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No.35
Revised 11/18/11

EH&S FACT SHEET
Environment, Health and Safety Information for the Berkeley Campus

Photoprocessing

Many chemicals commonly used in photographic processing have hazardous properties. Information provided in this Fact Sheet can help minimize exposure to photochemicals and ensure compliance with applicable environmental, health, and safety regulations.

For copies of documents referenced in this Fact Sheet or for more information, contact the Office of Environment, Health & Safety (EH&S) at 642-3073 or visit our web site at *http://ehs.berkeley.edu*.

Documented training

Cal/OSHA requires that all employees who work with hazardous chemicals, including photochemicals, receive documented training on the hazards they face. Two flip charts developed by EH&S provide essential training requirements and include a section for documenting training. A yellow flip chart entitled *Chemical Hygiene Plan* is required for laboratories; an orange flip chart entitled *Hazard Communication for Non-Laboratory Operations* is required for art studios, shops, and other non-laboratory facilities.

Every room where photochemicals are used must have either the orange or the yellow flip chart filled out completely and posted. Each flip chart includes a section where this fact sheet can be incorporated by reference. Supervisors are responsible for providing training on the location and contents of the flip chart. For more information on training requirements or for copies of the appropriate flip chart, contact EH&S.

Protective equipment

Personal protective equipment (PPE)—including gloves, safety goggles, and an apron—is recommended whenever working with photochemicals. Emergency eyewash stations should be readily available (within a 10-second, unobstructed walk) wherever corrosive or toxic chemicals are used. Contact EH&S for more information regarding Cal/OSHA's requirements for eyewash stations.

Ventilation

Mechanical ventilation should be adequate to control the level of vapors and gases generated during photographic processing. The American Society of Heating, Refrigeration and Air Conditioning Engineers recommends that darkrooms have more than 0.50 cubic feet per minute of outdoor air per square foot of floor space. Kodak recommends 10 room-air changes per hour.

Photoprocessing areas should have adequate exhaust ventilation to prevent airborne chemicals from migrating to other areas. The exhaust from photoprocessing areas should not be recirculated back into the general supply ventilation. Contact EH&S for a ventilation assessment if you have concerns that these conditions are not being met in your lab or darkroom.

To further limit exposure to vapors, dusts, and gases, use premixed photochemicals rather than powders whenever possible, and cover all baths (i.e., stop baths and fixing baths) when not in use.

E H & S UC BERKELEY
Office of Environment, Health & Safety
University of California
317 University Hall #1150
Berkeley, CA 94720-1150
http://www.ehs.berkeley.edu
(510) 642-3073

Chemical storage

Chemicals used in photoprocessing may be incompatible with one another. When mixed, incompatible chemicals can ignite, release toxic gas, or react violently. Examples of incompatible chemicals found in photolabs include:

- Certain fixers, intensifiers, reducers, and bleaching solutions (e.g., sodium bisulfite, potassium ferricyanide, hypochlorite bleach) release toxic gases when mixed with acids.
- Certain photographic reducing solutions containing potassium permanganate or ammonium persulfate are strong oxidizers and may cause fires or react violently when mixed with solvents or other organic materials.

To prevent accidental mixing of incompatible chemicals, follow recommended safe chemical storage practices, including:

- Clearly label all chemicals and spent materials stored in the photolab.
- Separate incompatible chemicals with an approved non-combustible partition, or store them apart from one another.
- Use secondary containment such as dishpans or polyethylene trays for storing containers larger than one gallon.
- Secure storage shelves and cabinets to the wall or another stable surface.
- Shelves should have raised edges or rim guards at least 2 inches high to keep containers from falling.
- Store large containers no higher than 2 feet from the ground.
- Store corrosives and strong eye irritants on shelves below eye level.
- Store chemicals away from sinks, drains, and heat sources.

Review the hazards of the specific chemicals in your lab or darkroom to determine which chemicals are incompatible. Manufacturer labels and Material Safety Data Sheets (MSDSs) are good sources of hazard information. The EH&S publication, *Safe Storage of Hazardous Chemicals* includes a list of common incompatible chemicals and a complete discussion of proper labeling and storage of hazardous chemicals.

Spill procedures

If a chemical spill enters a sink or floor drain during normal business hours (8 a.m. to 5 p.m., Monday through Friday), notify EH&S at 642-3073. After business hours, immediately notify UCPD (642-6760) and ask them to contact the off-hours emergency responder.

You should only clean up minor chemical spills that have not entered the drain and for which you have been trained. Always wear suitable PPE (described above) and use appropriate cleanup equipment. Contact EH&S if you have not been trained to clean up minor spills, if you do not have the appropriate PPE or cleanup equipment, and for all major spills.

Chemical disposal

Most photochemicals do not meet UC Berkeley's Drain Disposal Guidelines and cannot be poured down the drain. EBMUD specifically prohibits the discharge of waste fixer containing silver to the sanitary sewer. Drain disposal of spent developer is permissible only when the developer is not contaminated with fixer or other chemicals.

Blue "No Hazardous Chemicals" sticker is available from EH&S and is required on all sinks in photoprocessing areas. Clearly label unwanted chemicals to ensure that improper disposal does not occur. Contact EH&S for disposal of waste fixer and other chemicals, or submit an electronic request at http://ehs.berkeley.edu/hwp. The Hazardous Waste Management Fact Sheet provides detailed instructions on UC Berkeley's procedures for disposal of hazardous wastes.