

REEF SAFE SUNSCREENS

Coral reefs have a large ecological and economical impact in tropical regions. Coral reefs are a delicate ecosystem organisms that are sensitive to small changes in the environment (Riegl et al., 2009). Chemical sunscreen filters including homosalate, oxybenzone, enzacamene, octinoxate, octisalate, avobenzone, and octocrylene, have been detected in water samples across the world, leading to environmental concerns about their impact on aquatic life (Schneider & Lim, 2019). In vitro studies show that chemical filters resulted in reduced coral regrowth and changes in the behaviours of flatworms found along with the coral (McCoshum et al., 2016). However, the study was limited and more in vivo research is required to consolidate the effect of the filters in real reef conditions.

The National Oceanic and Atmospheric Administration – US Department of Commerce, list non-nano Zinc Oxide and non-nano Titanium Dioxide as the only sunscreen active ingredients not harmful to marine life and coral (NOAA, 2022). Chemical (organic) filters such as 4-methylbenzylidene camphor (MBC), octocrylene, octinoxate and oxybenzone, have been identified in various fish species across the world, as well as cod liver, leading to speculation about their possible bioaccumulation (Schneider & Lim, 2019). Due to these studies and the presence of chemical filters in all their major coral reef areas, the Republic of Hawaii recently banned the sale of sunscreens containing oxybenzone or octinoxate (State of Hawaii, 2018). They are also waiting to pass a bill banning octocrylene and avobenzone. The Palau government too has banned 10 chemicals from being sold, including oxybenzone, octinoxate and octocrylene (Palau, 2020).

The FDA declared only those sunscreens that contained zinc oxide and titanium dioxide to be considered GRASE (generally regarded as safe and effective) for both humans as well as the environment. Sunscreens that contain cinoxate, dioxybenzone, ensulizole, homosalate, meradimate, octinoxate, octisalate, octocrylene, padimate O, sulisobenzene, oxybenzone, and avobenzone can no longer be GRASE because of inadequate data to support a safety finding (FDA, 2021).

Zinc sunscreens are compliant with Palau Senate Bill No. 10-135, SD1, HD11 Thailand National Park Act B.E. 25622, Hawaii Senate Bill NO. 25713. We are also compliant with the upcoming proposed Hawaii Senate Bill No. 132 SD2. Therefore, the best option for your skin for protection while keeping the aquatic reef systems safe is a **natural zinc based 100% Organic 100% Vegan sunscreen** that is completely free of any possibly harmful chemical (organic) filters.

References

- FDA. (2021). U.S. FOOD AND DRUG ADMINISTRATION PROPOSED ORDER (OTC000008): AMENDING OVER-THE-COUNTER (OTC) MONOGRAPH M020: SUNSCREEN DRUG PRODUCTS FOR OTC HUMAN USE. <https://www.fda.gov/drugs/guidance-compliance-regulatory-information/regulatory->
- McCoshum, S. M., McCoshum, S. M., Schlarb, A. M., & Baum, K. A. (2016). Direct and indirect effects of sunscreen exposure for reef biota. *Hydrobiologia*, v. 776(1), 139-146–2016 v.776 no.1. <https://doi.org/10.1007/s10750-016-2746-2>
- NOAA. (2022, August 17). Skincare Chemicals and Coral Reefs. National Ocean Services Website. <https://oceanservice.noaa.gov/news/sunscreen-corals.html>
- Palau. (2020). REGULATIONS PROHIBITING REEF-TOXIC SUNSCREENS.
- Riegl, B., Bruckner, A., Coles, S. L., Renaud, P., & Dodge, R. E. (2009). Coral Reefs. *Annals of the New York Academy of Sciences*, 1162(1), 136–186. <https://doi.org/https://doi.org/10.1111/j.1749-6632.2009.04493.x>
- Schneider, S. L., & Lim, H. W. (2019). Review of environmental effects of oxybenzone and other sunscreen active ingredients. *Journal of the American Academy of Dermatology*, 80(1), 266–271. <https://doi.org/10.1016/j.jaad.2018.06.033>
- State of Hawaii. (2018). A BILL FOR AN ACT RELATED TO WATER POLLUTION.