



## The Cause

Rising water temperatures around the globe play the biggest role in the stressing of coral, in addition to acidification, and pollutive runoff entering and impacting the ocean. Even banning sunscreen with the most harmful ingredient -oxybenzone- was determined to not be in the top 14 ways to help coral bleaching recovery.<sup>i</sup> However, we feel that if we can make even the smallest difference, it is worth it to try.

Additionally, Hawaii recently banned two sunscreen ingredients, Oxybenzone and Octinoxate, from distribution on the islands in the future.<sup>ii</sup> We love the awareness this is bringing to coral reef bleaching, and will continue to mark our no-oxybenzone and no-octinoxate sunscreen as Reef Friendly because it makes people ask the questions: “Why does it have to be Reef Friendly? What is that? What is going on with the reefs?” Thus, it brings the ocean to the forefront of people’s minds because the majority of consumers don’t think about it; reefs are out of sight, out of mind. Hopefully this will impact other decisions they make to help protect the waters, and the amazing creatures that inhabit them.

According to the National Park Service, 4,000 to 6,000 tons of sunscreen enter reef areas annually<sup>iii</sup>. This does not spread out rapidly or evenly over the entire ocean, but accumulates on popular tourist sites. It is estimated that 90% of snorkeling/diving tourists are concentrated on 10% or less of the world’s reefs. This means that our most popular reefs, such as those in our national parks, are exposed to the majority of sunscreens.

## Coral Bleaching

If you go snorkeling or diving where there are reefs, you might notice that some of them are a lovely white color, or even the brightest shades of yellow, purple, or blue. While beautiful to look at, this is actually a sign of reef death.<sup>iv</sup> The white reefs have been “bleached”, and the almost-neon reefs are “fluorescing” – their last-ditch beautiful effort to save themselves (by expelling the algae they host and exposing their own “chemical sunscreen”).

Contrary to what many people might think, coral reefs are not plants. Reefs are made up of many smaller coral polyp animals. Most of these animals host algae within their tissues that they rely on for food. (While the coral cannot photosynthesize, the algae—or zooxanthellae—can.) Algae gives the coral its color, uses its waste for photosynthesis, and produces oxygen for the coral. If the coral is stressed or the water temperature rises enough to still the algae from being productive, the coral expels the algae, leaving the exoskeleton to be seen. This is why the reef looks white, also known as “bleached”. When this happens, there is a chance that the coral may recover, but typically it dies.

- Corals are home to 1/4 of marine species<sup>v</sup>
- Coral reefs are so valuable to the fishing & tourism industries, as well as protecting shorelines from storm damage, that destroying just 1 km of reef means the loss of between \$137,000 to \$1,200,000 over a 25-year period.<sup>vi</sup>
- Elements from coral reefs are being used to create important medicinal breakthroughs<sup>vi</sup>
- Corals absorb CO<sub>2</sub>, much like a rainforest. Coral reefs also help to improve the surrounding water quality. They act as a filter that traps things floating in the water, which makes for cleaner water all around.
- Only about 1% of the world’s oceans contain coral reefs.<sup>vi</sup> We are losing them at an alarming rate.

## Our Story

One of the managers of our 27-year old parent sunscreen company, Sean, was snorkeling in Maui in 2016 with his family at Honolua Bay when he came across a sign cautioning "Please - Do Not Apply Sunscreen before entering the water. Zinc Oxide and Titanium Dioxide... kills [the] reef!!". He had already been doing research on the topic and was not surprised to see the warning even back then; our company knows sunscreen and strives to help protect both the reef and your skin.

We have worked hard to keep up with the most recent studies and views around Reef Friendly Sunscreen. For years we have had regular (oxybenzone and octinoxate free) sunscreen, and in 2019 we will be adding mineral sunscreen as well to let the consumer decide what they prefer. Both regular and mineral Coral Isles lines will be Reef Friendly, and we will continue to stay current with what that truly means!

## Our Mission

*We strive to Protect Your Skin AND Protect the Reef.*

**Protect the Reef**— We will stay current with the latest studies and what they say about coral reef bleaching, and sunscreen. We will not use Oxybenzone nor Octinoxate, and go the extra mile by removing parabens too.

