Laboratory Safety: Read This Before Undertaking Lab Work

EYES — Safety goggles must be worn at all times while in the laboratory. This is to prevent injury caused by caustic materials or flying shards of glass. If the goggles are in your drawer, on the bench, around your neck, or on your forehead, they will not protect your eyes. Since your eyes would be just as vulnerable to an accident caused by another student, you must wear the goggles even if you are not actively engaged in work. If the goggles fog up, try wiping the inside of the lens with a little diluted liquid soap or a commercial anti-fog material available at ski shops. Never wash them with acetone or other organic solvents.

If you get some caustic material in your eyes, flush them immediately with lots of water. If you cannot open an eye owing to irritation caused by the caustic or stream of water, gently hold the lids apart with your thumb and index finger as you flush. Each of the four sinks in the lab is equipped with a hose. After you have washed out your eyes, seek medical attention.

FIRE — Almost all organic compounds are flammable. Almost all organic solvents are volatile and flammable; keep them away from flames. Diethyl ether (ethyl ether, ether) is especially volatile so keep it far away from flames. If you encounter a small bench-top fire you may be able to smother it with a watch glass, beaker, or similar item. If this is not practical, or the fire is not small, use one of the carbon dioxide fire extinguishers. (The extinguishers in PS 210 are all of the carbon dioxide type.) To use the extinguisher, pull the pin from the handle, aim the horn at the base of the flames, and squeeze the handle. Do not use water on chemical fires. If a person's clothing is on fire, use an extinguisher to smother the flames, but stop as soon as the flames are extinguished (to avoid frostbite and possible suffocation).

If your clothing is on fire, and you are not far from the safety shower use it. You can also use the fire blanket or roll on the floor to extinguish the flames. If you use the fire blanket, do not inhale as you wrap yourself in the blanket to avoid breathing in flames or very hot air.

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CHEMICALS — You should consider all of the chemicals in the laboratory to be toxic; to a greater or lesser extent, they all are. Some are caustic. Depending on the particular material, you can be poisoned by ingesting it, breathing it, or through skin contact with it. Therefore, never taste anything in the lab, never eat anything in the lab, and always wash your hands when you leave the lab for the day. To avoid being poisoned by breathing toxic vapors, it is prudent to minimize the amount of laboratory air pollution. Always turn the fume hoods on when you are working in the lab. If you are carrying out an operation in which vapors (other than those of water or ethyl alcohol) will be released into the air, do it under a hood. If you are keeping a volatile material at your bench, stopper or cover it so it cannot evaporate into the air. If you spill a volatile material wipe it up with paper towels and deposit the towels in a fume hood, not in a waste basket. If you wish to smell a chemical, do so cautiously by wafting the vapor above the chemical toward your nose. Keep your hands out of the chemicals. If you cannot manage this, wear protective gloves. If you get a chemical on you, wash it off immediately with lots of water (and soap, if it is not readily water-soluble). If a large amount of some chemical is spilled on you, quickly remove clothing from the affected area (only a fool would be modest under these circumstances) and flood it with lots of water. This is particularly important if the chemical is absorbed through the skin or is caustic. The following chemicals are quite caustic, unless they are quite dilute: sulfuric acid, nitric acid, hydrochloric acid, acetic acid, and sodium and potassium hydroxide solutions. Bromine and phenol are particularly bad actors. If you get either of these materials on you, wash them off immediately — seconds count! Dimethylsulfoxide, although not caustic, is rapidly absorbed through the skin and may carry toxic materials with it. This list is not complete. Pay attention to the warnings in the experimental procedures and those given by your instructor.

INJURIES — If you are injured in the laboratory, inform your instructor. If the injury is not trivial, seek medical attention. If you are ambulatory and otherwise feel OK, get someone to accompany you to the infirmary. If you do not feel well, get someone to call Public Safety at Ext. 3550 (or red emergency phone in the hall).

PREGNANCY — If you are pregnant, you should consult your physician concerning the advisability of working in an organic chemistry laboratory.

BE PREPARED — 1. Know the location of the fire extinguishers, showers, fire blanket and eye wash facilities. 2. Read and understand the experimental procedure before you arrive in lab. If you don't understand, ask. Executing each step of the procedure without being aware of what could or should happen next, or being unaware of what you should do next, is likely to cause poor results and perhaps an accident.