

Photography Lab Safety Guidelines for Lab Workers & Students

Individuals using chemicals for photo processes must wear:

- Apron
- Safety glasses or goggles, as appropriate
- Gloves: Disposable gloves or reusable gloves (lab or dish type)
- The lab also recommends:
 - Waterproof apron
 - Full length pants (or equivalent)
 - Top that covers torso and arms
 - Closed toe, closed heel shoes

Avoid these common unsafe practices:

- Looking at a container of a chemical by holding it above eye level
- Holding wet film (at any time during the development process) above eye level
- Engaging in darkroom activities without aprons, safety glasses (or goggles), and gloves
- Handling cell phones in the darkroom
- Eating and drinking in the lab areas
- Improper disposal or improper storage of in-use or exhausted chemicals

Potentially Hazardous Material/Tools in The Chemical Photo Lab

- Developer solutions and powders often have high concentrations of alkaline metals. Glacial acetic acid is used in making the stop bath. Both are corrosive by skin contact, inhalation, and ingestion.
- Powdered photo chemicals are easily inhaled before they are mixed. Some of these powders are mutagenic, carcinogenic, teratogenic (capable of causing birth defects), and many are toxic by inhalation, and various pulmonary issues may result. Students are not allowed to mix powdered chemistry.
- If mixed with acid, heated, or cross-contaminated with other photo processing baths, photo chemicals may generate toxic gases like hydrogen selenide, hydrogen sulfide, hydrogen cyanide, (exposure to these gases may be fatal) and others.
- Know the materials you plan to work with. Always review the SDSs for all chemicals used in a process so that you are fully aware of the hazards and how to mitigate those hazards and use the least toxic and least hazardous materials possible.

Developers

Skin and eye irritants, as well as strong sensitizers with direct contact

Most developers are moderately to highly toxic by ingestion

Symptoms after ingestion may include ringing in the ears (tinnitus), muscle spasms (i.e., twitching), nausea, headache, dizziness, delirium, shortness of breath, cyanosis (turning blue from lack of oxygen) due to methemoglobinemia, coma, and convulsions

Stop Bath and Fixer

Concentrated acetic acid is highly toxic to the skin, intestines, and respiratory tract. It can cause dermatitis, ulcers, and irritates the mucous membranes. The final stop bath is slightly toxic to the skin. Repeated exposure to acetic acid vapors by inhalation, even from the stop bath, may cause chronic bronchitis.

Potassium chrome alum or chrome alum (potassium chromium sulfate) can cause dermatitis and allergies, as it is moderately toxic to the skin and respiratory tract.

Cyanotype Solutions

Cyanotype is a photographic printing method that can be safely used at home. Ferric ammonium citrate and potassium ferricyanide are not harmful substances. However, use common sense and always take safety precautions to avoid ingesting or inhaling these substances.

Selenium Toner

Selenium can damage the kidneys and is a skin and eye irritant. Treatment of selenium salts with acid may release highly toxic hydrogen selenide gas, exposure to which can be fatal. Selenium toners also give off large amounts of sulfur dioxide gas (a strong irritant to the respiratory tract, and can be dangerous for people with asthma or bronchitis)

Potassium Ferricyanide for Bleaching

May be harmful if swallowed and cause irritation to skin, eyes, and respiratory tract

Requirements of Handling and Storing Photographic Chemistry

- Take regular breaks for fresh air when working with photo chemistry. Know your limits and listen to your body's signals.
- Do not work in the lab under the influence of alcohol or drugs, or if you are overly tired.
- Do not chew gum or eat in the lab.
- Use tongs, rather than bare hands, to reach into baths and to handle materials removed from baths.
- Wear full PPE (gloves, chemical splash goggles and a protective apron) when handling concentrated photo chemicals.
- Wear appropriate PPE (gloves, chemical splash goggles, lab coat, and acid-proof apron) when handling cleaning acids. **Always add acids to water, never in the reverse when diluting.**
- Store concentrated acids and other corrosive chemicals on low shelves so as to reduce the chance of face or eye damage in case of breakage and splashing.
- Do not store photographic solutions in glass containers.
- Use of corrosive materials and photo chemicals should only occur in locations where there is immediate access (i.e., within 50 ft.) to eyewashes and drench showers.

- Afflicted individual must use the eyewash or safety shower for at least 15 minutes
- Understand the materials you plan to work with. Always review the SDSs for all chemicals used in a process so that you are fully aware of the hazards and how to mitigate those hazards, and use the least toxic and least hazardous materials possible.
- Separate potassium persulfate and other strong oxidizing agents from flammable, organic, reducing agents and even other oxidizable substances.
- Do not heat or add acid to hypochlorite bleaches, as this will generate highly toxic gases.
- Students are not allowed to bring other chemicals or photography products into the lab unless it has been pre-approved by the lab manager.
 - This may cause unknown violent reactions or produce harmful gases
- Students are not allowed to mix chemistry in the lab outside of the usual process of diluting chemistry for standard photographic processes.
- Make sure all containers have been properly washed and dried before and after use to avoid possible contamination or reactions.
- Ensure that ventilation is turned on when working in the lab. Check indicators before starting work.
- Always label containers with chemicals or solutions prior to generation:
 - Include full Chemical Name or solution, do not abbreviate
 - Known hazards (e.g. Flammable, Corrosive, Oxidizing, Harmful, Toxic)
 - Date generated

Disposing of Photo Chemicals

All photo chemicals used at the lab are provided as working solutions that are pre-diluted with water from the original concentrations (powder or liquid types.)