**Protect Your Skin**— We will stay as affordable as possible. Most people cannot afford to apply mineral sunscreen every day. However, every-day sun protection is important in the fight against the most common, yet most preventable, form of cancer: skin cancer. All of our sunscreens are broad-spectrum and water resistant for 80 minutes, certified by the FDA.

We are constantly researching what is truly best and will continue to develop new formulas that are cost effective, and protect you skin and the reef to the best of our abilities.

## Our Research

### No Mineral—

**Leading Scientists say:** "An "organic" certification doesn't mean a sunscreen is safe for the environment. A number of plant-based oils can be toxic to reef organisms, especially arthropods. For example, neem, eucalyptus and lavender oils, which are used in some organic sunscreens, also have applications as insect repellents or insecticides, suggesting they may also have increased relative toxicity to invertebrates. Other ingredients such as beeswax can be contaminated with a variety of industrial fungicides and insecticides. Organic ingredients, or any ingredient in a product, should be subjected to toxicological testing." <sup>xv</sup>

**Safety Data Sheets say:** Zinc Oxide is toxic to aquatic life. Zinc Oxide should not be exposed to the environment. Zinc Oxide causes long-term effects in marine animals. <sup>vii,viii,ix,x</sup> (CI note: When we have reached out to experts on the matter, they are not sure why Zinc Oxide is toxic, and if this only applies to nano-particles. More research is needed)

**Studies say:** Titanium Dioxide causes Hydrogen Peroxide, which kills the phytoplankton that corals eat and contributes to ocean acidification. <sup>xi,xii</sup> Titanium Dioxide reacts with UV light to produce Reactive Oxygen Species, which cause cellular damage in plant cells. <sup>xiii</sup>

**Consumer Reports says:** No mineral sunscreen made of Zinc Oxide nor Titanium DiOxide has protected people well enough in their tests over the years to be included in their recommended products. They instead recommend chemical-based sunscreens for best protection.<sup>xiv</sup>

**Customers say:** Mineral Sunscreen made of Zinc Oxide or Titanium DiOxide is too expensive, goopy, and clogs my pores. I have also seen it coat the bottom of the sea floor.

## Pro Mineral—

**National Parks Service/ NOAA says:**

“While no sunscreen has been proven to be completely ‘reef-friendly,’ those with titanium oxide or zinc oxide, which are natural mineral ingredients, have not been found harmful to corals.”<sup>iii</sup>

**Customers say:** Zinc Oxide and Titanium DiOxide are natural and best for the reefs. Chemicals like avobenzene and octocrylene are bad. Avobenzene is a “benzone” like Oxybenzone which was banned in Hawaii, so I don’t want it. (Please note: this is a misconception)

**Resorts with Protected Reefs Say:**

- “Biodegradable Sunscreen is needed, preferably mineral” —Cozumel Tours, Mexico
- “We recommend “brands [that] use mineral sun protective shields such as non-nano zinc oxide and/or titanium dioxide as their active ingredients” —Hanauma Bay State Park, HI

## In General—

**Leading Scientists say:** Sunscreen is not even in the top 14 factors that are causing coral reefs to die.<sup>i</sup>

**The industry says:** Is zinc oxide biodegradable? Is titanium dioxide biodegradable? The answer is, unsurprisingly, no. UV filters of mineral sunscreens bioaccumulate in natural organisms rather than being broken down by them because they are simply not biodegradable. That doesn’t mean that they’re not eco-friendly, only that they’re mislabeled. Apart from organic-cotton long sleeve shirts, no entirely biodegradable sunscreens are available on the market. Sunscreens have to be worn for the occasion and location.”<sup>1</sup>

**The FDA says:** Avobenzene, Octocrylene, Zinc Oxide, and Titanium Dioxide are all approved sunscreen ingredients.<sup>xv</sup> However, Titanium Dioxide on its own without Zinc Oxide or another sunscreen agent, is not Broad Spectrum

**What we know:** Oxybenzone, Octinoxate, ButylParaben, and 4-methylbenzylidene camphor are said to be most harmful to reefs.

Zinc Oxide and Titanium DiOxide nanoparticles are harmful to aquatic life.<sup>xvi</sup>

*“Sunscreen is essential in protecting yourself from quickly-aging skin, and skin cancer.”*

## Our Solution—

**What we’ve done:** It’s hard to appease everyone, especially with only 16 active sunscreen ingredients approved by the FDA.<sup>xiv</sup> The best thing for the reefs is no sunscreen at all— try to cover up with long sleeves and protective clothing. However, for example when snorkeling, you can wear a wetsuit on your body, but not on your face or hands as it is not realistic at all times. Therefore, to protect your skin and help

decrease the risk of skin cancer you must wear sunscreen on your exposed skin. Every dermatologist will tell you the same thing: sunscreen is essential.

