**IACUC SOP on MS-222**

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| **IACUC SOP #:**none | **Original Date Issued:**3/18/2011 | **Current Date Issued:**August 22, 2022 |
| **Approved by:**  Dave Casper, veterinarian; IACUC, August 19, 2022 |
| **Revision, review, and approval history:** updated July 2022, added IACUC statements and SDS link, clarified safety terms, clarified disposal processes (checked the sanitary sewer ordinance for Santa Cruz and there's no prohibition to sewer discharge) |
| **Scope** | all personnel utilizing MS-222 |
| **Responsibility** | IACUC Office, AV |

***PURPOSE:***

To outline the use, precautions, and disposal of tricaine methanesulfonate or MS-222.

***INTRODUCTION:***

Tricaine methanesulfonate (TMS or MS-222) is a drug approved for the temporary immobilization of fish, amphibians, and other aquatic cold-blooded animals.

MS-222 has been recognized as a valuable tool for the proper handling of these animals during manual spawning (fish stripping), weighing, measuring, marking, surgical operations, and transport.

Pharmaceutical grade, FDA-approved MS-222 (i.e., **Finquel or Tricaine S**, as below) must be used in procedures associated with IACUC-approved protocols.

***IMPORTANT REGULATORY NOTE:***

The use of MS-222 in fish intended for human consumption is restricted to the following families: Ictaluridae (catfish), Salmonidae (salmon and trout), Esocidae (pike), and Percidae (perch). There is a mandatory 21-day withdrawal time before harvest. In other non-food, aquatic, cold-blooded animals, the drug should be limited to hatchery or laboratory use (21 CFR 529.2503).

These drugs are approved as OTC (over the counter) products, and a prescription is not required. There is no tolerance level set for residues in fish tissue.

***SOURCE OF PHARMACEUTICAL GRADE MS-222:***

Finquel® and Tricaine-S Finquel® are supplied by Argent Laboratories, Redmond, WA.

Tricaine-S is supplied by Snydel USA (Ferndale, WA) and Syndel Canada, as well as various distributors (Pentair Aquatic Eco-Systems).

***RESPONSIBILITIES:***

When handling MS-222, users (research staff and others) shall follow standard procedures as listed below and follow all safety precautions.

A. Review the material safety data sheet (SDS) associated with MS-222 prior to any work involving MS-222 or animals exposed to MS-222. The SDS is available here: <https://syndel.com/wp-content/uploads/2019/01/tricaine_s_sds.pdf>

B. Always wear protective clothing (lab coat, gloves, and goggles) when handling MS-222 or animals exposed to MS-222.

C. All work with MS-222 powder must be performed inside a chemical fume hood. Solutions of MS-222 are much safer.

D. Waste MS-222 reagent (solid) or concentrated stock solutions (concentration > 1 mg/L) will be disposed of as hazardous waste. Working solutions of MS-222 (concentration < 1 mg/L) may be disposed in the sanitary sewer. Hazardous waste regulations specifically prohibit dilution of a material for the purpose of making it less hazardous.

E. Working solutions of MS-222 (concentration < 1 mg/L) is **not** to be disposed into the Long Marine Lab (LML) seawater system.

F. When in the field working under a California Department of Fish and Wildlife (CaDFW) scientific collecting permit, researchers may dispose dilute working solutions of MS-222 (concentration < 1 mg/L) into the field environment, provided the total quantity of MS-222 disposed in one day is less than 1 mg. If the total quantity of waste MS-222 in one day is 1 mg or more, the total amount of waste MS-222 solution must be returned for proper disposal.

G. In the case of spill or exposure to MS-222, contact the supervisor and the PI immediately and the supervisor and PI should then contact EH&S. In the case of accidental human exposure take these indicated actions:

1. Exposure to eyes: check for and remove any contact lenses, flush exposed area with water for no less than 15 minutes
2. Contact on skin: wash exposed area with water and non-abrasive soap
3. Inhalation: remove victim to a well-ventilated area
4. Ingestion: do not induce vomiting
5. Contact medical services if needed.