

**STANDARD OPERATING PROCEDURE**

Tricaine methanesulfonate (MS-222) Benzocaine

According to the Safety Data Sheet (SDS) special precautions must be taken when working with the chemical described above. The following information includes the chemical characteristics of followed by recommendations for handling and any paperwork needed in order to use the chemical in the laboratory. This Standard Operating Procedure will be followed along with the requirements of the Hazcomm Plan.

GHS Classifications: **Signal Words: *Warning***

**Pictograms:** 

Additional Classification: **Potential Hazards**

-Causes skin irritation

- Causes serious eye irritation

- May cause respiratory irratation

**Brief description of proposed chemical work:** Intended for the temporary immobilization of fish, amphibians, and other aquatic, cold-blooded animals. Preparing and handling MS-222 or Benzocaine crystalline solid, stock solutions, use in water, and disposal.

**Section 1: Brief Safety Overview:**

● The Principal Investigator is responsible for training employees using the material on site. The training should include a discussion of the known and potential hazards; an explanation of the relevant policies, techniques and procedures including the proper use of personal protective equipment, emergency/spill procedures and containment equipment (engineering controls).

● Limit access to authorized users.

● Minimize the possibility of inadvertent ingestion, inhalation and direct skin or eye contact with the substance.

● Chemical has been entered in the Chemical Inventory (EHS Assistant)

● Require annual training.

**Section 2: Research Laboratory Procedures**

* **Handling Instructions**

**Procedures of Preparing/Use**

1. Follow label directions for use

2. Put on protective gear (gloves, lab coat or plastic apron, and goggles)

3. Methods of Application **General anesthesia:** - For most situations where rapid or moderately rapid anesthesia is required, may be applied in a bath, i.e., the fish are immersed in the anesthetic solution. Containers may be of glass, plastic, steel, aluminum, or other suitable material. Discard anesthetic solutions when a loss in potency is noted, or when the solutions become fouled with mucus or excrement.

**For surgery and certain physiologic studies,** the fish may be anesthetized to loss of reflex, removed from the anesthetic, and then positioned so that the gills are bathed in a sedating concentration.

**Transport** - Has been used to sedate fish during transport. It is more successful in cold than in warm water, and it is instrumental in reducing injuries because of hyperactivity. The anesthetic solution is prepared in the distribution unit and oxygenated. Then, the fish are added and temperature acclimated.

**Transportation & Storage:**

- Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower.

- Store TRICAINE-S solutions in a cool place away from light.

- Keep container tightly closed.

***Location – Engineering controls***

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

***PPE required:***

In order to select the appropriate PPE for the workplace, a Hazard Assessment is conducted. The Hazard Assessment determines the hazards and potential hazards associated with a task, machinery, or process. The appropriate PPE for the situation may be subsequently determined. Contact OSU EHS for a Hazard Assessment.

When preparing and handling stock and water solutions:

* Nitrile gloves
* Laboratory coat/protective clothing
* Chemical safety goggles
* NIOSH approved respirator, as conditions warrant.

**Cleanup/Decontamination procedures for work area after use:**

**Disposal Procedures**

**Indoor Applications:**

**Solid MS-222** waste (powder or tablets) and stock solutions need to be collected by EH&S as *regulated* chemical waste.

**Liquid MS-222** waste, such as tank water, can be disposed of via sanitary sewer if the liquid solution contains less than a 10% concentration of MS-222. Before disposal, contact OSU EHS, to discuss the contents of the liquid mixture and confirm the appropriate disposal method. Liquid MS-222 waste containing more than a 10% concentration of MS-222 needs to be collected by OSU EHS as regulated chemical waste.

**Outdoor Applications:**

**Solid MS-222** waste (powder or tablets) and stock solution should be brought back to the laboratory and disposed of using the guidance above for indoor applications.

**Liquid MS-222** waste can be disposed of using the guidance above for indoor applications. If a sanitary sewer is not available, the waste must be brought back to the laboratory for disposal. Do not discard MS-222 solution directly into surface water, stormwater conveyances, catch basins, or other natural water sources.

**Section 3: Occupational Exposures**

* **Routes of Exposure**

Potential health hazards to researchers include irritation of the skin and eye upon contact, and respiratory system if inhaled.

* **Occupational Exposure Response and First Aid Measures**

Skin: Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

Eyes: Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

* **Emergency Procedure for Chemical Spills and Accidental Releases**

**Spill Procedures**

**Indoor Applications:**

**Solid spill:** Wear nitrile gloves, lab coat/protective clothing, chemical safety goggles and shoe covers. Wearing an N95 respirator is recommended. Cover spilled material with wetted paper towels or other absorbent material. Wipe up spill with paper towels or other absorbent material and clean spill area with soap and water.

**Water spill:** Wear nitrile gloves, lab coat/protective clothing, chemical safety goggles and boots (as necessary). Wipe up water spill with paper towels or other absorbent material and clean spill area with soap and water.

**Treated Water spill (with recombinant nucleic acids):** Wear nitrile gloves, lab coat/protective clothing, chemical safety goggles and boots (as necessary). Cover spill with paper towels and spray appropriate disinfectant over the towels (e.g. 1: 10 bleach and let set for 20 minutes for chemically treating spills associated with recombinant nucleic acids). Wipe up the spill with paper towels or other absorbent material and clean spill area with soap and water.

Bag all spill cleanup materials for pickup by EHS as regulated chemical waste.

**Outdoor Applications**

During field research, ensure spill equipment materials are available for use. If a spill occurs, contact OSU EHS. Make all reasonable attempts to collect spilled crystalline solids and stock solutions. Bag all spill cleanup materials and bring back to laboratory and request pickup by EHS as regulated waste.

This Standard Operating Procedure must be placed in the Hazard Communication Plan and the SDS must be accessible. Also, all personnel must be familiar with safe handling practices (i.e., training with documentation of training) when working with these chemicals. This must be incorporated into the comprehensive hazcomm plan of the laboratory. If you have any questions regarding a comprehensive mandatory laboratory hazcomm plan, please contact your Representative at Environmental Health and Safety (292-1284). For any other questions or concerns, please contact:

**PI contact information**

Name:

Primary Contact Number:

Emergency Contact Number:

P.I. Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_