Although Film developing chemicals contain toxic-sounding names like [hydroquinone](#), [phenidone](#), or [p-aminophenol](#), the Kodak developers (D-76, Dektol and HC-110) that the lab uses are safe to be poured down the sink after diluted with water from used working solutions.

Kodak Indicator Stop bath can be reused multiple times and poured down the sink after diluted with water just as developers once it is fully exhausted.

Fixer removes the unexposed silver from the light sensitive materials such as film and photo papers, which is a toxic heavy metal that can harm aquatic life and is difficult to remove through wastewater treatment plants. Silver also bioaccumulates and is extremely difficult and costly to clean up when it enters an environment. Therefore, fixers **must** be stored in designated containers for hazardous waste after use and collected by the EHS specialist.

- Collection containers can never be left unlabeled! Use the campus Yellow hazardous waste label prior to filling it with contents
- Container can only be filled up to approximately 3/4 of its size to prevent overflow issues

- Contact Lab manager to assist with new waste collection vessel

Photo toners and bleach can contain silver after processing prints, and they should be treated just as fixers.

Photo Chemical SDSs

Kodak D-76

<https://www.freestylephoto.com/static/pdf/msds/kodak/Kodak Alaris SDS US English - D76 Developer 1058270.pdf>

Kodak HC-110

<https://www.freestylephoto.com/static/pdf/msds/kodak/Kodak Alaris SDS US English KODAK HC-110 Dev 1058692.pdf>

Kodak Dektol

<https://www.freestylephoto.com/static/pdf/msds/kodak/Kodak Alaris SDS US English - Dektol Developer 1058296.pdf>

Kodak Indicator Stop Bath

<https://www.freestylephoto.com/static/pdf/msds/kodak/Kodak - Indicator Stop Bath - MSDS.pdf>

Kodak Rapid Fixer Type A

<https://www.freestylephoto.com/static/pdf/msds/kodak/Kodak Professional Rapid Fix Part A.pdf>

Kodak Rapid Fixer Type B

<https://www.freestylephoto.com/static/pdf/msds/kodak/Kodak alaris SDS US English - Professional Rapid Fix Part B 1059922.pdf>

Arista Odorless Fixer

<https://www.freestylephoto.com/static/pdf/msds/aristapremium/Arista Premium Odorless Fixer SDS.pdf>

Kodak Photo Flo

<https://www.freestylephoto.com/static/pdf/msds/aristapremium/Arista Premium Odorless Fixer SDS.pdf>

Arista Hypo Wash

<https://www.freestylephoto.com/static/pdf/msds/aristapremium/ARISTA PREMIUM ARCHIVAL WASH SDS.pdf>

Kodak Selenium Toner

<https://www.freestylephoto.com/static/pdf/msds/kodak/Kodak Alaris SDS US English - KODAK Rapid Selenium Toner 1058536.pdf>

Photographer's Formulary Cyano Type Liquid Kit

https://www.freestylephoto.com/static/pdf/msds/formulary/original_liquid.pdf

Potassium Ferricyanide for Bleaching

[https://www.freestylephoto.com/static/pdf/msds/formulary/Formulary -
Potassium Ferricyanide - MSDS.pdf](https://www.freestylephoto.com/static/pdf/msds/formulary/Formulary_-_Potassium_Ferricyanide_-_MSDS.pdf)

Hydrogen Peroxide

https://www.medline.com/media/catalog/Docs/MSDS/MSD_SDSD93901.pdf

Precautions for the Lighting Studio

- Use power strips with surge protection.
- Never daisy chain a surge protector to another one
- Extension cords are to be used only for a max of 90 days and on a temporary basis.
 - Best practice is to always disconnect items when not in use
- Use the heat proof gloves when handling the hotlight heads.
- Do not touch hotlight bulbs.
- Secure light stands with sandbags.
- Secure cables and keep them out of traffic paths.
- Do not place any gel or other diffuser directly on top of the hotlight when it is on.
- Leave enough time to cool down lighting equipment before you place it back in the case or closet.
- Do not use ladders unless you have taken the formal ladder safety training
- <https://www.csulb.edu/college-of-the-arts/safety-college-of-the-arts/school-of-art-safety-programs>
- Be aware of pinching when handling tripods and stands in the studio.
- Strobe units may cause electrical shocks. Be sure you have been properly trained in their use. Discharge the unit before unplugging it.

Precautions for the Digital Print Lab, Grad/Faculty Print Lab, and Reading Room

- Tables, chairs, and printers are on wheels. These wheels can be pinch hazards, and wheels can be crush hazards. Use caution and be always aware of your surroundings.
- Use ergonomics when working on computers or at desks to avoid body and eye strain.
- Take regular breaks from computer and desk work to avoid strain.
- Food and drink are not allowed in lab spaces and must be consumed in the hallway or outside.

Precautions for the Finishing Room

- Heat presses and tack irons can cause burns and need to cool down after use. Be aware of your surroundings and do not touch them when they are hot.
- Mat cutters, rotary cutters, scissors, and X-Acto knives are sharp. Ensure that your hands and fingers are always out of the path of the cut.

- Tie up long hair and ensure that jewelry or accessories do not dangle in the path of a cutting tool or heat press.

Precautions for Student Workers in the Checkout Cage

- Equipment is stored on large rolling shelf units. Wheels can be pinch and crush hazards. Ensure that they stay locked and keep feet and toes protected by closed toe shoes and out of the path of the wheels.
- Only student workers, faculty, and the lab manager are allowed in the checkout cage.
- Unattended children are not allowed in the lab or checkout area due to the presence of chemistry and other hazards.
- The checkout window must be carefully closed to avoid pinch or crush hazards.