What to do if you suspect palytoxin poisoning

The main symptoms of palytoxin poisoning following exposure either via the skin, eyes or by inhalation are:

Fever (more than 38°C), cough, headache, difficulty breathing, sore throat, runny nose, chest pain, rapid heart rate, skin redness/rash, swelling, numbness/tingling, muscle pain, irritation of the eye, sensitivity to light and conjunctivitis. Additional indicators may include the detection of a foul smell or a bitter/metallic taste in the mouth.

It is important to note that currently there have been NO fatal cases involving marine reef aquarists and palytoxin poisoning recorded. However, the symptoms of palytoxin poisoning can develop quickly following exposure. If you suspect palytoxin poisoning has occurred, you should seek urgent medical attention and advise medical staff that you have been handling corals and that palytoxin poisoning is suspected.

Inactivating palytoxin

Palytoxin can be inactivated by household bleach (sodium hypochlorite). Regular ('standard') household bleach is typically sold at a concentration of 5% sodium hypochlorite. This should be used (i.e. standard, unscented household bleach) and not the gel-type/thick household bleach, when preparing a bleach solution. A suitable solution can be made from one part household bleach to nine parts water. Surfaces/equipment which have had contact with palytoxin can be cleaned using the 1:9 bleach to water solution. Be aware that household bleach can give off chlorine gas and should therefore never be used in addition with other household cleaners and should be used in a well ventilated room.

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Image on front cover: a common *Palythoa* species. Image courtesy of Julian Sprung.

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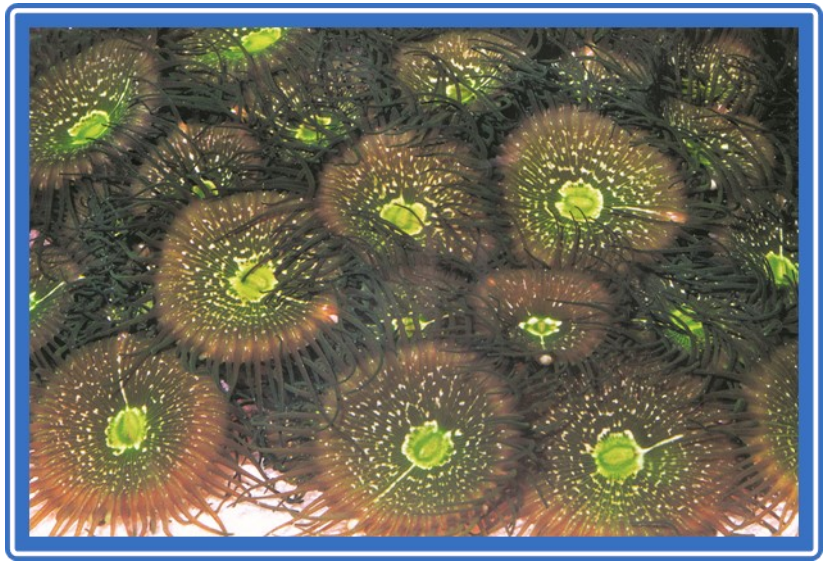
Recommendations to marine reef aquarists on how to prevent palytoxin poisoning



Introduction

Although rare occurrences, there have been a number of incidents reported worldwide involving people who keep marine reef aquariums having been poisoned by palytoxin. This information leaflet aims to provide guidance on what palytoxin is and what measures and precautions marine reef aquarists should take whenever they are handling marine animals. Such measures will reduce the possibility of such incidents occurring and should they occur, the appropriate action that should be taken to minimise any ongoing risk.

What is palytoxin?

Many marine animals produce toxins, either to help capture their prey or as a defence mechanism to protect themselves. One such toxin, palytoxin, is produced via species of *Palythoa* and *Zoanthus* colonising soft corals. *Palythoa* species are generally considered to be more toxic than *Zoanthus* species but as many hobbyists may not be able to distinguish between them, we collectively use the term **zoantharians.**

Zoantharians are commonly found in marine reef aquaria, either through being a 'hitchhiker' on live rock or purchased by marine reef aquarists, as they are commercially available due to being colourful and often seen as a good 'starter' coral.

How to reduce the risk of palytoxin poisoning occurring

Handling of marine animals

The greatest risk of palytoxin poisoning comes from exposing the slime coating produced by zoantharians to air. Wherever possible, marine animals should be handled underwater and fully submerged. Do not lift them out of the aquarium unnecessarily. If you do need to transfer them, then do so using submerged plastic bags, container or bucket.

Ideally strong rubber gloves/aquarist gloves should be worn when handling marine animals. Follow good hygiene practices e.g. washing and drying hands after they have been in an aquarium, especially before eating, drinking or touching your face/eyes.

Cleaning and zoantharians

When carrying out large water changes, avoid dropping the water level so low that zoantharian colonies are exposed to the air. Also, avoid exposing zoantharian colonies for long periods under high intensity metal halide lights as this may cause palytoxin to become aerosolised.

Aquarists may undertake activities in an effort to sterilise live rock/coral frags or to clean live rock/aquarium ornaments or to shrink/kill coral colonies which inadvertently increase the risk of palytoxin poisoning by increasing the likelihood for the toxin to become aerosolised. We therefore recommend that **the following activities should be AVOIDED:**

- **DO NOT** pour boiling/hot water over live rock/zoantharian colonies;
- **DO NOT** microwave live rock/coral frag plugs;
- **DO NOT** pressure (steam) clean aquarium ornaments or rock which may have been colonised by zoantharians;
- **DO NOT** wash live rock under running water/using a water sprayer (especially if using a brush as well).

Other activities which present exposure risks and often precede a palytoxin poisoning are: moving an aquarium (as this will involve draining the aquarium, this would expose zoantharians to the air and therefore allow palytoxin to aerosolise); carrying exposed live rocks in an enclosed vehicle and having them exposed to a room during the process of setting up an aquarium. If there is anyone nearby e.g. family, friends, housemates etc, let them know what you are doing and recommend that they keep back while you are working with zoantharians.

Removing zoantharians from an aquarium

If it is necessary to remove zoantharians e.g. during coral fragging (a method used to propagate corals) or when removing a colony, wherever possible, place them into a submerged bag, container or bucket under the water i.e. do not lift them straight out of the water first. Suitable personal protective equipment must be worn i.e. safety glasses/ goggles, gloves and a respirator face mask which covers the nose and mouth. If you wish to keep the zoantharian colony alive, it should be transferred to another aquarium. If you wish to dispose of the colony, then it should be transferred to a container which contains a bleach solution. An alternative method to reduce the size of a zoantharian colony is to choose predators that will eat them, such as the snail, *Heliacus variegatus* (Variegated sundial snail).

Disposal of live rock containing zoantharians

If you need to dispose of live rock which contains zoantharians, it is best to soak it in a 1:9 bleach to water solution for several days prior to disposal. However, bear in mind that if you are trying to dispose of a large amount, the amount of household bleach may need to be increased substantially. It should also be borne in mind that live rock containing palytoxin producing zoantharians which is left outside to dry and not treated with household bleach has the potential to remain highly toxic for years.

Activated carbon and palytoxin

Under 'normal' circumstances, activated carbon will help to maintain the aquarium water free of palytoxin. However, bear in mind that activated carbon cannot remove large pulses of palytoxin entering the water and that some *Palythoa* species can grow into large colonies very quickly. It should also be borne in mind that activated carbon needs to be changed frequently.