

Animal Care and Use Program | Occupational Health and Safety

Guidance for the Use of Tricaine Methane Sulfonate (MS-222)

Purpose

Tricaine Methane Sulfonate (MS-222) is commonly used as an anesthetic and euthanasia agent for fish and other aquatic species. MS-222 does not meet the OSHA classification as a toxic chemical but is considered an irritant to the eyes, respiratory system, and skin. This document provides guidance on the safe use of MS-222.

Safe Use of MS-222

- Avoid contact with the skin. Wear lab coat or protective clothing and gloves when handling MS-222 or animals exposed to MS-222.
- Avoid contact with the eyes. Wear safety glasses when working with MS-222 to avoid incidental eye exposure to the irritant. This includes both the powder and solution form. If there is a high risk of splash, use splash goggles.
- If possible, work inside of a fume hood to prepare a concentrated stock solution by mixing the appropriate amount of MS-222 powder in a small volume of water.
- If you must work outside of a chemical fume hood in a laboratory, carefully weigh the solid in a location that has minimal air turbulence or disturbance. Use of a top loading balance could be used to further minimize air disturbance. A closed room will also limit air disturbance.
- If you must prepare the MS-222 in the field, don PPE and work in a well-ventilated area. Avoid working with the powder in a location that could cause the powder to blow into your breathing zone or unprotected skin.
- It is a good practice to pre-weigh amounts of MS-222 into vials that can then be transferred into the desired volume of water at the desired field location. For example, 2 g of MS-222 is an amount that is often used to dissolve in 5 gallons of water to yield a concentration of about 100mg/liter (see References below).
- The use of a particulate respirator such as an N-95 is not required for typical use of MS-222 in research labs or in the field. Use of an N-95 will provide additional protection in the event of an accidental aerosolization, however under most conditions using careful transferring procedures there is a minimal potential of exposure to pure MS-222. If you wish to wear an N-95 while working with MS-222, you must be enrolled in the campus Respiratory Protection Program. For more information, please call the Animal Care and Use Program OHS Specialist.
- Do not discard MS-222 directly to surface water, storm drains or catch basins.

Disposal of unused MS-222

It is important to only generate the amount of MS-222 solution you need to perform the protocol. When using MS-222 on campus, all unused or expired MS-222 powder and aqueous solutions must be properly disposed through DRS. The following UI# can be used to [submit a waste request](#).

For solid MS-222 use UI# 6018 TRICAINE METHANESULFONATE (ETHYL 3-AMINO BENZOATE METHANESULFONATE).

For aqueous solutions use UI# 213427 TRICAINE METHANESULFONATE (ETHYL 3-AMINO BENZOATE METHANESULFONATE), WATER.

While working off campus or in the field, MS-222 waste solution with a pH between 6-10 may be disposed of by flushing the solution down the drain to a sanitary sewer with excess water. Solid MS-222 (powder or tablets) should be returned to campus for disposal through the DRS waste program.

If you have any questions or are unsure if your location is considered to be on-campus or off-campus, contact the Division of Research Safety for instructions on proper disposal.

	Working on campus in Champaign-Urbana	Working at a Site Off-Campus or in the Field
Disposal of unused (expired) MS-222 powder	Disposal through DRS	Disposal through DRS
Disposal of Unused (excess) Aqueous MS-222	Disposal through DRS	pH between 6-10 can be flushed down sanitary sewer with excess water

Standard Operating Procedures

Each experimental protocol may have a slightly different need or procedure for the use of MS-222. Standard Operating Procedures (SOPs) for the specific use of this chemical should be documented in your safety plan. This includes but is not limited to where materials will be measured, where the solution will be made, concentrations of solutions and how to acquire them, type of protective clothing used, how to respond if an exposure occurs at the research location or laboratory and any deviations from the above guidance.

If you have any questions or concerns, please contact the Animal Care and Use Program OHS Specialist at 217-244-0781 or Division of Research Safety at 217-333-2755.

References:

Syndel USA, Tricaine-S SDS, Retrieved October 11, 2019

https://syndel.com/wp-content/uploads/2019/01/tricaine_s_sds.pdf

Syndel USA, Tricaine-S, Instructions Sheet, Retrieved October 11, 2019

<https://syndel.com/wp-content/uploads/2019/01/Tric-S-Insert-101118-FINAL-updated-per-email.pdf>