Standard Operating Procedure

For

Use of DMBA in Animals

**PURPOSE:**

This document establishes procedures for the safe handling and use of 7,12-dimethylbenz(a)anthracene, commonly known as DMBA (CAS# 57-97-6) in university Division of Laboratory Animal Medicine (DLAM) facilities. DMBA is a highly potent carcinogen that causes cancer and heritable genetic damage and is used to induce cancer in animal models. Contact with eyes, skin and clothing should be avoided and inhalation of dust must be prevented. Based on the risk associated with the use of DMBA the safety procedures outlined below are required by all research staff and DLAM employees when working with DMBA in DLAM facilities.

**REQUIREMENTS:**

**Animal Housing:**
- All animal work associated with this chemical, will be conducted in the ABSL2 isolation cubicles.
- A “Chemical Hazard” sign should be posted on the entry door to indicate DMBA use.
- The IACUC Chemical Hazard form should be posted on cubicle or entry door to indicate DMBA use.
- Individual cages should be marked with a yellow chemical hazard card.
- Cages where DMBA is administered to the animals should not be changed for 48 hours after last dose. If cages are in need to be changed research personnel will change the animal bedding.

**Administrative Controls:**
- The IACUC “Use of Chemical Hazards in Animals” form should be submitted and approved by EHS prior to working with DMBA in animals.
- Anyone who handles DMBA or works with animals that have been treated with DMBA is required to review this SOP and the attached Material Safety Data Sheet (MSDS) prior to work.
Engineering Controls:
- Procedures that involve handling DMBA must be conducted under exhaust ventilation in a chemical fume hood or ducted Biological Safety Cabinet (BSC).
- Cage changing occurs within a Biological Safety Cabinet (BSC).

Personal Protective Equipment (PPE):
- Standard entry, gowning, and personal hygiene procedures of ABSL2 will be followed.
- Wear double nitrile gloves when preparing or dispensing DMBA solutions
- Safety glasses will be worn when handling DMBA, in the animal holding room and when cage changing as an additional precaution.

Waste Disposal:
- All animal carcasses are to be incinerated.
- Cages are to be autoclaved as per standard ABSL2 procedures.
- Animal bedding is to be incinerated during dosing and for 48 hours after last dose.
- Unused solutions of DMBA and contaminated solid waste will be disposed of as hazardous material (https://s4.its.unc.edu/HazMat_Pickup/)

Accidents or Injuries:
- Animal bites do not pose any increased risk. As per standard policy, report to supervisor.
- If DMBA solution is splashed on an individual or in eyes flush for 15 minutes with copious quantities of water and contact the University Employee Occupational Health Clinic (966-9119).
- Spill procedures:
  - Do not attempt to clean-up if you feel unsure of your ability to do so or if you perceive the risk to be greater than normal laboratory operations.
  - If a small spill occurs absorb with absorbent pads. Double bag contaminated solid waste and submit for hazardous material disposal (https://s4.its.unc.edu/HazMat_Pickup/).
  - If a large spill occurs notify others in the area and evacuate room immediately. Contact EHS (962-5507) during working hours and 911 if after hours.
1. PRODUCT AND COMPANY IDENTIFICATION

Product name : 7,12-Dimethylbenz[a]anthracene

Product Number : D3254
Brand : Sigma
Company : Sigma-Aldrich

3050 Spruce Street
SAINT LOUIS MO  63103
USA

Telephone : +18003255832
Fax : +18003255052
Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Toxic by ingestion, Carcinogen, Teratogen, Mutagen

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H302 Harmful if swallowed.
H316 Causes mild skin irritation.
H350 May cause cancer.

Precautionary statement(s)
P201 Obtain special instructions before use.
P308 + P313 IF exposed or concerned: Get medical advice/attention.

HMIS Classification
Health hazard: 2
Chronic Health Hazard: *
Flammability: 0
Physical hazards: 0

NFPA Rating
Health hazard: 2
Fire: 0
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.
Ingestion Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 1,4-Dimethyl-2,3-benzophenanthrene
DMBA
9,10-Dimethyl-1,2-benzanthracene

Formula : C\textsubscript{20}H\textsubscript{16}
Molecular Weight : 256.34 g/mol

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Concentration</th>
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<tbody>
<tr>
<td>7,12-Dimethylbenz[a]anthracene</td>
<td>57-97-6</td>
<td>200-359-5</td>
<td>-</td>
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4. FIRST AID MEASURES

**General advice**
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**
If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

**In case of skin contact**
Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Special protective equipment for fire-fighters**
Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**
Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe areas.

**Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**Methods and materials for containment and cleaning up**
Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

**Precautions for safe handling**
Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

**Conditions for safe storage**
Keep container tightly closed in a dry and well-ventilated place. Keep in a dry place.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

**Personal protective equipment**

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hand protection**
Handle with gloves.

**Eye protection**
Face shield and safety glasses

**Skin and body protection**
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

**Hygiene measures**
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**
- Form: powder
- Colour: light yellow

**Safety data**
- pH: no data available
- Melting point: 122 - 123 °C (252 - 253 °F) - lit.
- Boiling point: no data available
- Flash point: no data available
- Ignition temperature: no data available
- Lower explosion limit: no data available
- Upper explosion limit: no data available
- Water solubility: no data available

10. STABILITY AND REACTIVITY

**Chemical stability**
Stable under recommended storage conditions.

**Conditions to avoid**
no data available

**Materials to avoid**
Strong oxidizing agents

**Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

**Acute toxicity**
LD50 Oral - rat - 327 mg/kg

**Skin corrosion/irritation**
Skin - mouse - Mild skin irritation
Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
Laboratory experiments have shown mutagenic effects.

Carcinogenicity
This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Possible human carcinogen
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
Laboratory experiments have shown teratogenic effects.

Specific target organ toxicity - single exposure (GHS)
no data available

Specific target organ toxicity - repeated exposure (GHS)
no data available

Aspiration hazard
no data available

Potential health effects
Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion Toxic if swallowed.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.

Additional Information
RTECS: CW3850000

12. ECOLOGICAL INFORMATION

Toxicity
no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
no data available
13. DISPOSAL CONSIDERATIONS

Product
Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 3077  Class: 9  Packing group: III
Proper shipping name: Environmentally hazardous substances, solid, n.o.s.
Reportable Quantity (RQ): 1 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazards
Toxic by ingestion, Carcinogen, Teratogen, Mutagen

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

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Pennsylvania Right To Know Components

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New Jersey Right To Know Components

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California Prop. 65 Components

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<tr>
<td>WARNING! This product contains a chemical known to the State of California to cause cancer. 7,12-Dimethylbenz[a]anthracene</td>
<td>57-97-6</td>
<td>2007-09-28</td>
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16. OTHER INFORMATION

Further information
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.