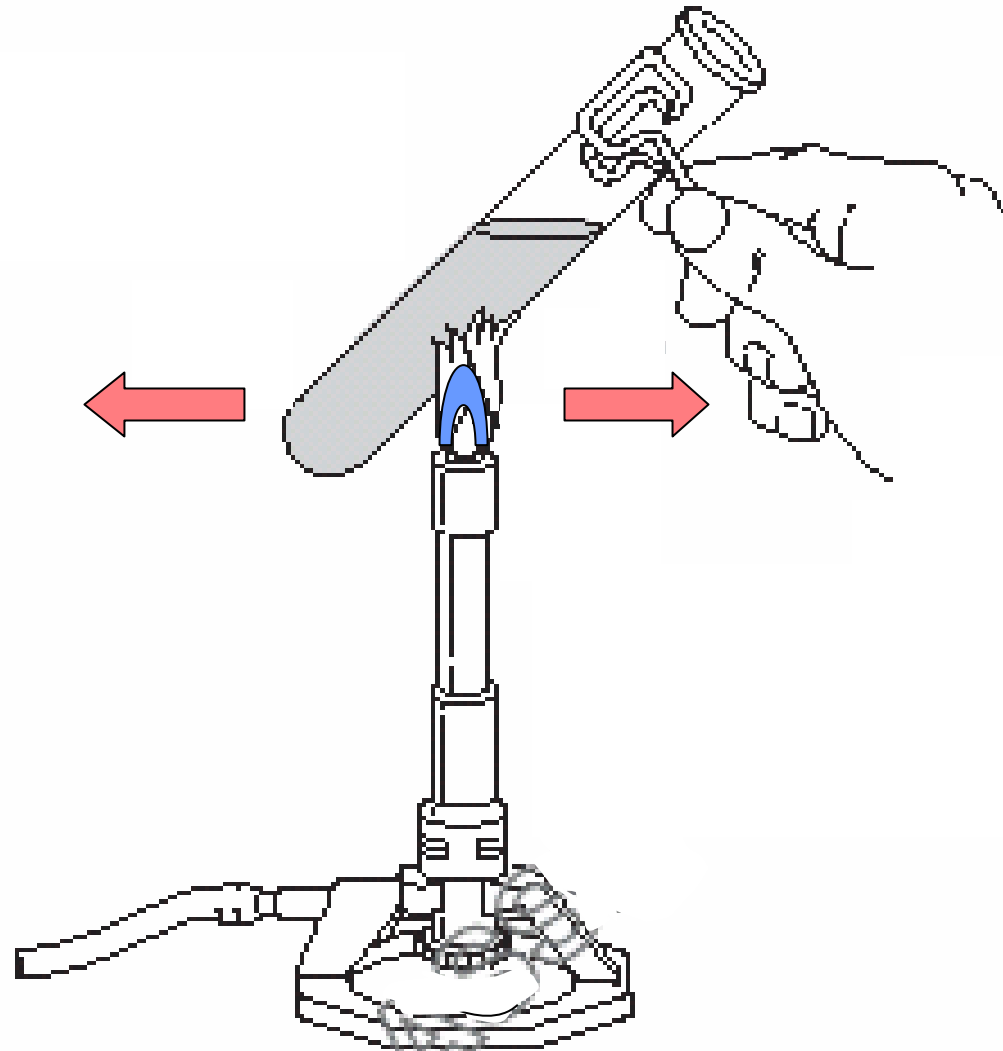


Proper position of stoppers left on bench

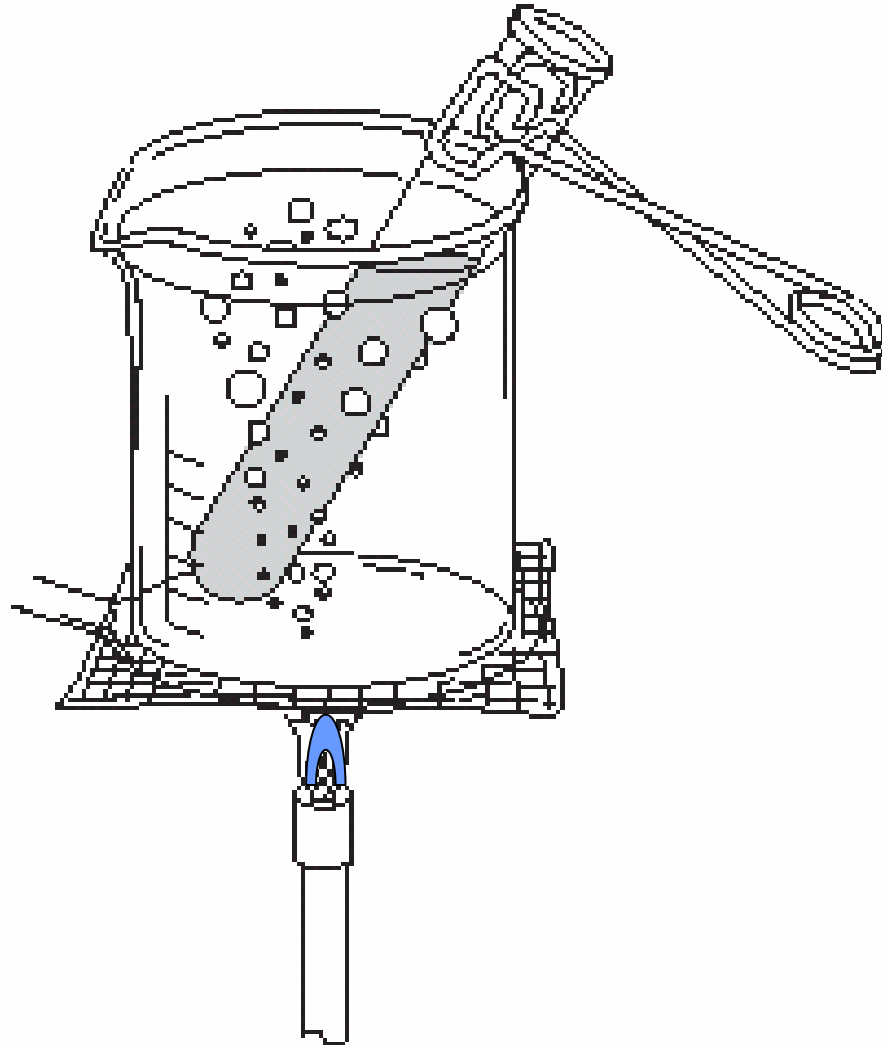
FILLING A PIPET



