



# Richard Thompson

Standing with the waves lapping his feet as sunbeams danced across the water, Richard was deep in thought about the marine animals he cared about so deeply. Ever since he was a young boy, it wasn't the thought of ghosts or goblins or monsters under his bed that kept him up at night.

Instead, he thought about sea turtles mistaking human litter for food and getting sick. He thought of seabirds and how they could eat garbage people left on the beach. He worried about seals ensnared in soda rings, and whales slowly wasting away because they assumed they were full since their tummies were heavy with trash and became malnourished.

As a marine biologist, Richard's research confirmed what he had always known as a child: that litter could be very, very harmful to marine animals and even leech chemicals into the water.

That day in 2004, at the Isle of Man in the United Kingdom, he had come to the beach to help his friends pick up big plastic waste from the shore—they were having a clean up drive to remove carelessly strewn litter like bottles, wrappers, and fishing rope that tourists and visitors often left behind.

But as he stood gazing at the sand, he had a strange realization. He noticed the usually pale yellow sand looked like a kaleidoscope of color! Instead of blue water and golden sand, he saw glittering pink, deep emerald green, reflective silver and teeny, tiny specks of black tainted the sand's usual calm, soothing feel.

Richard started walking across the shore, hoping it had been an optical illusion. Perhaps a child had dropped some confetti? Or maybe someone accidentally broke some sparkly gel pens? But after an hour's walk and lodging three pointy things in his big toe, he knew it was something else. And whatever that something was, it was the most abundant thing on the beach.

Photo: Getty Images

Scientists like to get to the bottom of a question. They like to explore, study, and look at things closely. Reminded of the days he would build sandcastles and try his very best to take them home with him, he gathered a huge bunch of sand and took it back to his lab, so he could test tiny bits of it from all across the shore and figure out what it was.

The results stunned both him, his students and the world: those tiny flecks, those colorful little spots about the size of a grain of sand... were actually plastic! Suddenly, Richard realized that this was a different beast altogether. Because the plastics were so very, very small, it meant the problem was ginormous. This wasn't a plastic wrapper that could be picked up and dumped in the trash can, no matter how many people helped clean up the beach.

Richard came up with a term for them: microplastics. Since then, he has been telling the world about the dangers of microplastics, and how single use plastic doesn't just disappear completely. We throw things 'away', but with plastic, an 'away' doesn't really exist. They last forever.

And when they're not in their large form, they get buffeted by the waves and turned into tiny, minuscule microplastics that are harmful to animals as well as the planet—even humans. Recently, he has been studying mollusks and mussels to see what happens after they eat micro—or even smaller nano—plastics, and found some of it stays within them for a very, very long time, and the rest comes out in their poop, right back into the ocean.

And since the plastic is so little, it travels far, wide—and deep—taking the dangerous chemicals embedded within it even farther. Extending beyond that long stretch of shoreline in 2004, Richard has now found microplastics present in sand from all the beaches in the world. Other scientists have found that even the Mariana Trench, the deepest point of the ocean floor in a faraway corner of the Pacific, has high levels of pollution—both on the seabed and within the innocent creatures.

As Richard says: “Even here, on what is a clean beach, I’ve noticed small bits of blue and red microplastic, particularly near the tide line. And that’s the point. The plastics issue is not just about an enormous pile of rubbish on a heavily contaminated beach somewhere in the Pacific. It’s the fact that it’s on every shoreline.”

Richard is trying his best, and his work has played a big role in getting single use plastic bags banned in some countries, as well as the microbeads in face wash. And that’s progress! But he can’t do it alone. He needs your help, STEMtaught scientists! Since such microplastics can’t be picked up and cleaned up, will you join us in reducing the amount of plastic we use in the first place?