UVM Darkroom Safety Guide

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Contact Information

Environmental Health and Safety	safety@uvm.edu
Chemical and Universal Waste	waste@uvm.edu
Service Operations Support (SOS)	sos@uvm.edu or (802)656-2560
Non-emergency	(802)656-3473 or CatAlert App
Emergency – Police, Fire Department, Medical	911

Guide Overview

This booklet will provide you with the information you need to run a safe and legal darkroom at University of Vermont. This guide contains valuable information that will help photography courses efficiently and safely. Darkroom instructors are responsible for ensuring darkroom users read and understand this guide.

If you have any questions regarding this guide or darkroom safety, please contact Environmental Health and Safety. They assist darkroom supervisors in overseeing darkroom safety in College of Arts and Science and provide technical advice. The darkroom supervisor and professor teaching photography are the primary contact for information about safety training, hazardous waste removal, and other safety concerns.

Training and Documentation

The darkroom in the Art Department is for teaching purposes only. Guidance on safety and best practices must be conducted by the instructor. Students should not work alone in the darkroom without proper guidance and understanding the work alone policy.

The darkroom has SDSs available either in print or online sources. The instructor should have procedures established for students that outline the safety precautions of chemicals and waste disposal.

General Safety in the Darkroom

Safety Equipment

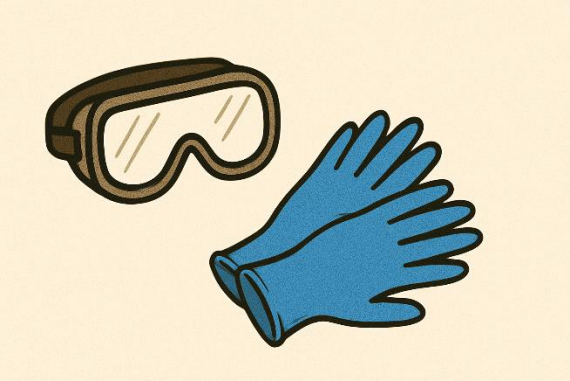
Safety equipment needs to be present and accessible in the darkroom before starting work. The darkroom must have the following:

- Fire extinguisher within distance approved by Fire Marshall
- Spill kits with signage of their location
- Safety goggles for each person
- Nitrile, neoprene or other rubber gloves depending on the chemical hazards
- Tongs
- Hazardous waste handling and pickup information
- Darkroom Safety Guide and Safety Notebook

Personal Protective Equipment

Students must wear appropriate clothing before entering the darkroom. This includes closed-toed shoes with no holes, full-length pants or skirts, and shirts that cover the midriff. Students must be aware that clothes may be damaged if chemicals are splashed and in the case of an incident.

All students in the darkroom must wear safety glasses or goggles at all times; however, goggles should be worn when chemicals are being poured for splash hazards.



At minimum, nitrile gloves must be worn at all times when working with or near chemicals. Latex does not provide adequate protection. Gloves should be inspected for cracks or holes before use and should be removed prior to leaving the darkroom to prevent the spread of chemicals. Please refer to Section 8 of the SDSs for glove compatibility of the chemicals.

Chemical Safety

Safety Data Sheets (SDSs)

SDSs provide specific chemical hazards and safety. The instructor must be able to access this information readily by either having printouts in Laboratory Safety Manual or by online sources. Common hazards of chemicals used in darkrooms are corrosive, flammable, and toxic, so SDSs provide guidance on the appropriate measures of mitigating exposure by these chemicals. SDSs are accessible outside of the darkroom and online on Sprint Systems website (https://www.sprintsystems.com/).

Chemical Inventory

Federal and State regulations require UVM to maintain accurate chemical inventory records. Inventories must be updated at minimum every 6 months by the darkroom supervisor or instructor as emergency personnel utilize inventory to assess the hazards and risks when an incident occurs. The darkroom supervisor or instructor should maintain their inventory in SciShield. (https://uvm.scishield.com)

Only purchase chemicals that are needed and keep inventory to a minimum. Chemicals may be purchased in bulk and should be purchased for what is needed for up to one year when stored in cold storage or up to 6 months at room temperature.

Chemical Handling and Storage

Some general safety practices when handling chemicals in the darkroom are:

- Wear appropriate PPE
- Use water rinse between developer and stop bath
- Discard stop bath solutions that have been contaminated with developer
- Always add acid to water
- Cover all baths when not in use to mitigate toxic vapors
- Do NOT eat, drink, smoke or apply cosmetics in the darkroom

When storing chemicals, be sure caps are closed when not in use; this not only protects the chemical from unwanted materials in them but also keeps vapors from escaping when not in use. The label should be in good condition with full chemical name(s), and the bottle is not brittle or cracked. It is recommended that containers be amber and opaque to prevent premature breakdown of chemicals. Chemical containers should be stored at room temperature or cold environment and in areas where they will not be tipped or knocked over easily. Segregate chemicals by their compatibility and store them in secondary containment. Always store liquids below eye level and off the ground.

Improperly stored chemicals can result in potentially dangerous conditions, including:

- Release of toxic vapors
- Contamination of chemicals
- Degradation of containers that can affect nearby containers
- Generation of unknown chemicals with different hazards

Only handle chemicals when properly trained and the process has been demonstrated. Students are prohibited from working in the darkroom alone. If needing to work in the darkroom alone, additional online training is required for in the case of emergencies. This guidance is supplemental to training if working alone.

