MATERIAL SAFETY DATA SHEET

1. PRODUCT DESCRIPTION
Product Name: Ethidium Bromide, 5ug/ml
Product Code(s): 21-7420
Size: 1 ml
Chemical Name: 3,8-Diamino-5-Ethyl-6-Phenyl-Bromide
CAS Number: 1239-45-8
Formula: C21H20BrN3
Synonyms: Phenanthridinium
Distributor: Carolina Biological Supply Company
2700 York Road
Burlington, NC 27215
Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS
Principle Hazardous Components: Ethidium Bromide (CAS# 1239-45-8)
0.0005%
TLV and PEL units: Not established

3. HAZARD IDENTIFICATION
Emergency Overview: Harmful if inhaled, swallowed or absorbed through skin.
Potential Health Effects:
Eyes: May cause irritation.
Skin: May cause irritation.
Ingestion: May cause gastrointestinal discomfort.
Inhalation: May cause irritation to respiratory tract.

4. FIRST AID MEASURES
Emergency and First Aid Procedures:
Eyes - Flush with water for at least 15 minutes, raising and lowering eyelids occasionally. Get medical attention if irritation persists.
Skin - Thoroughly wash exposed area for at least 15 minutes. Remove contaminated clothing. Launder contaminated clothing before reuse. Get medical attention if irritation persists.
Ingestion - If swallowed, if conscious, give plenty of water. Immediately call a physician or poison control center. Never give anything by mouth to an unconscious person.
Inhalation - Remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm, quiet, and get medical attention.

5. FIREFIGHTING PROCEDURES
Flash Point (Method Used): No data available
NFPA Rating: Health: 2
Fire: 1
Reactivity: 0
Extinguisher Media:
Use dry chemical, CO2 or appropriate foam.
Flammable Limits in Air % by Volume: No data available
Autoignition Temperature: No data available
Special Firefighting Procedures:
Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.
Unusual Fire and Explosion Hazards: Thermal decomposition produces...
toxic
fumes.

6. SPILL OR LEAK PROCEDURES
Steps to be Taken in Case Material is Released or Spilled:
Ventilate area of spill. Eliminate all sources of ignition.
Remove all non-essential personnel from area. Clean-up personnel should wear proper protective equipment and clothing. Absorb material with suitable absorbent and containerize for disposal.

7. SPECIAL PRECAUTIONS
Precautions to be Taken in Handling or Storing: Keep container tightly closed. Do not breathe dust. Store away from oxidizers.
Other Precautions: Do not get in eyes, on skin, or on clothing.

8. SPECIAL PROTECTION INFORMATION
Respiratory Protection (Specify Type):
A NIOSH/MSHA chemical cartridge respirator should be worn if PEL or TLV is exceeded.
Ventilation:
Local Exhaust: Yes
Mechanical (General): Yes
Special: No
Other: No
Protective Gloves:
Rubber, neoprene, PVC, or equivalent.
Eye Protection:
Splash proof chemical safety goggles should be worn at all times.
Other Protective Clothing or Equipment:
Lab coat, eye wash, and safety shower.

9. PHYSICAL DATA
Molecular Weight: 394.32
Melting Point: 262°C Decomposes
Boiling Point: No data available
Vapor Pressure: No data available
Vapor Density (Air=1): No data available
Specific Gravity (H2O=1): No data available
Percent Volatile by Volume: No data available
Evaporation Rate (H2O=1): No data available
Solubility in Water: Soluble
Appearance and Odor: Dark reddish crystals

10. REACTIVITY DATA
Stability: Stable
Conditions to Avoid: Heat
Incompatibility (Materials to Avoid): Oxidizers
Hazardous Decomposition Products: NOx, COx, Bromine, and Bromine compounds.
Hazardous Polymerization: Will not occur

11. TOXICITY DATA
Toxicity Data: ipr-mus LDLo: 20mg/kg
Effects of Overexposure:
Acute: See section 3
Chronic: Tests on laboratory animals indicate material may
MATERIAL SAFETY DATA SHEET

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TSCA.......Toxic Substances Control Act
produce
adverse mutagenic effects.
Conditions Aggravated by Overexposure: No data available
Target Organs: No data available
Routes of Entry: Ingestion, inhalation or skin contact.

