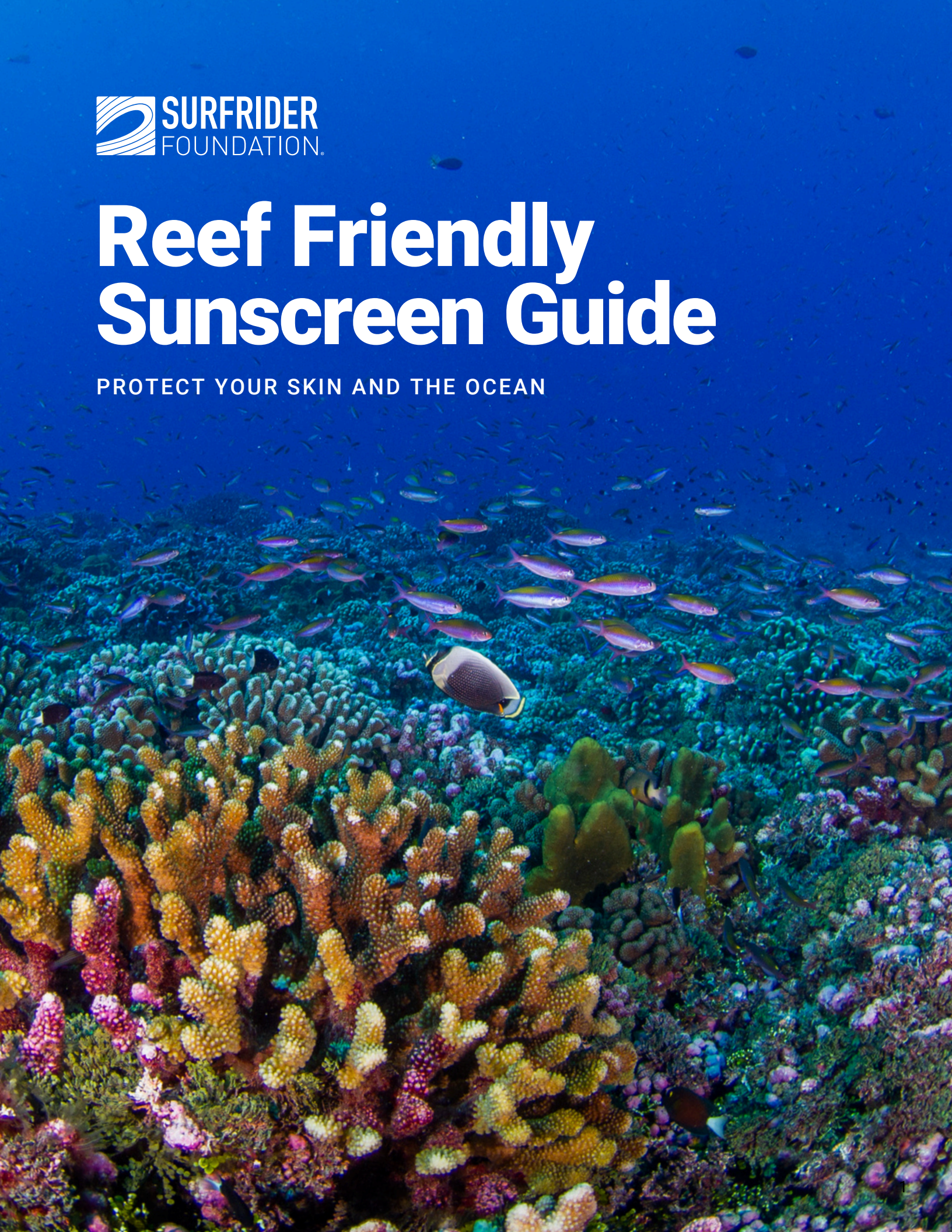




# Reef Friendly Sunscreen Guide

PROTECT YOUR SKIN AND THE OCEAN



# Introduction

Let's be real: sunscreen is essential for time in the sun, be it long summer beach days, tropical vacations or a day at work. But not all sunscreens are created equal – especially when it comes to protecting not just your skin, but also the ocean environment.

More and more marine scientists and eco-savvy beachgoers are raising concerns about the impact that chemical sunscreens are having on our ocean ecosystems. We're talking significant consequences – like genetic mutations and infertility in coral reefs and fish, and being straight up toxic to phytoplankton – which is why places like Hawai'i, Key West, Aruba, Palau, and the U.S. Virgin Islands have banned the sale and/or use of certain conventional chemical sunscreens altogether.

Even the U.S. Food and Drug Administration (FDA), which oversees sunscreen ingredients, is starting to pay attention. Active chemical sunscreen ingredients – like oxybenzone, octinoxate, and octocrylene – are being reevaluated for human safety. These concerns, as well as documented impacts to aquatic wildlife, have sparked a boom in so-called “reef friendly” sunscreens flooding the market.

