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Darkroom Safety Reed College March 2014

Introduction

A darkroom is a room that can be made completely dark to allow the processing of light sensitive photographic materials, including photographic film and photographic paper. Working in a darkroom exposes the occupants to many toxic chemicals in a short amount of time and continued exposure to these chemicals can be potentially hazardous to one's health.

General Safety Rules

- ⇒ Limit access to the darkroom. Only approved persons with safety training should be allowed to work in the room.
- ⇒ Read the Safety Data Sheet (SDS) before working with a chemical.
- ⇒ Practice good housekeeping. Keep the work area clean and uncluttered to prevent tripping hazards.
- ⇒ Wet and dry working areas should be clearly separated.
- ⇒ Always segregate chemicals. Do not store acids near reducers, etc.
- ⇒ Use the least toxic chemicals available. Avoid cyanides, heavy metals, and developers containing pyrocatechol or pyrogallol when possible.
- ⇒ Do not store chemicals on the floor. Chemicals should be kept in locations that will minimize the chance of breakage and splashing.
- ⇒ Do not eat, drink, or smoke in the darkroom.
- ⇒ The darkroom should be well ventilated.
- ⇒ Always wear appropriate personal protective equipment (PPE) like gloves and goggles.
- ⇒ Always wash hands with soap and warm water after working with chemicals to avoid possible exposure.
- ⇒ Know how to use emergency equipment before an actual emergency.
- ⇒ **Always Add Acid** to water...Never add water to acid. (Remember "AAA")
- ⇒ Keep a spill kit in the darkroom.
- ⇒ Do not use paper towels or sawdust to clean up acid spills as this may cause a fire.
- ⇒ Clean up all spills immediately to prevent slipping and falling and reduce inhalation of chemicals.

- ⇒ Many chemicals can be flammable. Keep them away from any source of heat or open flame to avoid a possible explosion or fire. Keep a fire extinguisher that can be used for both chemical and electrical fires in the work area.
- ⇒ Pregnant women should not be exposed to powdered developer.
- ⇒ Label all containers.
- ⇒ Keep all containers and trays closed or covered when not in use to prevent the release of toxic gases.
- ⇒ Do not wash any chemicals down the sink.
- ⇒ All spent chemicals should be placed into an appropriate waste container. Dispose of chemical waste in a timely fashion.
- ⇒ Remember, people have varying sensitivities to chemicals. If you have had an allergic reaction to any chemicals, you should pay close attention to the effects that darkroom chemicals have on you and you should be extra careful about following all safety procedures.

Safety Equipment and Information

- ⇒ Fire extinguisher
- ⇒ Spill Kit(s)
- ⇒ Safety goggles, enough for each person using the darkroom.
- ⇒ Nitrile, Neoprene (best for acids/bases) or Rubber gloves.
- ⇒ Tongs
- ⇒ Darkroom Safety Guide

Eye Protection

All persons in the darkroom must wear safety goggles at all times, even when not performing a chemical operation.

Gloves

Nitrile gloves should be worn at all times when working with or near chemicals. Latex gloves do not provide reliable protection because they tend to leak easily. Check to ensure there are no cracks or small holes in gloves before each use. Before leaving the work area, gloves should be removed to prevent the spread of chemicals. Only gloves approved for the use with darkroom chemicals should be used.

Clothing

Clothing worn in the darkroom should offer protection against splashes and spills. The clothing should be easily removable in case of an accident. Aprons or lab coats are recommended to be used in this environment. High-heeled, sandals, open-toes shoes or shoes made of woven material should not be worn. Shorts and miniskirts are also inappropriate when working near chemicals.

Safety Data Sheets (SDSs)

Safety Data Sheets provide specific chemical safety information for the chemicals you are working with. They are required to be available to any individual working with hazardous chemicals. The regulations state that faculty, staff, and students “have both a need and a right to know the hazards and identities of the chemicals they are exposed to when working in any environment. They also need to know what protective measures are available to prevent adverse effects from occurring.”

The information that can be found in a SDS includes:

- ⇒ The identity of the chemical
- ⇒ Physical and chemical characteristics
- ⇒ Physical and health hazards
- ⇒ Primary routes of entry
- ⇒ OSHA Permissible Exposure Limits (PELs)
- ⇒ Carcinogenic status
- ⇒ Precautions for safe handling and use (including personal protective equipment)
- ⇒ Spill response
- ⇒ Emergency and first aid procedures
- ⇒ Date of the SDS

Chemical Safety and Storage

Chemical Inventory

Be sure to determine what chemicals are present in the darkroom. The chemical inventory should include the chemical name and approximate total quantity. Maintaining a chemical inventory will help reduce waste and costs. Chemicals in large containers that are not used frequently can be rendered useless in time by contamination or degradation. The most important step you can take in knowing what you have on hand is to maintain a running inventory of what chemicals are present in the darkroom. Always use older chemicals first.

Handling Darkroom Chemicals

- ⇒ ALWAYS use a water rinse between developer and stop bath
- ⇒ ALWAYS discard stop bath solutions that have been contaminated with developer
- ⇒ ALWAYS add acids to water, not water to acids
- ⇒ ALWAYS cover all baths when not in use (to control the release of toxic vapors)

Appropriate Storage Practices

All chemicals must be stored properly. This includes proper labeling, proper placement (off the floor) and compatible storage containers. Improperly stored containers can result in the following dangerous conditions:

- ⇒ Release of potentially toxic vapors
- ⇒ Degraded containers that allowing chemicals to become contaminated.
- ⇒ Degraded containers releasing vapors that can affect the integrity of nearby containers.
- ⇒ Degraded labels that result in the generation of unknowns. (Deteriorating labels must be replaced before the chemical becomes an unknown.)

Proper chemical storage includes the following practices:

- ⇒ All chemicals must be labeled
- ⇒ Containers must be dated and initialed with they arrive
- ⇒ Older chemicals should be used first
- ⇒ Chemicals must be properly segregated
- ⇒ All containers must have lids on at all times (except when pouring)
- ⇒ Chemicals should never be stored at or above eye level

Chemical Alternatives

There are less--hazardous substitutes for hazardous chemicals used in darkrooms that can be substituted satisfactorily in many cases.

- ⇒ Developer → Phenidone
- ⇒ Stop Bath → Dilute solution of acetic acid (rather than concentrated acetic acid)

Mixing of Chemicals

- ⇒ Read and follow all instructions and safety recommendations provided by the manufacturer
- ⇒ Follow mixing instructions precisely
- ⇒ Avoid mixing powders, use pre--mixes whenever possible. If you have to mix powders, do so in a well--ventilated area with an exhaust fan. Always wear a dust mask when using powdered chemicals.
- ⇒ Take breaks and be aware of any ventilation problems to prevent prolonged exposure to photo--chemicals; prolonged exposure to photographic chemicals increases the risk of developing chronic diseases.
- ⇒ Use the least toxic chemicals available.
- ⇒ Always Add Acid to water, never water to acid