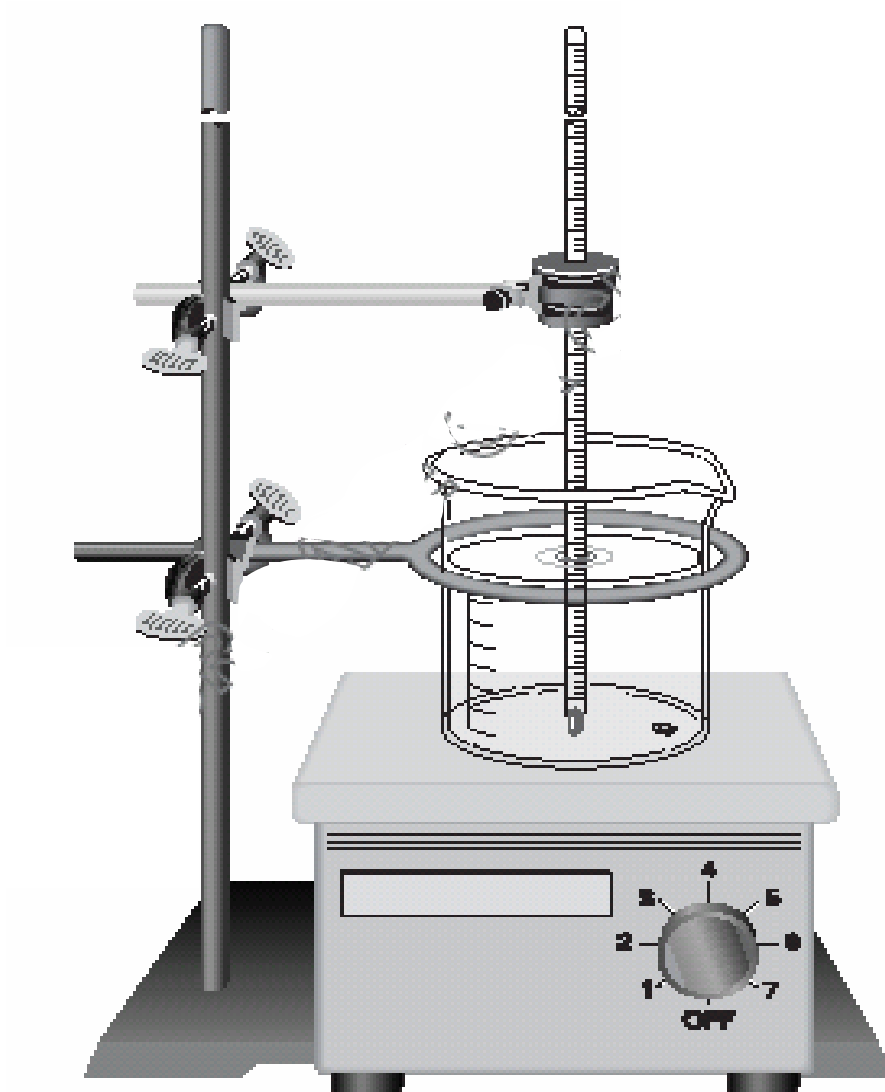
HEATING A LIQUID IN A TEST TUBE



HEATING A FLAMMABLE LIQUID IN A TEST TUBE



SUSPENDING A THERMOMETER IN A BEAKER OF BOILING WATER