DID YOU KNOW?

**14,000 tons of sunscreen enter the ocean each year.**

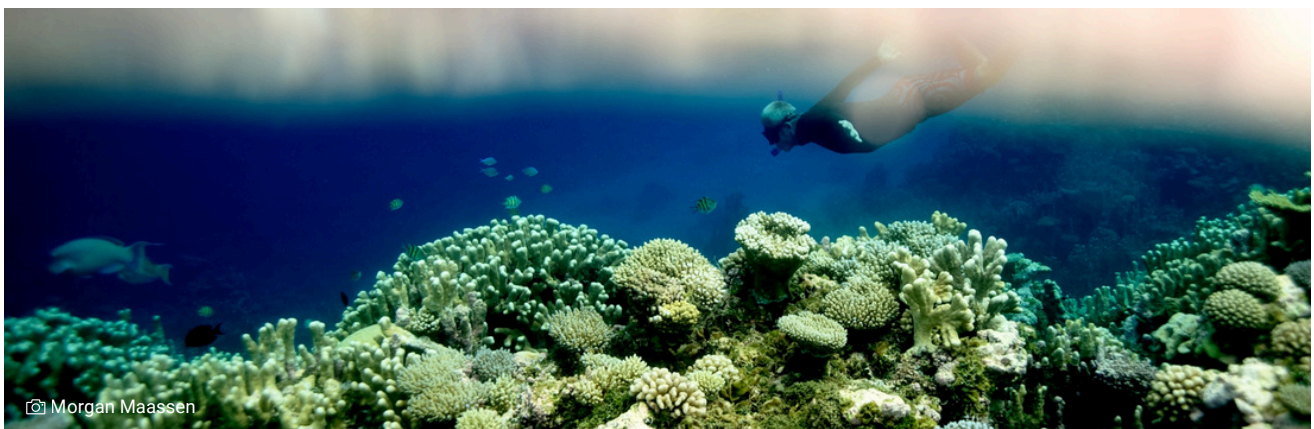


But what does “reef friendly” actually mean? How effective are more eco-friendly sunscreens? And how safe are these alternative sunscreens to the marine environment?

Wouldn't it be nice to have a marine scientist bestie who could help you sort all this out?

That's exactly why Surfrider has created the Reef Friendly Sunscreen Guide. So you can spend less time worrying about which sunscreen to buy, and more time simply and safely enjoying the beach and time outside— feeling good about what you're putting on your body, before you put your body into that big, beautiful ocean.

Don't get burned by the sun or big pharma. Keep reading to protect yourself and our ocean this summer.



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# How Conventional Sunscreens Harm Our Ocean

Broad-spectrum sunscreens are designed to block both UVB and UVA rays. To do that and stay smooth, invisible, and affordable, many conventional sunscreens rely on a cocktail of synthetic chemicals.

For these reasons, certain widely available chemicals are often added to sunscreen, including oxybenzone, octinoxate, and octocrylene, to name a few. As most of us have experienced, sunscreen doesn't just stay on our skin. When swimming, surfing, or just splashing around, lotion can wash off your skin and enter nearby waters – where it can harm both marine life and freshwater species.

The death of coral polyps, the building blocks of coral reefs, can occur at concentrations as low as 5 parts per billion (ppb) of oxybenzone. In popular swimming destinations, like Trunk Bay in the U.S. Virgin Islands, water samples have measured oxybenzone concentrations as high as 1,350 ppb. Healthy polyps rely on a symbiotic relationship with the algae, zooxanthellae. Increased ocean temperatures and

toxic chemicals like oxybenzone and octinoxate stress, deform, and can even kill this symbiotic algae, causing coral bleaching and increased risk of coral disease and death.

This not only reduces the reef's ability to act as an important nursery and feeding ground for hundreds of marine species, but damaged reef ecosystems also lose the benefits provided by healthy, functioning reefs – such as coastal protection from storm surge, preservation of sandy beaches, breeding grounds for commercial fisheries, and recreational value from snorkeling, scuba diving, and wildlife viewing.

Conventional chemical sunscreens can also directly harm fish, impairing neurological and reproductive abilities, increasing rates of disease and miscarriages, and acting as hormone disruptors that impact the immune system. Recent studies have even shown that chemical sunscreen ingredients are toxic to marine phytoplankton, a key foundation species of the marine food chain.



# Human Health Risks

Some of these sunscreen chemicals that are poisoning the ocean environment get absorbed directly through our skin and into our bodies.

Yes. If you use chemical sunscreen, it's not just on you, it's in you!

The Fourth National Report on Human Exposure to Environmental Chemicals by the Centers for Disease Control (CDC) found that **over 90% of the over 2,500 people tested had oxybenzone in their urine.**

Sunscreen chemicals have also been found in breast milk. It's estimated that 4% of the oxybenzone in our sunscreen is absorbed by our bodies — during each sunscreen application!

