



GREEN FINS GUIDELINES

Environmental Best Practice for Chemical Cleaning Agents

Safe Management & Disposal of Hazardous Waste &
Chemicals in a Post COVID-19 World

FOREWORD

Reef-World, the team behind Green Fins, has created these guidelines to help Green Fins members deal with chemical cleaning agents in an environmentally friendly way. These recommendations are a consolidation of known best practice around the safe management and disposal of hazardous waste and chemicals. They are not recommendations on how to safely and correctly disinfect any scuba diving or snorkelling equipment to prevent the spread of COVID-19. Rather, they focus on how to deal with any hazardous waste generated as a result of cleaning your equipment or boats that may pose a significant threat to the marine environment.

For advice on preventing the spread of COVID-19 in your dive or snorkel operation, please follow recommendations from [DAN](#), [the WHO](#) or any national guidance that may be applicable to you on how to treat any surfaces which require disinfecting. The [EPA](#) (Environmental Protection Agency) in the United States provides [a list of disinfectants that can be used against SARS-CoV-2](#).

We appreciate that this is a difficult time for many business owners and we are confident that the scuba diving industry will bounce back but there is likely to be a 'new normal' and level of expectation in sanitisation not previously witnessed by the sector.

As ambassadors and guardians of our oceans, Reef-World asks all businesses that offer scuba diving, snorkelling and related activities (whether they are Green Fins members or not) to remember the importance of preventing any threats to the wider marine environment. While there are many changes taking place during these times, please keep an environmental strategy high on your agenda.

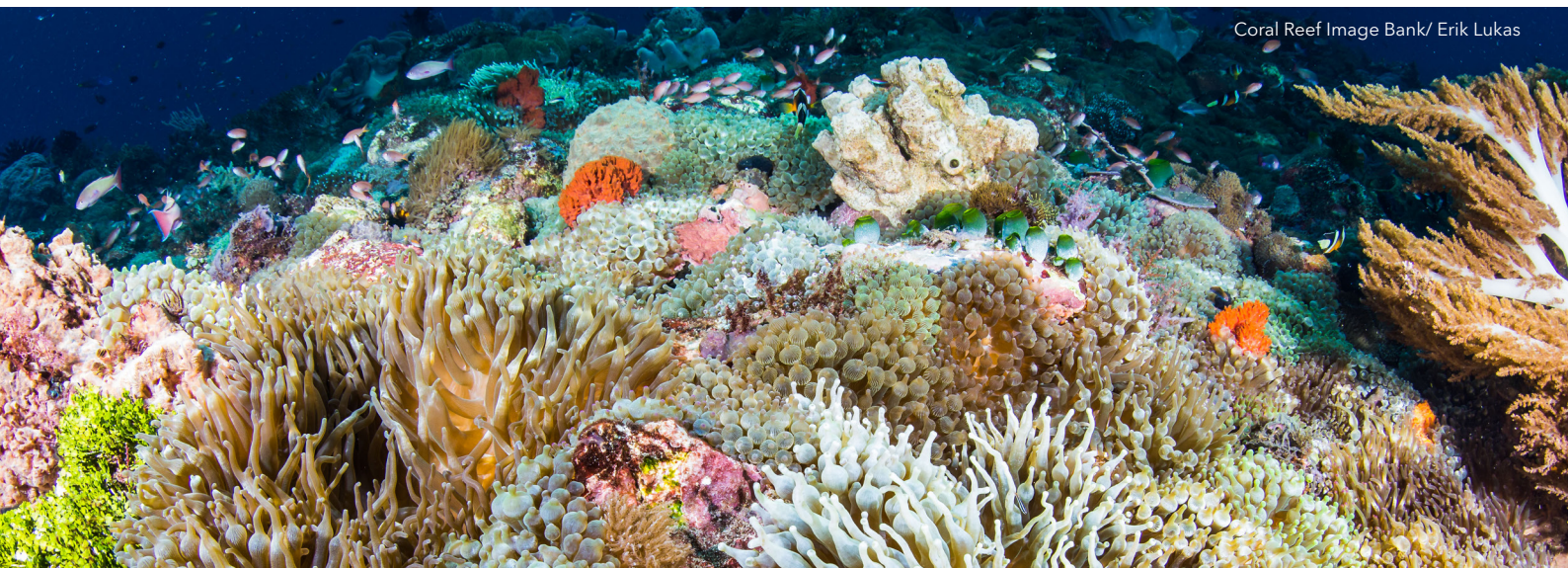
Stay safe and healthy,



THE REEF-WORLD
FOUNDATION



**INTERNATIONAL
COORDINATOR**



Coral Reef Image Bank/ Erik Lukas





CHEMICAL CLEANING PRODUCTS & THE ENVIRONMENT

Potential environmental threats

The use of chemical cleaning agents is widely regarded as the safest option when disinfecting equipment, surfaces and laundry in today's climate. The use of soap and water when washing your hands under running water for at least 20 seconds has been recommended as best practice for effectively disinfecting your hands.

To reduce your environmental impact when using soap to wash your hands:

- Minimise the use of toxic products, wherever possible, and replace them with non-toxic, natural or environmentally-friendly products that have been proven to be effective

Many cleaning and cosmetic products contain substances which are hazardous to the marine environment. For example: bleach (sodium hypochlorite) products can react with other minerals in water to create toxic substances; phosphates have a fertilising effect in the ocean; and surfactants (such as SLS) - which act as foaming agents in many soaps, shampoos etc. - can be toxic to fish.

