

Ethidium Bromide Safe Handling, Disposal, and Emergency Procedures

Ethidium Bromide (EtBr) is a mutagen, a suspected carcinogen and teratogen, and at high concentrations is irritating to the eyes, skin, mucous membranes and upper respiratory tract. The toxic effects of EtBr may be experienced if swallowed, inhaled, or absorbed through the skin. Its hazardous properties require safe handling and disposal procedures.

Safe Handling

1. Review EtBr Material Safety Data Sheet (MSDS) *prior to* handling the material: <https://www.chematix.gatech.edu/Chematix/>.
2. *Nitrile* gloves, eye protection, and a lab coat should be worn at all times (Latex gloves should not be worn when working with EtBr as they do not provide effective protection).
3. When working with high concentrations (i.e. stocks or powder) or for a prolonged period of time, double gloving can further reduce the risk of exposure, especially if the outer glove is replaced whenever significantly contaminated.
4. Preparation of stock solutions and any operations capable of generating EtBr dust/aerosols should be conducted in a fume hood to prevent inhalation.
5. Whenever possible, EtBr should be purchased in sealed rubber capped vials so that it can be hydrated by injecting water through the vial cap without ever opening the vial.
 - If EtBr cannot be purchased as described above, weigh out on draft-protected balance (clean around balance after use, *whether you think you've spilled anything or not*).
6. EtBr fluoresces orange when exposed to ultraviolet light. UV light is harmful to the eyes and skin. When using UV light to visualize EtBr, always wear UV-blocking eyewear or work behind UV shielding glass.
7. Always wash hands thoroughly after handling EtBr, even when gloves are used.

Spills/Disposal Procedures

A minor spill is one where the individual responsible for the spill feels they are capable of handling the spill safely without the use of respiratory protection or the assistance of specially trained emergency response personnel. This may include spills less than 10 mL and generating little aerosol. A major spill is any spill that requires emergency response personnel and/or requires a respirator to avoid inhalation of EtBr. This includes spills more than 10 mL or with considerable aerosol and gel splatters involving large contaminated areas. Clean up spills using *soap and water only!*

1. Individuals should become familiar with proper clean-up procedures before a spill occurs (Spill kits with instructions, absorbents, and protective equipment should be available to clean up minor spills).
2. Locate the spill in its entirety using ultraviolet light. Wear UV-blocking eyewear and skin protection.
 - For minor spills:
 - Control the area of the spill by restricting access.
 - For liquid spills: Clean the contaminated surface from *outside to inside* to avoid spreading the spill.
 - For powders: Place wet paper towels over the spilled material to avoid aerosolizing material. Clean spill from *outside to inside* to prevent spread of contaminated area.
 - Bag cleanup materials in a Biohazard bag and handle as hazardous waste (See Disposal Procedures).
 - Call **GT EHS at 404-894-6224** for hazardous waste pick up
 - Replenish spill clean up supplies.
 - For major spills:
 - Call GT Police (**404-894-2500**) for help (If possible, provide your name, phone number, location, and amount of material spilled).
 - Control the area of the spill by restricting access
 - For fume hood spills, close the hood sash
 - Evacuate the lab
 - Post warning signs
 - Pull fire alarm if necessary
 - Remain on site to speak to first responders

3. Clean up spills using *soap and water only!* Using household bleach for cleanup produces compounds that are more hazardous than the original EtBr. Therefore, BLEACH CANNOT BE USED FOR EtBr SPILLS.
4. Recheck the area with UV light to ensure all the EtBr has been removed. Wear UV protective eye wear.

Disposal Procedures

Ethidium Bromide should be handled and disposed of as hazardous waste. This applies to gloves, pipette tips, test tubes, paper towels, etc. Hazardous waste also applies to stock solutions, crystals and powders, gels, buffer solutions, and contaminated debris.

1. Any materials used to clean up EtBr are considered hazardous waste and must be bagged and/or boxed as such.
2. All EtBr waste containers must be suitable for transportation and must not be leaking.
3. Gels may be disposed of in closeable buckets lined with 2 black or clear plastic bags. Lids must be kept closed when not adding waste.
4. Contact **GT EHS at 4-6224** for hazardous waste pickup or use Chematix to submit a waste pick up request.

Exposure/ Personnel Decontamination Procedures

1. If you are splashed with a chemical on any area of your body, you must rinse that area with copious amounts of *tepid* water for no less than 15 minutes. If you are splashed in an area of your body which cannot be put under a sink faucet and flooded immediately – you must use an emergency shower.
 - If your clothing is involved, remove it on the way to the shower:
 - Shout for help
 - Remain in the shower for 15 minutes
 - Get someone to call the GT police (**404-894-2500**)
 - a) You must have the street address of where you are located
 - b) Have your helper print 3 copies of the MSDS
 - Do not re-don contaminated clothing

- If you are splashed in the eyes:
 - Shout for help
 - Hold your eyelids open with your fingers as you rinse your eyes for a *full 15 minutes* (move eyes up and down and side to side to fully remove chemical).
 - Have your helper watch a clock for you to make sure you continue to rinse your eyes for the *full 15 minutes*.
 - ALL MEDICAL EXPOSURES TO THE EYES REQUIRE MEDICAL FOLLOW UP.
 - EHS recommends you go to Grady Memorial Hospital to ensure proper care.
 - MSDSs
 - Take one copy of the MSDS with you to the hospital
 - Give one copy to the ambulance crew
 - Give one copy to the GT Police or EHS.

2. If inhaled or swallowed, seek medical attention immediately.

*If you have any questions please contact the Any of the following people with the Department of Environmental Health and Safety:

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