Humans can also be exposed by swimming in popular areas where a large concentration of chemical sunscreens are used, ingesting contaminated fish, and even ingesting contaminated drinking water — as these chemicals are not completely removed during treatment at wastewater treatment facilities or at drinking water treatment facilities. Even worse, oxybenzone has been directly added to food (like certain candy) as a “flavoring agent”.

DID YOU KNOW?

**Certain chemical sunscreen ingredients actually become more toxic when exposed to light.**



That CDC Report states, “The human health effects from skin exposure to low levels of BP-3 [oxybenzone] are unknown... BP-3 has been shown to cause weak hormonal activity in laboratory animals. More research is needed to assess the human health effects of exposure to BP-3.”

Although the long-term human health impacts of oxybenzone are unknown, with more evidence becoming available about the toxicity of ingredients in traditional sunscreen, **the FDA recently proposed removing all over-the-counter chemical sunscreen ingredients** (including avobenzone, octisalate, homosalate and more) from their “Generally Recognized as Safe and Effective” list due to the potential for adverse human health impacts and the fact that there is insufficient safety data on their use in over the counter sunscreen products.

So why would you risk damaging your own endocrine system — which controls growth, development, metabolism, and reproduction — by choosing to use a chemical sunscreen that is known to be toxic to marine life and the ocean environment, when safer alternatives exist?

# Stay Safe, Stay ACTIVE

We know the nitty-gritty of sunscreens can feel complicated and overwhelming, but at the end of the day, **it's mainly about the active ingredients.** Based on available data, a reef friendly sunscreen lotion will **only contain** the minerals **zinc oxide and/or titanium dioxide** as active ingredients. That's it! If there's a chemical listed, then it's not reef friendly – no matter what the label claims.

The terms 'reef friendly' and 'reef safe' *are not regulated*, so you can't just trust products with this description. Any brand can use those terms on the bottle, even if the ingredients tell a different story. The best and only way to know for sure is to read the label carefully.

## Avoid ingredients on the HEL List:

Avobenzene	Octocrylene	Parabens
Homosalate	Oxybenzone	Triclosan
Octisalate	Nanoparticle	Nylon
Octinoxate	PABA	Polyester



### PRO TIP

**Choose products with minimal or sustainable packaging. Reusable containers, recycled content, or even cardboard tubes are a win for you and the ocean.**

#### Disclaimer:

While research findings indicate that chemical sunscreens are more toxic than mineral sunscreens, it's important to note that everything has an impact. Surfrider developed this guide to summarize available research and recommend ingredients that are the least harmful to our friends in the ocean and other aquatic environments. But at high enough concentrations, almost anything can be toxic, including minerals. The best way to stay sun safe and ocean friendly is to cover up with UV-protective clothing and hats, and use only non-nano mineral sunscreen lotion on exposed areas.



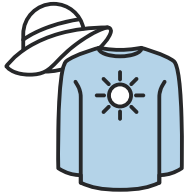
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## Size Matters

The smaller the particles, the easier it is for marine life, and our bodies, to absorb them – which can be toxic in high concentrations. Be sure to use micro-sized (or 'non-nano') mineral sunscreens to avoid nanoparticles. These micro-sized particles are considered to be unable to permeate the skin or the blood-brain barrier within the body.

**In summary: cover up when you can, stick with non-nano mineral sunscreens, skip the chemicals, and check your labels like a reef-protecting champ.**

# 5 Simple Ways to Stay Sun Safe and Ocean Friendly



TIP 01

## Cover Up

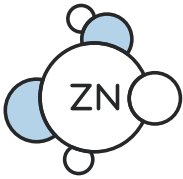
Rash guards, hats, and UPF clothing reduce the need for sunscreen.



TIP 04

## Check the Label

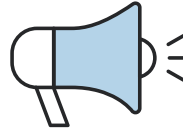
'Check the Label 'Reef Safe' and "Reef Friendly" aren't regulated. Learn the ingredients.



TIP 02

## Choose Mineral Sunscreen

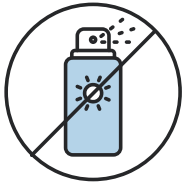
Always opt for non-nano zinc oxide or titanium dioxide.



TIP 05

## Tell Your Friends

Help spread the word about reef friendly sunscreen by sharing this intel (or even this guide!) with your friends.



TIP 03

## Skip Sprays and Powders

They often end up in the sand and air, not on your skin.





To learn more and to see the studies referenced, visit:  
[BEACHAPEDIA.ORG/REEF\\_FRIENDLY\\_SUNSCREENS](https://beachapedia.org/reef_friendly_sunscreens)

