

OCEAN ACIDIFICATION

OSTEOPOROSIS OF THE SEA



*“The Greatest Threat to Our Planet Is the Belief That
Someone Else Will Save It.” – Robert Swan, O.B.E.*

What is Climate Change?

You’d be challenged to find a human being on the planet who hasn’t heard at least something on the topic of climate change, but how many truly understand it? The term climate change refers to changes in weather patterns and growing seasons worldwide. It also refers to a rise in

sea level caused by the expansion of warmer seas and melting ice caps and glaciers, posing a severe threat to life on Earth from widespread flooding and extreme weather.

The Earth has experienced subtle warming and cooling over its lifetime due to various natural causes; however, the degree of change we've seen in the past century is not a natural occurrence; instead, it's a global crisis brought about by increasing amounts of CO₂ emissions into the atmosphere.

Carbon dioxide (CO₂) is an important heat-trapping greenhouse gas released through human activities such as deforestation and burning fossil fuels and natural processes such as respiration and volcanic eruptions. Since the beginning of the industrial era (1850), human activities have raised atmospheric concentrations of CO₂ by nearly 49%.



This level of warming is more than what had happened naturally over 20,000 years.

An estimated 30% of greenhouse gasses come from transportation, 25% from power plants that produce the electricity we consume, 23% from industrial production, and the rest is evenly balanced between residential and agricultural sources. This warming trend has been happening for centuries, spiking significantly over the past hundred years due to the increased use of fossil fuels. The increase in population aligns with the increase in the amount of burned fossil fuels. Fossil fuels include such things as coal, oil, and natural gas.

Chronic exposure in humans to high levels of CO₂ can lead to detrimental health effects such as inflammation, kidney disease, respiratory acidosis, and oxidative stress, to name a few. But Humans aren't the only species to suffer from CO₂ emissions.

“We are the first generation to feel the sting of climate change, and we are the last generation that can do something about it.” – Jay Inslee.

What Does CO₂ in The Air Have To Do With The Ocean?

It's easy to see the effects of pollution in the air. Everywhere you look, the evidence is unmistakable in the form of smokestacks belching billows of toxic smoke; automobiles backed up for miles in rush-hour traffic, and that grey layer of smog that blankets most large cities. But, other than some garbage left behind by careless humans, aren't our oceans clean and clear? This question is perhaps why science has been so late in identifying the issue of ocean acidification as a result of increasing levels of CO₂ emission in the atmosphere. When carbon dioxide mixes with seawater, it forms carbonic acid. This introduction of acid reduces the pH balance in the ocean environment, making it more acidic.

Increasing CO₂ and acidity levels is particularly concerning for corals. Many people believe corals to be a rock or a plant; however, corals are living creatures made up of hundreds to hundreds of thousands of animals, called polyps. These polyps are soft-bodied creatures who make hard outer skeletons by combining calcium and carbonate from the seawater.



Tragically, corals and other shell and skeleton-making organisms suffer catastrophic consequences from ocean acidification. As acid increases, carbonate decreases, preventing these organisms from building and maintaining their shells and skeletons. Some shells and skeletons can even dissolve. The disappearance of corals from

our planet could lead to a domino effect of mass destruction. Many marine species will vanish after their habitat and food sources disappear. The danger exists for humans too.

There may be a severe food crisis in coastal regions that subsist primarily on a diet of fish as many fish die-off. Coral reefs also protect against flooding and erosion of coastlines.

The ocean is the aquatic lungs of our planet, and acts as a massive carbon sink, absorbing environmental CO₂ through its marine life, but too much CO₂ is killing the aquatic life, thus destroying the very lungs of our planet! It's not too late to turn this around and restore our ocean environment.

Get involved today! Our future generations are counting on us!