Marine tourism operators may regularly use cleaning or cosmetic products in several ways which risk entering a marine environment, such as:

- Equipment / wetsuit cleaning;
- Cleaning marine toilets;
- Washing plates, cutlery, cups etc. on board;
- Boat hull and deck cleaning;
- Shampoos, soaps etc. in outdoor showers or areas that drain into the beach or sea;
- Cleaning shop floors; and
- Laundry (liveboards).

The [EWG's guide to healthy cleaning products](#) is a helpful place to start looking at the environmental impact of regularly used cleaning products.

Commonly used chemical cleaning agents

The following chemical cleaning agents are among those commonly suggested for disinfecting scuba and snorkelling equipment:

- Quaternary ammonium (QACs or quats)
- Bleach or sodium hypochlorite
- Sodium chlorite
- Hydrogen peroxide
- Hydrochloric acid or muriatic acid
- Chlorine dioxide

Please refer to the manufacturer's guidance on which chemical cleaning agents and what dilution or concentration levels are required to disinfect your equipment. For advice on risk prevention and mitigation, please follow relevant guidance provided by [DAN](#) and [the WHO](#).

Environmental considerations

Many of these cleaning agents have acute toxic effects on humans, aquatic life and the environment and may even enter the food chain. Dilute any chemical agents being used as much as possible: stronger solutions will have a greater environmental impact. For advice on safe dilutions in diving operation settings, please refer to recommendations from [DAN](#).

Great care should also be made to ensure chemical cleaning agents are stored securely to minimise the risk of spillage. Where possible, source local, environmentally friendly and biodegradable cleaning products.

Environmental best practice for chemical disposal

Regardless of the product used, it is imperative that the wastewater or chemical cleaning agent does not enter the marine environment. Ingredients that are harmful to marine life and the environment only pose a threat if they enter the ecosystem. For this reason, it is important to think about the disposal options available in your location.

It is likely that chemical cleaning agents are either added to a dunk or rinsing tank to treat any equipment. Once the water needs discarding or changing, it is important that the wastewater is disposed of appropriately. The same concept should be applied to cleaning any showers, sinks, toilets or marine toilets (heads) that lead into the sea; either directly or via a holding tank.

When considering where to dispose of chemical cleaning agents:

- Ensure they are disposed into a sewage treatment system that does not enter the sea directly
- If using an open system septic tank, ensure it cannot enter the marine environment via the water table/groundwater
- Wherever possible, any chemical cleaning agents disposed of into a marine vessel's holding tank must be emptied on land for treatment and not disposed of at sea. If land-based disposal is not available, the next best option is to slowly empty the holding tank while underway in a large open and deep body of water, away from any ecosystems - such as mangroves, corals or seagrass - to ensure the highest possible dilution. Never empty a holding tank in shallow water, bays, lagoons, harbours, piers, marinas or other areas with limited water circulation.

Neutralising chemical cleaning agents

If a sewage treatment system or septic tank is not available, it is important you neutralise the chemical cleaning agents before disposal. This should be done on land and away from water where possible. Here are some ways of neutralising cleaning agents:

NOTE: Please read all safety and hazard information before trying to mix or dilute chemical compounds and follow the correct dilution ratios as per the product instructions.



Bleach: if left in the sun for 24 hours, bleach is broken down and can be safely disposed of. There are some chemical agents you can add to bleach to neutralise it but most have a range of environmental impacts themselves and, thus, are not recommended and should be avoided where possible.

Hydrogen Peroxide: breaks down rapidly in the environment and is not thought to bio-accumulate. However, please follow the guidance above and do not dispose of it directly into the environment.

Chlorine dioxide: similar to bleach, chlorine dioxide is highly reactive and will break down when exposed to the sun. It is recommended to leave in the sun for 24 hours before safely disposing.

Quaternary Ammonia (e.g. Dettol) and Hydrochloric acid (muriatic acid) do not have proven methods for neutralising.



OTHER CONSIDERATIONS: TRASH MANAGEMENT

Potential environmental threats

For hygiene reasons, it is likely that many customers and guests will either bring their own single-use water bottle or insist their operator provides plastic water bottles. There is also likely to be an increase in other single-use plastic packaging and containers, including the use of cling film, latex gloves, protective masks, single-use cutlery and plates and coffee cups. In addition, some guests might choose to bring their own mouthpieces that require plastic cable ties to attach to the regulator or second stage.

Many tourism destinations are already struggling with trash management. Even if these items are correctly disposed of, there remains a risk they may end up in the aquatic environment. As such, all efforts should be made to minimise the use of single-use plastic.

Single-use plastic already presents a significant hazard to the marine environment as it could either be ingested by animals directly or break down to become a microplastic and enter the food chain. This is even more concerning as studies have shown toxic chemicals and endocrine disruptors can adhere to microplastic and enter the food chain, including into our own food, leading to health implications.

Environmental best practice for trash management

To ensure you are in a position to deal with these additional pressures from an increase in plastic use:

- Be mindful there may be higher levels of plastic used as a result of hygiene concerns
- Point out the bins/trash cans in any boat briefings so guests can safely dispose of their used plastic
- Ensure your bins are deep enough and have lids to prevent any waste being blown into the sea
- Make sure all staff, including boat crew, are aware there might be an increase in the use of single-use plastic and know how and where to responsibly dispose of any associated waste
- Keep staff training or protocols on the correct collection and safe disposal of any plastic waste up to date
- Recycle, wherever possible
- Due to the increased use of many chemical cleaning products, please ensure all containers are correctly disposed of or recycled where possible



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Contact information:

The Reef-World Foundation leads the global implementation of the UN Environment Programme's Green Fins initiative, which focuses on driving environmentally friendly scuba diving and snorkelling practices across the industry globally

Please visit www.reef-world.org and www.greenfins.net or follow us on social media.

Contact the Green Fins teams on info@greenfins.net

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