Waste Disposal

Improper disposal of these wastes can result in state and/or federal penalties, such as fines, closure of the space, or imprisonment. Environmental Health and Safety will assist with waste disposal to ensure regulations are followed. Used darkroom developer and stop baths may go down the drain since the drain systems at UVM are connected to municipal water systems and can be treated at Burlington Water Treatment Facility. Silver fixator must be collected as waste as directed by Environmental Health and Safety.

https://www.uvm.edu/safety/chemical-waste-management

Silver fixator is toxic and contains ammonium hydroxide that is toxic, has a strong odor, causing irritation to the respiratory tract, and can cause chemical burns. It also contains silver nitrate that is extremely toxic and needs to be disposed of properly to recycle the silver from the solution. Silver fixator needs to be disposed of in the Silver Recovery Processing Unit. The filter in the unit must be changed at the frequency that Environmental Health and Safety deems necessary or as stated in the manual of the unit. Always work with nitrile gloves and goggles when working with silver fixator and unit.

Developer can create toxic fumes when mishandled or mixed with other chemicals that are incompatible. The developer contains solvents, but the ones of most concern are ethylene glycol (<3%), hydroquinone (<3%), and dimethyl formamide (<2%). While at low concentrations, gloves and goggles are recommended when using these solvents as they can still cause skin/eye irritation and sensitivity or allergic reactions when absorbed through the skin. Always use tongs when working with developer.

Stop baths are essentially diluted acid; acetic acid found in stop baths (20-30%) can cause chemical burns when exposed to skin over long periods of time and may increase sensitivity to acids. It is recommended to work in as little concentrations as possible and to use the appropriate amount of solutions. When diluting, always wear proper PPE (goggles, gloves, shirt with long sleeves). Always use tongs when working with stop baths.

Liquid waste needs to be collected for pick up. The supervisor is required to complete waste training on SciShield and students should be advised by the supervisor on how to collect waste. For waste accumulation, the requirements are:

1. Choose a container that is compatible with the contents to be collected and is the appropriate size for waste being collected. Containers of used chemicals can be recycled for waste accumulation as long as they are triple rinsed and the label is defaced. Defacing can be done by using a permanent maker to mark out the chemical name or by removing the label.
2. The container must be labeled with waste accumulation label. It must be filled out entirely with full name of chemicals, accumulation date, and hazards. Please refer to SDSs for hazard in Section 2.
3. Accumulate waste. Containers must be close when waste is not actively being added. When done adding waste and there is enough space in the container to collect later, store waste in secondary containment away from in-use chemicals if possible.
4. The container needs to be tagged for waste when: the container full, it is 6 months old from accumulation date, and/or the container is compromised. The container is considered full when there is approximately 2 inches of headspace.

Tagging waste notifies our waste handlers to pick up your waste. To tag waste, fill out a white waste tag entirely with information on the location of the waste, contact information, date of tag entry, volume of waste (approximate values are fine and must be accompanied by units of liters or gallons), number of containers, full chemical names, and approximate percentages of waste. The tag can be entered as the link below. If you need assistance in waste, you may reach out to waste@uvm.edu or safety@uvm.edu.

Spill Kits

Spill kits are used only for spills of 1 L of liquid or less and contain the following items:

- Spill pads (enough for up to 1 L of liquid)
- Two zip-top plastic bags
- Nitrile gloves
- Chemical waste labels
- Chemical waste tags
- Do not enter sign

To use a spill kit, immediately clean the spill by:

1. Donning PPE (goggles and gloves)
2. Place absorbent pad or pads over the liquid starting from the outside to inside the spill
3. Allow the pad to soak the liquid for at least 30 seconds and place into zip-top bag provided.
4. Wipe down the surface with soapy water and place all debris and gloves into the zip-top bag.
5. Seal the bag and place accumulation label onto bag. Be sure to fill out the label with chemical contaminants and date accumulated.
6. Fill out a waste tag provided and enter into the system.

For spills larger than 1 L, do the following:

1. Evacuate you and others from the space. Place a Do not Enter Sign from the spill kit onto the entrance to the darkroom.
2. If the spill spreads outside the darkroom, evacuate the building. You may need to pull the fire alarm.
3. Once evacuated to a safe space, report the spill by calling SOS or 911.
4. Stay in a safe space until emergency personnel arrive. Additional information will be needed regarding the spill.

When contacting SOS, please provide the following information:

- Building and room number,
- the chemical that was spilled and approximately how much,
- what actions you have taken,
- how the spill occurred,
- if there are any injuries, and
- provide a call back number.

Incident Reports

When spills and/or injuries occur, an incident report must be filed by the instructor. Incident reports can be found at the following link:

https://www.uvm.edu/riskmanagement/incident-and-claim-reporting-procedures

Fill out the information in as much detail as possible and send to safety@uvm.edu

All images in this document are from ChatGPT

The information in this document has been curated from UVM website (https://uvm.edu/safety), pre-existing document on Darkroom Training for campus wide use, and Sprint Systems website.