

## **The Aquarium Complex**

### Disease Prevention and Treatment Protocol

The following are protocols required to prevent the introduction and spread of disease within The Aquarium Complex. Negligence in not following these protocols will result in disinfection of the system to be charged to the researcher responsible for the breach. Supervisors are responsible to ensure that students follow the developed protocols.

All fish must be treated for parasites using the following formalin bath protocol PRIOR to introduction to any MARFU system: This applies to all animals before they are introduced into MARFU from external sources **AND** when moved within the facility i.e., from one system to another.













### MARFU Formalin Treatment Protocol for Marine Finfish:

**250ppm Formalin (37% w/w formaldehyde) for no less than 45 minutes.**

Notes on Formalin before you begin:

- Formalin is a reducing agent that will absorb oxygen from water; in addition, it is also toxic to fish gills and will lower the efficiency of gaseous exchange. For this reason, only well-aerated water should be treated and treatments should never be done with water >28 degrees Celsius.
- Used formalin solutions should be diluted to at least 25 ppm before discarding. Your friendly MARFU technicians are happy to dispose of used formalin solutions for you but working solutions should always be kept to a minimum practical volume. Do not dose 100L of seawater if you only need to treat one fish!
- Formalin is volatile and irritating. It causes cancer in laboratory rodents and can cause contact hypersensitivity and lung damage in humans; solutions should be tightly sealed during storage and not allowed to contact human skin.
- Formalin should only be used in well-ventilated areas.
- Formalin is a clear solution, if you notice any white precipitate do not use and inform MARFU staff.

**PERSONAL PROTECTIVE EQUIPMENT** - The following PPE is necessary to complete the task.

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Equipment you will need:

MARFU graduated formalin treatment tank and air stone

Formalin

Formalin mixing jar

Syringe or pipette for measuring your dose

Gloves

Safety glasses

Treatment protocol:

- Using the MARFU formalin treatment tank, decide on a volume of water to the nearest 20 litres that is appropriate for the biomass that you are treating. Fill the tank to that mark using a mixture of the water that the fish are coming from and going to. Note- fish should not be exposed to a temperature change of >2 degrees Celsius.
- Introduce the fish to be treated into the treatment tank using your standard fish handling procedures.
- Calculate the formalin dose required to achieve a concentration of 250ppm (25mL formalin per 100L of seawater). See Appendix A.
- Wearing all appropriate PPE; Use a syringe or pipette to measure out the required dose of formalin and add it to the formalin mixing jar along with an equal amount of seawater.
- Put the lid on the mixing jar firmly and shake the solution vigorously to combine the two liquids
- Using a syringe or pipette, draw this mixed solution out of the mixing jar, inject it beneath the surface of the water in your treatment tank, and start a timer for 45 minutes.
- You must have clean fish handling equipment to use post treatment, if you plan to use the same equipment i.e. nets, buckets, gloves etc. these items also need to be in the formalin bath.
- At the end of the 45 minute treatment move all fish into their new homes. Be sure to briefly remove the air stone so you can be certain that no fish remain in the treatment tank.
- Ask your friendly MARFU technician to dispose of any used formalin solutions for you.

**Appendix A** – Determining the dose of formalin required to achieve 250ppm

Using the following formula:

$$C_1V_1 = C_2V_2$$

Where:

$$C_1 = 1000$$

$V_1$  = Formalin dose in mL

$$C_2 = 250$$

$V_2$  = Your volume of seawater to be treated in litres

Example – You want to make up a 60 litre batch of seawater to 250ppm formalin

$$C_1 = 1000$$

$V_1$  = Amount of formalin required in mL

$$C_2 = 250$$

$$V_2 = 60$$

$$C_1V_1 = C_2V_2$$

$$1000 \times V_1 = 250 \times 60$$

$$V_1 = \frac{(250 \times 60)}{1000}$$

$$V_1 = 15\text{mL}$$

∴ 15mL of formalin is required to make a 250ppm concentration in 60 litres of seawater

## MINI SDS

## FORMALDEHYDE

INGREDIENTS	CAS NO	%	8HR OEL
Formaldehyde	50-00-0	37-50 *	1.2 mg/m <sup>3</sup>

GHS	DG
	UN No: 2209 Hazchem Code: •2X DG Class: 8 Subsidiary Risk: Not Applicable Packing Group: III Poisons Schedule: AS6

## HEALTH HAZARD INFORMATION



Signal word: Danger

Hazard statement(s):	Description
H227	Combustible liquid.
H290	May be corrosive to metals.
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H330	Fatal if inhaled.
H402	Harmful to aquatic life.
H317	May cause an allergic skin reaction.
H350	May cause cancer.
H371	May cause damage to organs.
H314	Causes severe skin burns and eye damage.

## PRECAUTIONS FOR USE



Appropriate engineering controls:	Local Exhaust Ventilation recommended.
Glasses:	Consider chemical goggles. Consider full face-shield.
Gloves:	1.BUTYL 2.NEOPRENE/NATURAL
Respirator:	Type BAX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)
Storage and Transportation:	Store in cool, dry, protected area. Restrictions on Storage apply. Refer to Full Report. Dispose of this material and its container at hazardous or special waste collection point. Keep locked up. Keep out of reach of children. Keep away from living quarters. Keep away from food, drink and animal feeding stuffs.
Fire/Explosion Hazard:	Vapours/gas heavier than air. Toxic smoke/fumes in a fire. Attacks metals to liberate hydrogen. Dispose of this material and its container at hazardous or special waste collection point. In case of fire and/or explosion, DO NOT BREATHE FUMES.
Environment:	Harmful to aquatic organisms.

## PROPERTIES



Liquid. Mixes with water. Corrosive. Combustible.

## EMERGENCY



## FIRST AID

Swallowed:	Give water (if conscious). URGENT MEDICAL ATTENTION.
Eye:	Wash with running water (15 mins). Medical attention.
Skin:	Flood body with water. Remove contaminated clothing. Wash with water
Inhaled:	Fresh air. Rest, keep warm. If breath shallow, give oxygen. Medical attention.
Advice To Doctor:	Lavage up to 15 mins post- ingestion. Decontaminate with milk/water containing ammonium acetate. Emesis.
Fire Fighting:	Water spray/ fog.
Spills and Disposal:	Eliminate ignition sources. Prevent from entering drains. Contain spillage by any means. Absorb with dry agent. Stop leak if safe to do so. Dispose of this material and its container at hazardous or special waste collection point. This material and its container must be disposed of in a safe way. To clean the floor and all objects contaminated by this material, use water.

## SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



x — Must not be stored together  
 0 — May be stored together with specific preventions  
 + — May be stored together