DETECTING ODORS

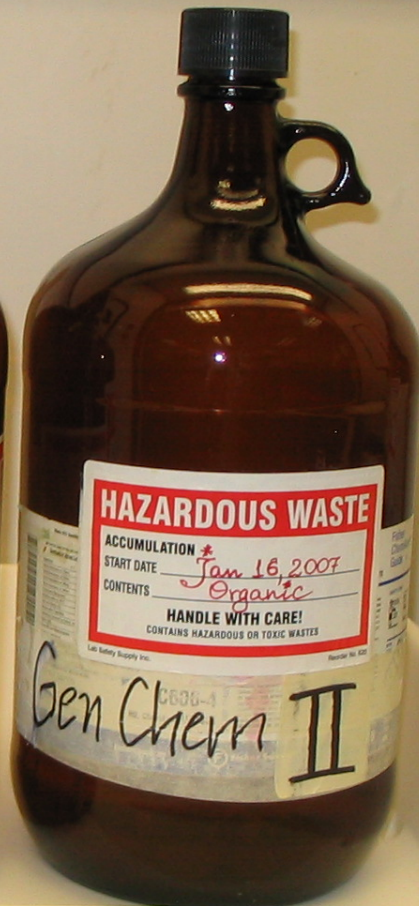
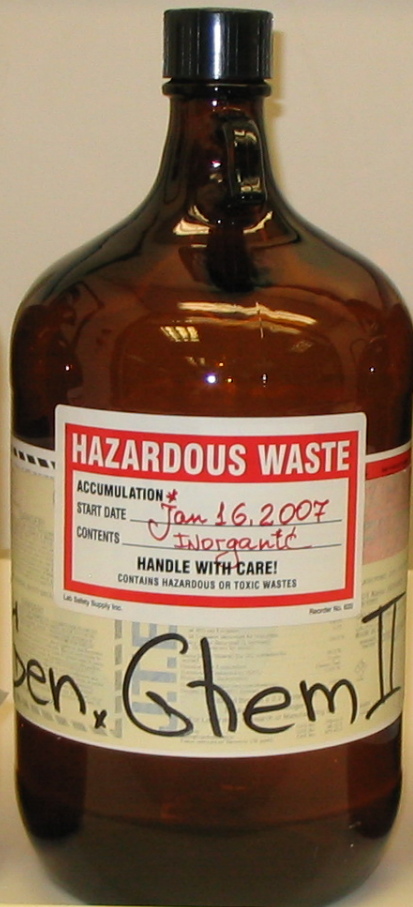
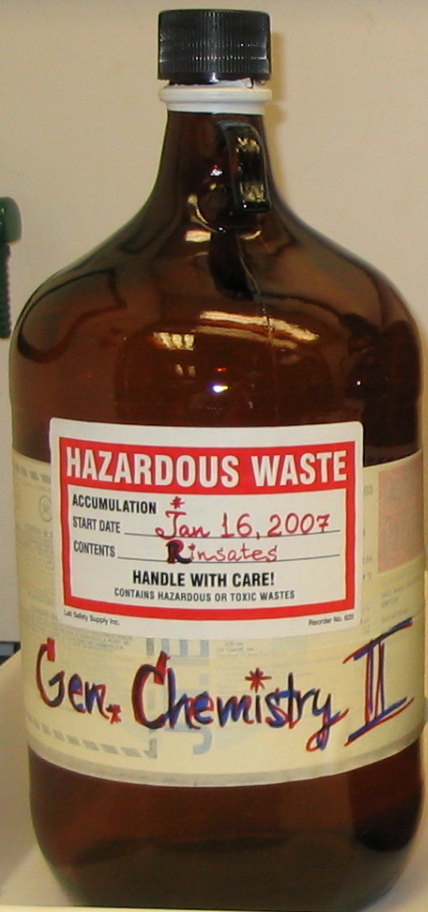




