

INNOVATION IN ACTION!

More and more people and businesses are realising how important the circular economy is to our planet. Check out these amazing examples, and discover how YOU could get involved...

MUSHROOM PACKAGING

Sounds bonkers, but a company called **Ecovative Design** have developed **packaging** made from the roots of **mushrooms**! These 'mycelium' act as **glue**, growing around **woodchips** or a mould to create sturdy **plastic-free zero-waste** packaging. Yay!



NOT-SO-FAST FASHION

Have you heard about the problem with **fast fashion**? That's when clothes are produced so **cheaply** that they're often only **worn a few times** before being thrown away – adding to the world's waste. But outdoor clothing manufacturer **Patagonia** is encouraging people to make their clothes last a lifetime. Their **Worn Wear** programme gives tips on fixing and waterproofing, and they offer free repairs.

GET INVOLVED!

REPAIR CAFES

Instead of **chucking away** your **broken things**, why not **fix them**? It can be much **easier** than you think! **Repair Cafés** all around the UK and Ireland provide tools, materials and advice to people who want to get mending, whether it's **furniture, bicycles, electrical appliances, clothes, crockery or toys**. Find one near you at repaircafe.org/en/



In 2018, Repair Cafés prevented 350,000kg of waste!

SECOND-HAND SHOPPING MALL

In **Sweden**, eco-friendly shoppers can visit the first ever **second-hand shopping centre**, **ReTuna**! Every store in the building sells only **up-cycled vintage goods** – from coats to chairs. Snap up a bargain **and** avoid waste! Trip to Sweden not on the cards? Then have a nose around your local **charity shop**!



GET INVOLVED!

FREecycle

What if something's not broken, but you just don't want it any more? Well sign up to **Freecycle**! You can advertise the things you're getting rid of – from **furniture to bicycles** – and someone local will pop round to pick it up and give it a loving new home. Aww!



ECO-FRIENDLY MATERIALS

In a circular economy, it's important to think about **how** we make things and the materials we use to make them. That's where **Covestro** come in. They're inventing new materials that **reduce fossil fuel** and **reduce the amount of carbon dioxide (CO₂)** in the air!

CHEMIST CHAT!

Dr. Persefoni Hilken tells us about **Covestro's** new environmentally-friendly plastic material...

Hi Persefoni! You're a scientist at a company called Covestro. First up, can you explain to our readers what your job involves?

Hi NG KiDS, I work as part of a team that's looking for new ways to **develop environmentally-friendly plastic materials**. Our main idea is to use **carbon dioxide (CO₂)** in our production processes. This was our dream for many years and it's finally became reality!

Why is using CO₂ such a good thing?

Well, to produce plastic materials you normally need **crude oil**, which is a **natural resource**. But with our new technology we use CO₂ instead – which is normally considered a **waste product**. This **reduces the amount of crude oil used** in the production by up to **20%**. So we **preserve natural resources** and turn something that was considered as **waste** into something **useful**.

Great news! So what do you make from it?

The new material that we've invented is called **cardyon®**. One of the many things it is used



for **flexible foams**, which are used in

mattresses. It can also be used to make an **adhesive** which is in **elastic sports floors**.

Are there other things it may be used for in the future?

We're currently investigating using it for **elastic textile fibres**, which could be used to make **colourful socks** or **medical textiles**, like **bandages**.

So how does this all relate to the circular economy?

Cardyon® contributes to the circular economy by taking what would have been an **industrial waste gas**, and turning it into a **new and useful raw material**. By doing this, we are **recycling, reusing** and **remanufacturing** to reduce input and waste!

Cool! Waste plastic is still a big environmental problem. How can we change that in the future?

The first thing we need to do is to **avoid throwing plastic away** – that is the worst thing for a circular economy. Next we need to find ways to make plastic products that **last longer** and we can **use many times** – like **LED lightbulbs** for example. They last up to **50 times longer** than conventional bulbs.

But we need to be able to recycle it too, right?!

Yes – that's one of the keys to the circular economy!

We scientists at Covestro are working on ways to **reuse plastic waste** again, for example by converting used plastics back into their **molecules**.

Why is science so important when thinking about the circular economy?

As a scientist you have a **good understanding of how the world**



works. And you can use that knowledge to do **research** and come up with **new ideas**. At Covestro, we have a lot of scientists who are constantly looking for new, creative

solutions to make the world a brighter place. And **scientific developments** are very important for helping us to **protect our environment**.

Would you recommend a career in chemistry and if so, why?

Definitely! Working in **chemistry** is very **exciting**. No day is the same and you **get to make a difference to people's lives**. Plus, you meet people from all around the world who have completely different ideas but share the same **passion for science** and the **environment**.

And finally, what advice would you give to NG KiDS readers who want to be scientists?

Make sure you **ask questions**, be **curious** and try to **understand** how things work. Science is really such a fascinating topic and it never gets boring!

Thanks for chatting, Persefoni!

Covestro is working with the **Alliance to End Plastic Waste** and the **EU Circular Plastics Alliance** to find innovative ways to recycle plastic!

WHO IS COVESTRO?

Covestro produces innovative plastic materials to make the world a brighter place.

