



<b>Research Office Laboratory Animal Resources Center (LARC)</b>	<b>Subject:</b> Tricaine methanesulfonate (MS-222) SOP: Preparation and Labeling	<b>Date:</b> IACUC Approved 11/2011, 10/2014, 07/2015, 10/2019
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**Tricaine methanesulfonate (MS-222)** is an anesthetic agent used in aquatic animal species for the sedation, anesthesia, and euthanasia of fish, amphibians, and other aquatic, ectothermic animals. It is recognized as a valuable tool for the proper handling of these aquatic species during manual spawning (fish stripping), weighing, measuring, marking, surgical operations, transport, photography, and other research procedures.

*Animals euthanized with MS-222 cannot be used for human consumption.*

There is one **FDA-approved** source for MS-222:

Syndel's TRICAINE-S (MS-222, TMS, Tricaine methanesulfonate)

See Syndel's [Directions for Use](#), [Dosage Chart](#), & [SDS](#)

FDA-approved TRICAINE-S was previously manufactured by Western Chemical. Stocks of Western Chemical TRICAINE-S may still be used, provided they are within the manufacturer-labeled expiration date.

FDA-approved MS-222 must be used for anesthesia and euthanasia procedures, unless otherwise approved as an exception by the IACUC.

**Procedures and Guidelines:**

Principal Investigators approved to use Tricaine methanesulfonate (MS-222) in animal studies agree to follow the procedures below. The PI provides this information to their research staff and students who work with MS-222.

- a. Those handling MS-222 powder indoors must work within in a certified fume hood or while wearing a fit-tested respirator. Gloves and eye protection must also be worn.
- b. Those handling MS-222 powder in the field must work in an outdoor open area and wear gloves and eye protection.
- c. MS-222 solution must be **buffered** with sodium bicarbonate, resulting in a solution of pH 7.0 - 7.5.
- d. **Stock/concentrated solution** is kept frozen and shielded from light (freezer; tin foil or amber bottles), and labeled with the original container expiration date.
- e. **Working solution** is kept refrigerated and shielded from light and labeled with the expiration date. Refrigerated solution expires 30 days to one (1) month after the preparation date. Discard the solution if there is a change in color, regardless of the expiration date.
- f. **Expiration Dates**
  - TRICAINE-S - the expiration date is the 6 digit lot number on the original container: MMDDYY. The expiration date is 3 years after production.
  - If any another previously FDA-approved MS-222 product is in use and does not appear to have an expiration date on the bottle, it should be marked with an expiration date 3 years after receipt into inventory, unless otherwise directed by the manufacturer.

- g. **MS-222 disposal** – please contact [EH&S](#) for chemical waste pick-up, or to speak with the Chemical Hygiene Officer.

**References:**

Noga, E.J. 2010. *Fish Diseases: Diagnosis and Treatment*. Wiley-Blackwell, Inc, Ames Iowa, USA. pp. 417 – 418.

2013 American Veterinarian Medical Association (AVMA) Guidelines for the Euthanasia of Animals