12. ECOLOGICAL DATA
EPA Waste Numbers: None

13. DISPOSAL INFORMATION
Waste Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations.
Always contact a permitted waste disposer (TSD) to assure compliance.

14. TRANSPORT INFORMATION
Poisonous Solid, 6.1, UN2811, III

15. REGULATORY INFORMATION
EPA TSCA Status: On TSCA Inventory
Hazard Category for SARA Section 311/312 Reporting: Acute

<table>
<thead>
<tr>
<th>Product or Components</th>
<th>SARA Sec. 313</th>
<th>SARA Sec. 302</th>
<th>CERCLA</th>
<th>RCRA</th>
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<tbody>
<tr>
<td>Ethidium Bromide</td>
<td>No</td>
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16. ADDITIONAL INFORMATION
The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

Glossary
ACGIH........American Conference of Governmental Industrial Hygienists
CAS Number..Chemical Abstracts Service Number
CERCLA......Comprehensive Environmental Response, Compensation, and Liability Act
DOT.........U.S. Department of Transportation
IARC........International Agency of Research on Cancer
mpccf......million particles per cubic foot
N/A.........Not Available
NTP.........National Toxicology Program
OSHA.........Occupational Safety and Health Administration
PEL........Permissible Exposure Limit
ppm........parts per million
RCRA........Resource Conservation and Recovery Act
SARA.........Superfund Amendments and Reauthorization Act
TLV.........Threshold Limit Value
ETHIDIUM BROMIDE

What is Ethidium Bromide?

Ethidium Bromide (3,8 diamino-5-ethyl-6-phenylphenanthridinium bromide, dromilac), CAS #1239-45-8, is a DNA and RNA polymerase inhibitor used in several of Harvard's laboratories. It is known to be toxic and mutagenic and may be fatal if swallowed, inhaled, or absorbed through the skin. Lesser exposures may cause coughing or sneezing, and irritation of the skin and of the mucous membranes of the eyes and respiratory system.

How Can I Minimize Exposure To Ethidium Bromide?

Several steps can be taken to minimize exposure to ethidium bromide:

Before working with a chemical, know all of the potential hazards and safety precautions (including what to do in the event of a spill);

Wear a lab coat, rubber gloves, and goggles;

Confine all work with ethidium bromide to a properly functioning, uncluttered chemical fume hood -- be sure the hood sash is at the correct height (14"). Chambers or enclosed weighing stations can reduce the effects of turbulence on the performance of scales. Also, consider using pre-mixed solutions or pre-measured quantities;

As with all hazardous substances, work on a disposable mat in the hood, and dispose of used mat properly after work is done (see information below on management/disposal of waste).

What Should I Do In the Event of Exposure or Spills?

In the event of exposure and/or spills, take the following steps:

In case of accidental inhalation, remove to fresh air and get medical attention.

If swallowed, get medical attention immediately by calling the Harvard Police (Cambridge 5-1212, Longwood 2-1212).

For skin exposure, remove contaminated clothing and wash skin with plenty of soap and water for at least 15 minutes; get medical attention.

For eye exposure, wash eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally, then get medical attention.

For spills of ethidium bromide, clean-up spilled material (avoid raising dust) and dispose appropriately (see below for information on management/disposal of waste).

As with all accidents, report any exposure as soon as possible to your Lab Supervisor. Remember that help at night and on weekends and holidays is available through the Operations Center (495-5560). Additional health and safety information on ethidium bromide and other chemicals can be obtained by referring to your Material Safety Data Sheet (MSDSS) file, the MSDS database on the EHS web-page or by calling your building Safety Officer, Lab Safety Coordinator, or the EHS Office.

How Should I Manage and Dispose of Ethidium Bromide Waste?

Ethidium bromide is a mutagen that requires special storage, handling, and disposal as waste. Ethidium bromide waste streams typically include:

Buffer solutions;
Gels; Stock solutions;
Crystals and powders; and
Contaminated debris.

As with any waste generated from activities at Harvard, a concerted effort should be made to minimize ethidium bromide waste wherever possible. Examples of pollution prevention and waste minimization methods include:

Substituting hazardous materials for less or non-hazardous materials;
Using dilute rather than concentrated solutions;

http://www.uos.harvard.edu/ehs/environmental/ethidium_bromide.shtml 02/15/2010