



Tricaine methanesulfonate (MS-222, TMS) Fact Sheet

This fact sheet is for general safety awareness. Individual Standard Operating Procedures (SOPs) for all experiments and processes involving MS-222 must be developed by the laboratory. For assistance developing the SOP for sedation or euthanasia of aquatic species, contact dlar@umd.edu.

INTRODUCTION

MS-222 is a widely used anesthetic for aquatic species. Pharmaceutical grade MS-222 working solutions must be made fresh for each use and buffered to a neutral pH for all intended uses on live vertebrate aquatic species.

Principal Investigators are required to assess the exposure hazards of their work with MS-222 to determine the appropriate precautions and controls to be taken to develop a safe procedure. Principal investigators must provide researchers laboratory-specific training for the preparation and administration of this anesthetic prior to use. The Safety Data Sheet (SDS) must be readily available in the laboratory.

PROPERTIES & HAZARDS

Section 2 – Hazard Identification of the SDS for MS-222. More information on material hazards can be found in complete hazard and precautionary statements.

Hazard Classification and Category	Pictogram	Hazard Statement
Skin Irritation (Category 2), Eye Irritation (Category 2A), Specific target organ toxicity - single exposure Respiratory system, (Category 3), Acute aquatic toxicity (Category 3) Chronic aquatic toxicity (Category 3)		Causes skin irritation Causes serious eye irritation May cause respiratory irritation Harmful to aquatic life with long lasting effects

PREPARATION

Preparation must be completed in a certified fume hood. Any laboratory that intends to use MS-222 but does not have access to a fume hood must reach out to the Office of Research Safety for guidance. The greatest exposure risk comes from handling the dry powder. MS-222 can be handled outside of the fume hood once mixed into solution.

Personal Protective Equipment (PPE)

Disposable gloves and lab coat must be worn when working with powder form MS-222. When working with solution, wear nitrile gloves, a lab coat, a facemask, and eye protection (goggles or face shield for splash protection). Laboratory workers must wear clothing that leaves no exposed skin on legs or feet and closed-toe shoes that fully cover the top of the foot.

Waste

MS-222 must not be released into the environment. Any leftover solution or solid material must be submitted to Environmental Safety, Sustainability and Risk (ESSR), Environmental Affairs (EA) for pickup and disposal as hazardous chemical waste. Contaminated solids (PPE, paper towels, etc) can be disposed as non-regulated solid waste. Contaminated sharps must be placed in a sharps container and submitted to EA for pickup and disposal. For questions regarding waste management contact ESSR, Environmental Affairs at envaffairs@umd.edu.

First Aid/Spills

In case of accidental exposure to MS-222: Address the exposure as described below and seek medical attention at the University Health Center (UHC) or local hospital if after hours/weekend or holiday. Report incident to supervisor and submit an injury report to ESSR. Bring the SDS for medical personnel to reference.

1. **In case of contact with skin**, immediately remove any contaminated clothing and wash skin with soap and water for at least 15 minutes.
2. **In case of contact with eyes**, immediately flush the eye and inner surface of eyelid continuously with water for 15 minutes. **Do not rub eyes**. If contact lenses are present, remove them if easy to do so after several minutes of rinsing, then continue rinsing eyes for 15 minutes.
3. **In case of contact with mucus membranes**, flush exposed area continuously with water for 15 minutes.
4. **If inhaled**, remove person to fresh air and keep comfortable. If reaction is severe, call 911, otherwise seek medical attention at the University Health Center and report incident as directed above.

UHC Contact information During business hours: 301.314.8184. After business hours: 301.314.9386.

In the event of a spill – Alert personnel in the immediate area and don appropriate protective equipment, including chemical splash goggles, appropriate gloves, and lab coat. Use appropriate spill kit to absorb the spilled material, and place clean-up materials in a bag labeled as hazardous waste. Call ESSR for advice as needed at (301) 314-2000.* Refer to the Emergency Response Guide: <https://essr.umd.edu/emergency-response-guide>

*Note: ESSR staff are on-call 24 hours a day, seven days a week. During regular business hours, this number will be answered by ESSR. After regular business hours, it will be answered by the University of Maryland Police Department, who will contact appropriate ESSR on-call personnel.

REFERENCES AND ADDITIONAL RESOURCES

1. OSHA [A Guide to the Globally Harmonized System of Classification and Labeling of Chemicals \(GHS\)](#)
2. OSHA [Occupational Exposure to Hazardous Chemicals in Laboratories](#)
3. Sigma-Aldrich Safety Data Sheet for MS-222, Version 4.4, Print date 11/10/2018
4. University of FL EHS Fact Sheet <https://www.ehs.ufl.edu/wp-content/uploads/2021/06/MS-222-Fact-Sheet.pdf>