Clemson University
Institutional Animal Care and Use Committee (IACUC)

Policy Number: 3.15

Policy Title: Safety Measures During the Preparation of MS222

Section 1: Purpose

Because MS222 potentially causes skin, eye, or respiratory irritation, the IACUC developed this policy to define the minimum safety measures to be taken during preparation of solutions using this chemical. The IACUC evaluates Standard Operating Procedures and/or Animal Use Protocols that describe the use of MS222 for these standards.

Section 2: Scope

This policy applies to all protocol activities that utilize solutions of MS222.

Section 3: Policy

The following are the safety measures required when preparing MS222:

- MS222 powder must not be handled on an open benchtop.
- The preparation of MS-222 into solution, including weighing the powder and mixing, should be performed in a fume hood.
- If a fume hood is not available, please refer to the attached SOP for guidance regarding respiratory protection or consult with Occupational and Environmental Safety.
- Eye protection must be worn during the preparation of MS-222.
- To avoid contact with skin, long pants, long sleeves, and closed toed shoes must be worn.
- Nitrile gloves must be worn, and double gloving is recommended. Use proper glove removal technique (without clean hand touching glove's outer surface) to avoid direct contact with this product. Properly dispose of gloves after use.
- Wash hands after the preparation is complete.

The above safety requirements should be incorporated into facility (or AUP) specific SOPs that describe the preparation and use of MS222. As an alternative, the attached SOP may be used as a template to address the safety component of MS-222 preparation.

These standards were developed from guidance provided by Occupational and Environmental Safety. Please reference the below document from OES for more details.

Department:
Date SOP was written:
Principal Investigator:
Building:
Laboratory: 1
Primary Emergency Contact (Name and Number)
Secondary Emergency Contact (Name and Number):

Tricaine methane sulfonate (MS-222)

Clemson University
Standard Operating Procedure

1. **Working Principle:**
   Describe what this chemical will be used for

2. **Physical and Chemical Properties**
   CAS #: 886-86-2
   Physical State (Form): Solid
   Incompatibilities: Strong oxidizing agents

3. **Health Effects**
   Globally Harmonized System (GHS) Pictograms:

Signal word:
Warning

Hazard statement:

Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation

Precautionary Statements:

Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Do not eat, drink, or smoke when using this product.
Dispose of contents/ container to an approved waste disposal plant.

NOTE: The SDS states "To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated."

4. **Regulatory Review:**

Contains no substances with occupational exposure limit values.

5. **Controlling Exposure:**

The preparation of MS-222 into solution including reconstitution, weighing powder, and mixing should be performed in a fume hood. Do not handle powder on open benchtop. When preparation of the solution occurs outside in the field, prepare solution in a well-ventilated area and position yourself upwind from the mixing location.

Avoid all direct skin contact and inhalation of dust, or mists. Do not get this material in contact with skin. Wear gloves when handling MS-222 and when handling fish or amphibians that have been treated with MS-222.

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Clean equipment and work surfaces with soap and water after use.

After removing gloves, wash hands and other exposed skin thoroughly.

Wear protective clothing to avoid direct contact with the chemical.

Storage: Keep containers tightly closed in a dry, cool, well-ventilated place.

6. **Personal Protective Equipment (PPE)**

Eye/face protection

Face shield and safety glasses or safety goggles when handling powder, use equipment for eye protection tested and approved under the ANSI Z81.1 standard.[1]

Skin protection

Handle with nitrile gloves. Double gloving is recommended. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

[1] Clemson University's lab safety manual states: "All laboratory eye protection must meet requirements set by the ANSI Z87.1 standard. This certification is stamped on the lens or the frame of safety glasses and goggles."

Body Protection

Wear lab coat, long pants and closed toed shoes.

Respiratory protection

Respiratory protection is not anticipated to be needed when using a fume hood to measure powder and mix solution. If a fume hood is not available, do not prepare the solution on an open benchtop without respiratory protection. An N95 respirator should only be used by personnel that are in the Clemson University Respiratory Protection Program and have been trained, medically cleared and fit tested on the N95. For field work, prepare the solution in advance in a fume hood or wearing appropriate respiratory protection and take stock solution into the field. If you must prepare the solution in the field, be in a well-ventilated area or outdoors, positioned upwind from the mixing location.

7. Spill Procedures:

A **minor chemical spill** is one where the lab personnel responsible for the spill feel that they can handle the spill safely without the use of respiratory protection or the assistance of specially trained emergency response personnel. It is not anticipated that a major spill will occur with this product due to the quantity and preparation inside of the designated area.

Minor Chemical Spills

In the event of a minor spill of hazardous material, lab personnel should do the following:

- Alert people in immediate area of spill.
- Wear protective equipment as needed, including safety goggles or face shield, gloves, and lab coat.
- Avoid breathing vapors from the spill. Increase area ventilation by opening windows and doors.
- Confine spill to small area with absorbent materials such as paper towels.
- Collect residue and related clean up debris in container, properly mark container to identify contents, attach ORS waste container label and follow the waste disposal procedures in this SOP Section 8.
- Clean spill area with soap and water or disinfectant.

8. Waste Disposal:

Dispose of used MS-222 solution and any clean-up materials, and other supplies that have been in contact with MS-222 in a separate container. Label containers of MS-222 waste with the words “Hazardous Waste, MS-222 skin irritant and percent.

Always keep lids on the waste container unless they are in use. For questions regarding hazardous waste disposal contact the Hazardous Materials Manager, 864-633-6357 or email juneb@clemson.edu.

9. **Emergency and first aid measures:**
   Emergency Procedures:

   - **For Main campus, contact CUFD at 911 or 656-2222.**

   General advice

   Consult a physician. Show the safety data sheet to the doctor in attendance.

   If inhaled

   If breathed in, move person into fresh air. If not breathing, give artificial respiration. Seek medical attention.

   In case of skin contact

   In case of skin contact, wash the affected area with soap and water for at least 15 minutes. Seek medical attention.

   In case of eye contact

   Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Continue rinsing. Seek medical attention.

   If swallowed

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

10. **Lab-Specific Procedures:**
    Refer to lab-specific SOPs where applicable.

11. **Documentation of Training** (signature of all users is required)
    Prior to conducting any work with MS-222, designated personnel must provide training to his/her laboratory personnel specific to the hazards involved in working with this substance, work area decontamination, and emergency procedures.

    - The Principal Investigator must ensure that his/her laboratory personnel have completed all required safety training.

I have read and understand the content of this SOP:

Name	Signature	Date