Many of you have heard of global warming, which is slowly but surely killing us. But, have you ever heard of its evil twin? That’s right. Ocean acidification.

Ocean acidification is the absorption of CO2 into the world’s oceans and other bodies of water such as lakes and rivers. COs reacts with water and creates carbonic acid, which is acidic and lowers the pH of the water.

Normally, seawater is slightly basic, at around 8.4 on the pH scale. However, it is now slowly becoming more neutral and has already fallen about .1 pH since the industrial revolution. Although that may seem small, that is actually a 30% change as the pH scale is logarithmic. Meaning, a change of 1 degree from, say 7 to 6, means that the water has gotten 10x more acidic.

As carbon emissions increase, the+ rate of change will be even higher, as large bodies of water absorb over ¼ of all CO2 emissions. The ocean’s waters are projected to lower to 7.9 in 2100. We’re talking about 1.332 billion cubic kilometers of water changing drastically.

While you may not know the difference between 8.4 and 7.9pH, fish, shellfish, and many marine animals will. Oceans that are more acidic may affect fish behaviour and development, as many chemical reactions are very sensitive to changes in acidity.

Shellfish are especially vulnerable. Acidic water can literally eat away at their shells, leaving them essentially unprotected. Look at this picture taken by the Smithsonian Institution. On the upper right is a shell that has been placed in water that is supposed to simulate the conditions of the future. In just 45 days, the shell is essentially gone, with just a few fragments remaining.

Acidic seawater can also erode ocean coral and reduce its ability to regenerate. You know the Great Coral Reef, with its breath-taking view? Yeah, it could be completely wiped out and turned into brownish sea stumps. I mean, not like it needs help. Many scientists have already declared the reef “unsalvageable”, and over 95% of areas surveyed in 2016 were bleached.

While shellfish and coral might be suffering, crustaceans such as lobsters seem to be forming even stronger shells. And while scientists aren’t sure why, this may be caused by differences in how their shells are built. In addition, species accustomed to acidic conditions, such as those near underwater vents may even thrive. But that’s a minority of the ecosystem, and other species will not have enough time to adapt.

No matter how you look at this, it’s going to decrease ocean species diversity.

Do we need to keep on going? Ocean acidification is a huge problem and we need to solve it. However, because this is a relatively new phenomenon, as humans only started filling the earth with CO2 in the 18th century, scientists aren’t even sure what other long-term effects here could be, much less how to solve them.

But don’t you worry, ocean acidification is being treated as an urgent problem. Scientists are running dozens of experiments worldwide to get us answers. Many involve filling a large cylinder, with water. Then, they submerge it into the water, letting bacteria, plankton, and other small life to float in. They then seal the tube and increase the acidity to simulate conditions in the future.

Scientists are also studying an event about 55.8 million years ago when the ocean’s acidity also soared above normal. While they’re not sure exactly what caused it, they did notice a large drop in shellfish and chalk in the fossil record, indicating that these groups may struggle in the future.

So, what can you do about this? Well, just be aware of your carbon emissions. Bike or walk to school, recycle and reduce your electricity usage. Tell your parents to replace your light bulbs with LEDs, which use 75% less energy, and not to mention, last 25 times longer. When you visit the beach, pick up after yourself and make sure you don’t leave anything behind. Finally, if you happen to be someone fortunate enough with a boat, be responsible and don’t litter off the edge. Really, it just creates problems for everyone.

So next time, you hear from someone that climate change isn’t real, kindly tell them that they should do some research.

Anyway, thanks for watching this episode of the Ocean Show, make sure to leave a like and subscribe, and if you really want to help out, make sure to support us on Patreon. Finally, visit our website at theoceanshow.ml to find out more about this important topic.

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