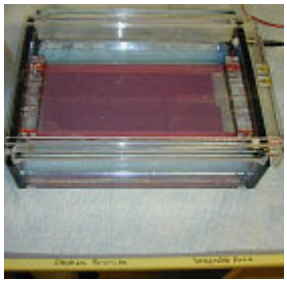
Working Safely with Ethidium Bromide

DESCRIPTION

Ethidium bromide, (Dromilac, homidium bromide), CAS # 1239-45-8, is commonly used in molecular biology laboratories for visualizing nucleic acids using electrophoresis and other gel-based nucleic acid separation methods. Ethidium bromide fluoresces when exposed to ultraviolet light and exhibits a vivid red-orange color when bound to nucleic acids.



HAZARDS

Ethidium bromide is a potent mutagen and is an irritant to the eyes, skin and respiratory tract. Ethidium bromide can be absorbed through exposed skin and mucus membranes.

Personal Protective Equipment

Protective Clothing: Wear standard laboratory apparel including a fully-buttoned lab coat, long pants and closed-toe shoes.

Eye Protection: Wear safety glasses with side shields at all times within the laboratory. Wear chemical splash goggles when there is a splash hazard.

Gloves: Wear disposable nitrile gloves to protect exposed skin on the hands. Wash hands thoroughly after removing gloves.

Special Work Practices

Locations where ethidium bromide is used or stored must be identified as "Designated Areas"

Procedures requiring the use of ethidium bromide powder or having the potential to generate aerosols must be performed in a fume hood. To minimize inhalation exposure, purchase ready-made stock solutions or tablets in lieu of preparing stock solutions from ethidium bromide powder.

During normal use, small spills may occur and residues may build up on equipment and other laboratory surfaces. A solution of soap and water is recommended for cleaning small spills and removing residues on equipment and laboratory surfaces.

Due to the potential for equipment contamination, ethidium bromide-containing agarose gel should not be heated in a microwave.

Emergency Procedures

Eye Contact: Immediately irrigate. Hold eyes open and irrigate for 15 minutes. Obtain medical attention.

Skin Contact: Remove contaminated clothing. Immediately wash affected areas with soap and water. Obtain medical attention.

Ingestion: Obtain medical attention immediately.

Inhalation: Seek medical attention if symptoms develop (wheezing, coughing, shortness of breath, burning in mouth, throat or chest).

Medical Attention: Between the hours of 8:30 AM and 5:00 PM, staff should visit contact Cindy Ferrini at x77853.

Ethidium Bromide Waste Disposal

Ethidium Bromide waste in concentrated or solid form is collected as hazardous waste and should not be flushed down the drain or disposed of in the trash. Waste should properly labeled and handled as follows:

Write the date received and the date opened on all containers of ether. Discard open containers of ether within six months of opening.

Liquids: Small quantities of aqueous solutions containing an ethidium bromide concentration of less than 10 µg/ml (10 ppm) may be flushed down the drain. Non-aqueous solutions and solutions containing an ethidium bromide concentration of greater than 10 µg/ml will be picked up by waste management. Laboratories are responsible for providing small volume waste containers.

Contaminated sharps (needles, syringes, slides, broken glass, etc.): Discard in an infectious waste sharps container clearly labeled "CHEMICAL CONTAMINATED SHARPS-DO NOT AUTOCLAVE". Discard the sharps container as infectious waste without autoclaving when it is 2/3 to 3/4 full.

Solids (contaminated gloves, centrifuge tubes, towels, etc.): Store in a properly labeled translucent polyethylene container for disposal as chemical waste. Do not use glass containers.

Gels: Low concentration gels (< 10 µg/ml) may be wrapped in plastic wrap and discarded in the trash. Higher concentration gels should be disposed of as contaminated solids described above.

Spill Procedures

Small spills of ethidium bromide solutions should be cleaned by laboratory staff. For large spills outside the fume hood, evacuate/restrict access to the laboratory and contact Barb Erwin x70160 for assistance.

Individuals cleaning spills must wear appropriate protective equipment as described in the Personal Protective Equipment section of this document.

Spills of ethidium bromide solutions should be cleaned using absorbent pads followed by surface decontamination using soap and water. Spilled dry material should first be covered with moist absorbent pads to avoid generation of dust.

Ensure all materials contaminated as a result of the cleanup process are collected and disposed of as hazardous waste as described in the Ethidium Bromide Waste Disposal section of this document