If you would like mineral sunscreen, we will offer it to you. Ours rubs in nicely, is non-nano, and non-fragranced. It is Zinc Oxide and Titanium DiOxide based. Ours also offers broad-spectrum protection, unlike sunscreens with Titanium DiOxide only.

If you would like regular sunscreen, we will offer it to you. Avobenzone and octocrylene have not been found harmful to the reefs, nor banned in Hawaii. They are globally approved, rigorously tested sunscreen agents accepted in the US, EU, Australia, and Japan. Avobenzone is not the same thing as Oxybenzone. This is a more affordable option, that should not clog your pores.

Both our regular and mineral sunscreens are:

- Oxybenzone Free
- Octinoxate Free
- No Parabens
- Hypoallergenic
- Fragrance free
- Cruelty Free, Beeswax free, Nut Oil Free
- Mixed, Filled, Packaged in the USA
- FDA Broad Spectrum and Water Resistant (80 min)
- Dermatologist tested
- “Reef Friendly” by current standards, which we will keep up with. Since we offer both regular and mineral sunscreen, we will choose whichever one is better for the reef as studies develop.

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<sup>i</sup> [https://dlnr.hawaii.gov/dar/files/2017/04/Coral Bleaching Recovery Plan final.pdf](https://dlnr.hawaii.gov/dar/files/2017/04/Coral_Bleaching_Recovery_Plan_final.pdf)

<sup>ii</sup> [https://www.washingtonpost.com/news/energy-environment/wp/2018/07/02/hawaii-is-about-to-ban-your-favorite-sunscreen-to-protect-its-coral-reefs/?noredirect=on&utm\\_term=.c02dcfb243a2](https://www.washingtonpost.com/news/energy-environment/wp/2018/07/02/hawaii-is-about-to-ban-your-favorite-sunscreen-to-protect-its-coral-reefs/?noredirect=on&utm_term=.c02dcfb243a2)

<sup>iii</sup> [https://cdhc.noaa.gov/docs/Site%20Bulletin\\_Sunscreen\\_final.pdf](https://cdhc.noaa.gov/docs/Site%20Bulletin_Sunscreen_final.pdf)

<sup>iv</sup> <https://www.inverse.com/article/34218-what-is-coral-bleaching-chasing-coral-great-barrier-reef-dead>

<sup>v</sup> [http://wwf.panda.org/our\\_work/oceans/coasts/coral\\_reefs/coral\\_facts/](http://wwf.panda.org/our_work/oceans/coasts/coral_reefs/coral_facts/)

<sup>vi</sup> <https://www.nature.org/ourinitiatives/urgentissues/oceans/coral-reefs/coral-reefs-and-medicine.xml>

<sup>vii</sup> [https://www.carlroth.com/downloads/sdb/en/9/SDB\\_9348\\_MT\\_EN.pdf](https://www.carlroth.com/downloads/sdb/en/9/SDB_9348_MT_EN.pdf)

<sup>viii</sup> <http://www.inchem.org/documents/icsc/icsc/eics0208.htm>

<sup>ix</sup> <http://sitem.herts.ac.uk/aeru/ppdb/en/Reports/1321.htm>

<sup>x</sup> <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/93>

<sup>xi</sup> <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0030321>

<sup>xii</sup> <http://www.mdpi.com/2079-9284/4/2/11>

<sup>xiii</sup> <https://www.sciencedirect.com/science/article/pii/S0048969710003025>

<sup>xiv</sup> <https://www.consumerreports.org/sunscreens/shining-a-light-on-natural-sunscreen/>

<sup>xv</sup> <https://www.fda.gov/drugs/resourcesforyou/consumers/buyingusingmedicinesafely/understandingover-the-countermedicines/ucm239463.htm>

<sup>xvi</sup> <http://www.alertdiver.com/Sunscreen-Pollution>

#### A Good Read:

1. <http://www.spartansaving.com/biodegradable-materials/biodegradable-sunscreen-myth/>

*Read more at [Coralisles.com](http://Coralisles.com)*