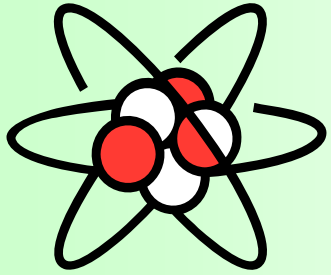
**EXPLOSION-PROOF
REFRIGERATOR**

FLAMMABLE ROOM





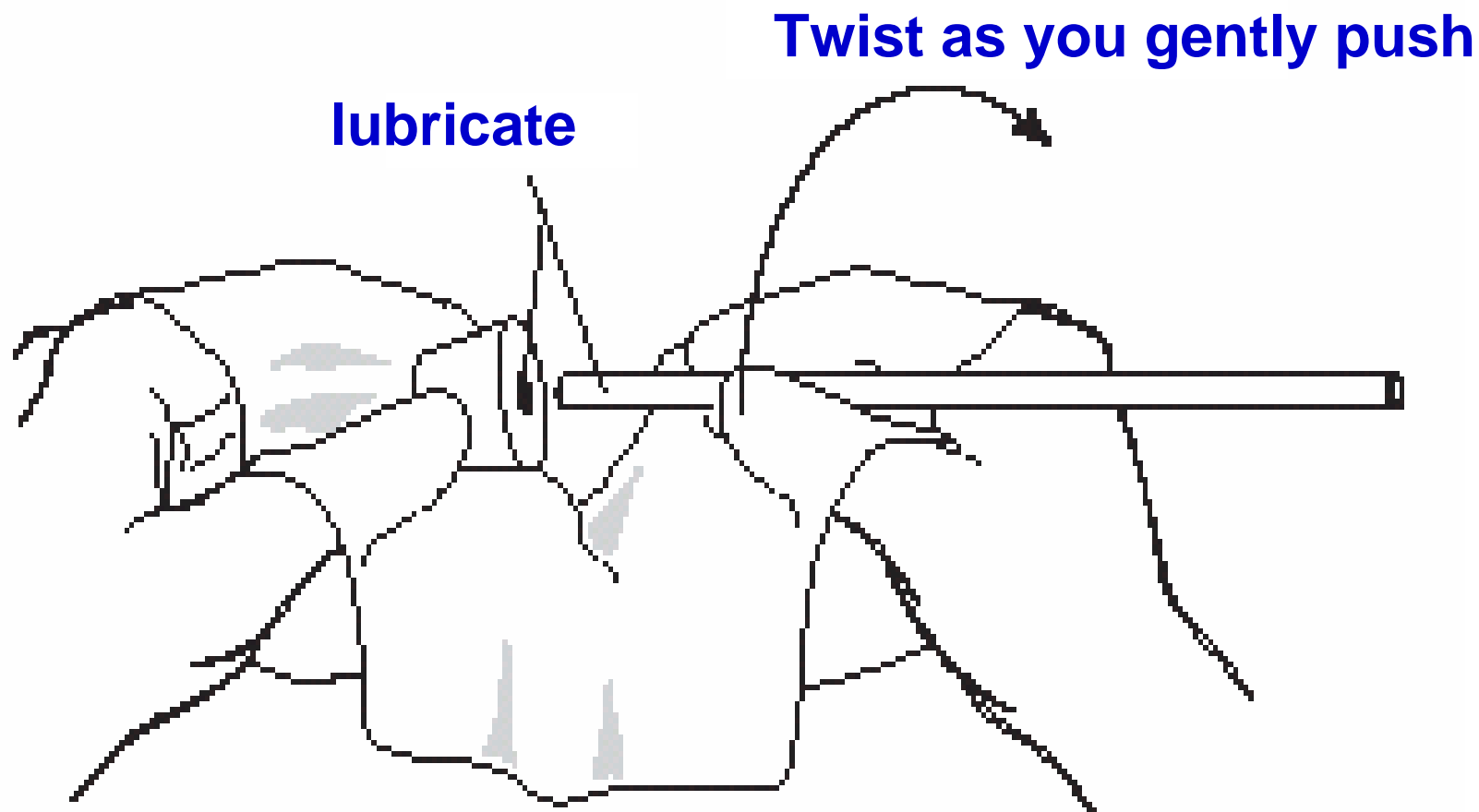
Gen. Chem II
use ONLY!

