

This is not a word-for-word transcript.

Neil

Hello. This is 6 Minute English from BBC Learning English. I'm Neil.

Beth

And I'm Beth.

Neil

Plastic pollution is a problem we've discussed before on 6 Minute English. It's an environmental issue which, like the growing amount of plastic waste, isn't going away. And now microparticles of plastic have even been found... can you guess where, Beth?

Beth

Hmm, let me guess – in our food? inside dead animals? at the North Pole?

Neil

At the top of Mount Everest! Although the other places you mentioned are true as well. Plastic is a tough problem to fix, but fortunately scientists may now have found a solution.

Beth

In this programme, we'll be hearing about chemical recycling, a groundbreaking way of making old plastic new again. And, as usual, we'll be learning some useful new vocabulary as well.

Neil

But first I have a question for you, Beth. Visit the country or seaside and you'll soon see evidence of plastic waste. According to the UN, around 400 million tonnes of new plastic is produced every year, much of it going to waste. It's hard to imagine what 400 million tonnes looks like, so which of the following, if you placed on a set of scales, would weigh about the same? Is it:

- a) all the people on Earth?
- b) all the cars on Earth? or,
- c) all the elephants on Earth?

Beth

I think all the cars on Earth would weigh about 400 million tonnes.

Neil

OK, Beth. We'll find out if that's the right answer later. Globally less than 10 percent of all plastic gets recycled. Some gets **incinerated** or burnt, and about half of all plastic waste goes straight to **landfill**, meaning it's buried underground. But as reporter for BBC World Service programme, 'People Fixing The World', William Kremer, explained, this only fixes part of the problem:

William Kremer

So, there is a mechanical process where some plastics can be sort of melted down and remoulded into a new shape or a new form, but not all plastics can go through that process at all. And also, it loses a little bit of quality every time you do that, so it will become slightly more **brittle**. So, it's actually more **downcycling** than recycling - every time it goes through that process it gets less useful.

Neil

Each time plastic is recycled it gets more **brittle**, meaning it's easier to break or crack. As a result, what we call recycling is actually **downcycling**, creating recycled products which are less valuable and of lower quality than the original waste product.

Beth

And that's where the new discovery fits in. Chemical recycling uses **enzymes**, natural chemicals which cause changes in other chemicals without being changed themselves. Certain enzymes have evolved the ability to break down plastic into its basic building blocks, and use that to make new plastic.

Neil

The problem is that very few enzymes exist which can break the chemical bonds in stronger plastics like PET, the plastic used in drinks bottles. At least, that's what scientists used to think, until researcher, Sintawee Sulaiman, took an autumn walk in the park near her laboratory at the University of Osaka, Japan. In a pile of rotting leaves, she discovered the microorganism, 'leaf-branch compost cutinase', or LCC for short.

Beth

Sintawee mixed LCC with plastic and left it in her lab overnight. She was surprised to return the next morning and find the plastic gone, eaten by the enzyme! The news spread and soon scientists were predicting a major breakthrough, as William Kremer reported for BBC World Service programme, 'People Fixing The World':

William Kremer

This discovery wasn't the end of the story but the beginning. LCC **showed promise** in breaking down PET plastic, but it needed a lot more work to become stable and effective.

Beth

The LCC enzyme **showed promise** in breaking down even strong plastics. If something **shows promise**, it has the potential to be successful in the future.

Neil

Since then, that promise has started to come true. Scientists in France have used LCC to develop new enzymes and by 2025 they plan to recycle 50 thousand tonnes of plastic waste annually, including strong plastics like PET, and nylon which is used to make clothes.

Beth

But there's still work to do. Fifty thousand tonnes sounds a lot, but not as much as the 400 million tonnes of plastic waste in your question, Neil. So, what was the correct answer?

Neil

Right, I asked you what else would weigh about 400 million tonnes, the amount of new plastic we produce each year. You guessed all the cars on Earth would weigh the same, which was... the wrong answer, I'm afraid, Beth. In fact, it was all the people on Earth! OK, let's recap the vocabulary we've learned in this programme, starting with **incinerate**, another word for burn.

Beth

Landfill is a method of dealing with rubbish by burying it in large holes in the ground.

Neil

The adjective **brittle** means easily broken or snapped.

Beth

Downcycling is recycling but in such a way that the resulting product is less valuable or of lower quality than the original.

Neil

Enzymes are chemicals found in living cells which cause changes in other chemicals to happen while not being changed themselves.

Beth

And finally, if something **shows promise**, it has a lot of potential for success in the future. Once again our six minutes are up, but remember to join us again next time, here at 6 Minute English. Goodbye for now!

Neil

Bye!

VOCABULARY

incinerate

burn

landfill

method of dealing with rubbish by burying it in large holes in the ground

brittle

easily broken, cracked, or snapped

downcycling

creating a recycled object of lesser value and quality than the original waste object

enzyme

chemicals found in living cells which cause changes in other chemicals to happen while not being changed themselves

show promise

have the potential for success in the future