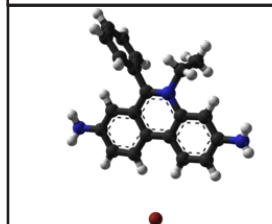
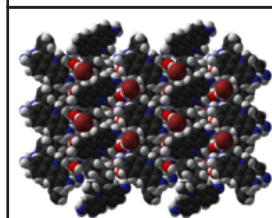


EH&S Facts

Ethidium Bromide (CAS# 1239-45-8)

What is Ethidium Bromide?

Ethidium bromide (EtBr) is commonly used as a non-radioactive DNA stain to identify and visualize nucleic acid bands in electrophoresis and perform other methods of nucleic acid separation. Solutions of EtBr fluoresce readily with a reddish-brown color when exposed to ultraviolet (UV) light. Although it is an effective tool for genomic research, its hazardous properties require special safe handling and disposal.



What are the potential health hazards of Ethidium Bromide?

- EtBr is a mutagen (may cause genetic damage) and is moderately toxic after an acute exposure
- EtBr can be absorbed through skin, and will stain it purple
- EtBr is an irritant to the skin, eyes, mouth, and upper respiratory tract
- Some [alternative stains](#) are less mutagenic and less toxic than EtBr. If the toxicological data is lacking or unclear, handle the stain in the same way as EtBr
- Some alternative stains are suspended in dimethyl sulfoxide (DMSO), which can increase skin absorption of organic compounds

What special laboratory precautions are recommended?

Good laboratory work practices help reduce hazardous exposures.



- ✓ Use dry materials in a fume hood, or choose premixed solutions to avoid inhalation exposure
- ✓ Wear nitrile gloves, a laboratory coat, safety glasses, long pants, and closed-toed shoes. Change gloves **frequently** ([PPE Selection Guide](#))
- ✓ Provide users with safety training on the hazards, use, and proper cleanup procedures
- ✓ Following glove removal, always wash hands
- ✓ [Review Material Safety Data Sheet](#) (MSDS) and this EH&S fact sheet before handling DNA stains
- ✓ Ensure unobstructed access to an emergency eyewash/shower unit in the work area
- ✓ Wear UV-blocking eyewear or work behind a UV shielding glass when using ultra-violet light
- ✓ Store EtBr away from strong oxidizing agents in a cool, dry place, and the keep container undamaged and tightly closed

What should I do in the event of an exposure?

After any exposure to EtBr (via skin, inhalation, ingestion, or eye contact), seek medical treatment:

Occupational Health Facility, Monday - Friday, 7:00 a.m. to 4:00 p.m., located at CHS 67-120, x56771
Ronald Reagan UCLA Medical Center - enter from Gayley Avenue, x52111 (for medical emergency or after hours and on weekends)

Inhalation or Ingestion	In the case of EtBr ingestion, obtain medical attention immediately. If EtBr dust is inhaled, move the victim to a source of fresh air
Eyes	Immediately flush eyes with copious amounts of water for at least 15 minutes, preferably in an emergency eyewash
Skin	In the event of skin exposure, remove contaminated clothing and immediately wash the affected area with soap and copious amounts of water for 15 minutes

What should I do in the event of a spill?

Small Spills of Dilute EtBr Working Solution (<1L)

Small spills that do not enter drains can be cleaned up by laboratory personnel who are aware of the hazards, have been trained on the proper cleanup procedures, and have access to appropriate safety and cleanup equipment. *If you do not have appropriate training or equipment, contact the EH&S Hotline for assistance (x59797).*

1. Wear the proper personal protective equipment (PPE). See the [PPE Selection Guide](#)
2. Wipe up excess liquid with paper towels. Using fresh paper towels, soak the paper towels in ethanol and place ethanol-soaked paper towels over contaminated surface area
3. Sprinkle activated charcoal on the surface
4. Wipe up the ethanol/charcoal mixture with additional paper towels. Place all contaminated spill debris (including paper towels and PPE) into a clear, plastic bag. Seal the debris bag and attach a completed hazardous waste tag
5. Dispose of as hazardous waste through EH&S. (See the [hazardous waste pick-up schedule](#))



Large Spills of Dilute EtBr Working Solution (>1L) **OR** Spills of Concentrated EtBr (100% EtBr)

1. Notify others in the area to stay away. If possible, confine the spill to a small area using a spill kit or absorbent material. Keep others from entering contaminated area with caution tape, barriers, etc.
2. Evacuate the immediate area and prevent entry
3. Call the EH&S Hotline for assistance (x59797)

How do I dispose of Ethidium Bromide and its alternatives?

The table below outlines proper disposal of different staining products used in the preparation of electrophoresis gels. Using the California definition of a hazardous waste, the legal disposal options are summarized for each product.

Product Name	Percent Solution	Hazardous Waste?	Mutagen?	Safety compared to EtBr	Liquid Waste Disposal	Solid Waste Disposal (gels w/stain)
Ethidium Bromide	100%	Yes	Yes	N/A	Hazardous Waste via EH&S	Hazardous Waste via EH&S ¹
Ethidium Bromide	<0.15% (working solution)	No	Yes	N/A	Dispose as hazardous via EH&S	Hazardous Waste via EH&S ¹
SybrSafe	Working Solution	No	Weakly Mutagenic	Safer	Drain	Trash
GelRed	Working Solution	No	No	Safer	Drain	Trash
GelGreen	Working Solution	No	No	Safer	Drain	Trash
EZVision	Working Solution	No	No	Safer	Drain	Trash

¹ Working solutions of Ethidium Bromide, although not hazardous by the State definition, are restricted from drain disposal by campus policy. Because Ethidium Bromide is a mutagen, UCLA does not allow sink disposal of any waste containing Ethidium Bromide. Solutions of Ethidium bromide should be disposed as hazardous waste via EH&S.

Contact Information:
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