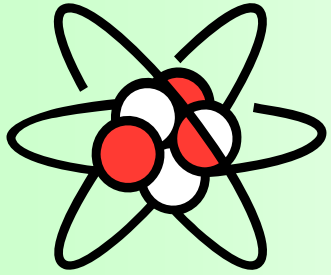


GLASSWARE SAFETY

- Inspect/ handle glassware with care**
- Keep glassware in drawers when not used**
- Follow correct cutting/inserting glass procedures**
- Clean broken glass with broom and throw in designated broken glass box**

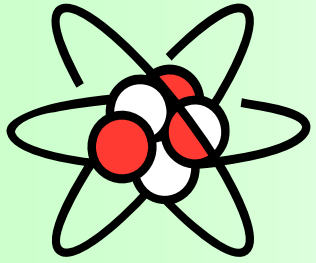
INSERTING GLASS TUBING INTO A STOPPER





ELECTRICAL SAFETY

- **Keep electrical equipment away from water**
- **Remove conductive jewelry when working**
- **Use spark-free devices near flammable liquid**
- **Never pull live wires**
- **Don't overload electrical outlets**
- **Report any faulty outlets/electrical equipment**



FIRE SAFETY

- **Fight the fire or flee?**
- **Call the Public Safety Office or Fire Dept.**
- **If your clothing starts burning:**

CALL FOR HELP – STOP - DROP - ROLL

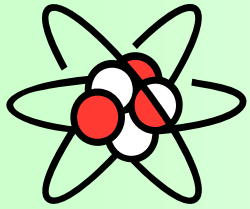
EXIT



NATURAL GAS
SHUT OFF
CAS 74 82 8

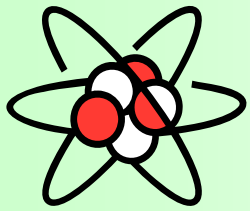






EMERGENCY NUMBERS

- **ext. 3127 / 3128** – Rita Oleas/Director EHS
- **(201) 547-4240** – Jersey City Fire Dept.
- **(201) 915-2000** – Jersey City Medical Ctr.
- **(201) 547-5477** – Jersey City Police Dept.



GENERAL REMINDERS

- **Avoid contamination of chemicals**
- **Handle lab apparatus with care**
- **Clean and return general-use materials after use**
- **Return your key after use**
- **Clean your area before leaving the lab**
- **Students are not allowed inside the stockroom**
- **Inform instructor of any special health conditions**



**YOU HAVE A SAFE & ENJOYABLE
LABORATORY EXPERIENCE THIS
SEMESTER.**