WAKE FOREST UNIVERSITY	**Standard Operating Procedure (SOP)**	

ETHIDIUM BROMIDE

Effective Date:	**8/23/2013**	**Revised Date:**	**8/23/2013**

INTRODUCTION

- This SOP applies to Ethidium bromide (EtBr). Ethidium bromide is a non-radioactive marker used in identification of nucleic acid bands in electrophoresis.

GENERAL LAB RULES

1. No eating, drinking, smoking, handling contact lenses, or applying cosmetics in the laboratory.
2. Persons shall wear buttoned lab coat, long pants, safety glasses or goggles and appropriate gloves when working with hazardous chemicals.
3. Mouth pipetting is prohibited; mechanical pipetting devices are to be used at all times.
4. All procedures are performed carefully to minimize the creation of splashes or aerosols.
5. Wash hands
    - after handling chemicals materials,
    - after removing gloves, and
    - before leaving the laboratory.

POTENTIAL HAZARDS

- Ethidium bromide is highly toxic by inhalation.
- Mutagen, suspected of causing birth defects.
- Harmful if absorbed through skin or ingested.

HEALTH HAZARDS

- Ethidium bromide is a potent mutagen and should be treated as a possible reproductive hazard and carcinogen.
- Irritating to mucous membranes, eyes, skin and upper respiratory tract.

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PERSONAL PROTECTIVE EQUIPMENT

EYE PROTECTION

- Safety glasses, goggles or face shields shall be worn during operations in which ETHIDIUM BROMIDE might contact the eyes (e.g., through vapors or splashes of solution).
- When using UV light to identify EtBr contamination, UV-blocking eyewear must be worn.

HAND PROTECTION

- Use disposable nitrile gloves when working with chemicals. Check chemical compatibility chart for breakthrough time when using
- Laboratory personnel should thoroughly wash hands with soap and water before and immediately upon removal of gloves.

LAB COATS, ETC.

- Button lab coats, closed toed shoes, long pants and long sleeved clothing shall be worn when handling ETHIDIUM BROMIDE. Protective clothing shall be worn to prevent any possibility of skin contact with ETHIDIUM BROMIDE.

WORK PRACTICES

- Stock solutions of Ethidium bromide should be prepared in a chemical fume hood.
- Aerosols may be produced during any open handling of dry powder, and during open or pressurized manipulations of solutions. Conduct all operations in fume hood that may produce aerosols.
- Check the work area for contamination using a UV light (EtBr will fluoresce a reddish-brown). If decontamination is needed, try the methods below after wiping up excess liquid with paper towels.
    - Wipe the contaminated area or equipment with fresh towels and a soap/water solution multiple times. You can also wipe with towels soaked in ethanol. Check for any remaining contamination using UV light.
    - Take fresh paper towels soaked in ethanol and place them over the contaminated surface. Sprinkle activated charcoal on the ethanol-saturated towel in contact with contaminated surface. Wipe up ethanol/charcoal mixture with additional towels and place all clean-up materials into a plastic bag. Check for any remaining contamination with UV light and repeat if needed.
    - Use a solution of 4.2 grams of sodium nitrite ($NaNO_2$), 20 milliliters of 50% hypophosphorous acid solution (H_3PO_2), and 300 milliliters of water to decontaminate. Check the area again with the UV light until all EtBr has been removed, then rinse with water. It should be noted that hypophosphorous acid is a DEA listed chemical and may require additional authorization for purchase.

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SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

- Do not store with incompatible material. See SDS for details.

Additional Lab Specific Special Handling/Storage Procedures

WASTE DISPOSAL

- Chemicals shall not be drain disposed unless prior approval is given by EH&S.
- Ethidium bromide may be treated according to protocols established by the Department of Biology.
- Excess ETHIDIUM BROMIDE and all waste material containing ETHIDIUM BROMIDE must be placed in a container labeled with the following **"WASTE ETHIDIUM BROMIDE"**, AND THE FULL CHEMICAL NAME.
  Contact EHS at x3427 for hazardous waste removal.

EMERGENCY PROCEDURES

Emergency Numbers:

Fire and Medical Emergencies	x5911 (911 on cell phone)
Environmental Health and Safety	x3427
Hillcrest Urgent Care (employees)	336-760-8999
Student Health (students only)	x5218
Poison Control	800-222-1222

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FIRST AID

1. If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Call x5911 for medical assistance.
2. In case of skin contact: Take off contaminated clothing and shoes immediately. Wash off in safety shower for at least 15 minutes. Call x5911 for medical assistance.
3. In case of eye contact: Rinse thoroughly with plenty of water at eyewash for at least 15 minutes and call x5911 for medical assistance.
4. If swallowed: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Call x5911 for medical assistance.
5. Call x5911 and describe the extent of injuries.
6. Report all accidental exposures to EHS and Human Resources (employees) or Student Health (students).
7. Complete an online injury/illness report if there is an over-exposure to the chemical or if there is an accident involving the chemical.

SPILL AND ACCIDENT PROCEDURES

SPILL QUANTITY	PROPER SPILL RESPONSE
Spill less than 500 mL	**Contact Environmental Health and Safety (x3427) and clean up spill using spill kit. Avoid breathing vapors. Follow decontamination procedures listed under "Work Practices", above.**
Spill greater than 500 mL	**Do not attempt to clean up spill. Leave the area and immediately report to WFU Police (x5911) and EHS (x3427).**