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An estimated 8 million tons of plastic end up in the sea every year, killing and harming marine life

By 2050 it could weigh more than all the fish in the ocean







Most of the plastic in our ocean is called microplastic which is often too small to see with the naked eye.

Sunlight, bacteria, the motion of the waves and other processes, break down the plastics into smaller pieces.

These pieces are then eaten by animals such as plankton — which are eaten by a larger fish.







Have a look around. What can you see that is made from plastic?

Why do you think plastic is a good choice of material for these items?









Fantastic plastic

Plastic is in lots of things we use. Making things from plastic is popular because there are many kinds of plastics and all have different properties. Generally all plastics are:

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- Flexible and easy to shape into different forms and sizes
- Easy to colour
- Lightweight to transport
- Waterproof and air-tight (keeps food fresh)
- Electrically insulating
- Cheap to buy



Plastic is used in many industries





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Here are just a few of the uses of plastic within these industries:

Building: heating pipes, sockets, fittings, windows and doors Car: dashboards, lights, wing mirrors, interior trim Packaging: bottles, bin liners, yoghurt pots Electronics: games consoles, TVs, radios, mobile phones





How plastic is made

Plastic is made from chemicals found in crude oil.

Crude oil is a smelly liquid found deep underground and formed from the remains of animals and plants that lived many years ago.

Over the years, the remains were covered by layers of mud. Heat and pressure from these layers turned the remains into crude oil.





How plastic is made

Crude oil is one of the main ingredients needed to make plastic.

But it is also a fossil resource, meaning there's a limited amount of it. Fortunately for one key component in plastic, called aniline, a way was discovered to create it from biomass (organic matter) such as corn and wood. This can be used instead of using oil.





How plastic is made



Step (2)

Step 3

Step 4

Step 5



First the oil is heated to a high temperature. Oil and gas molecules are bonded together to form polymers (raw plastic) Now more chemicals are added to make this plastic hard Next a dye is added to create the required colour The raw plastic is then poured into a mould that is the shape of the product it will become

The plastic then cools in the shape of the finished item



Plastic problems

Plastic does sound fantastic but the problem is that most plastic is not biodegradable (which means it can not break down and rot like garden waste). The way plastic is made also releases harmful gases.

Instead, if it is not recycled, it stays in the environment for hundreds of years — risking the life of our wildlife.





Plastic problems

When it is dumped, either in landfill sites (a place for burying waste), or in the sea, plastic can be harmful to wildlife.

Plastic waste cannot be burnt as it releases harmful gases into the air which causes air pollution.





Plastic problems

Plastic eventually breaks into small pieces which get moved around by the wind and the rain and can end up in our rivers and seas. They are then accidentally eaten by animals who mistake them for food. This is toxic and very harmful.

Larger plastic items such as packaging or carrier bags pose a risk for animals becoming caught up in them.





Pros	Cons	
 Cheap to use Flexible / can be shaped Waterproof Electrically insulating Strong Long lasting (minimal corrosion allowing for a longer life) 	 Most not biodegradable (does not break down) Toxic when burnt Releases harmful gases when made Some plastics not recyclable 	

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Pros	Cons	
trength ectrically insulating iodegradable (does break down)	 Not heat resistant Does not last as long Needs more maintenance 	



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Pros	Cons	
 Strength Flexible / can be shaped Cheap to use Heat resistant Long lasting Mostly recyclable 	 Conducts electricity Not biodegradable (does not break down) Corrodes (rusts) 	



Although it is a really useful material, what happens to plastic after we throw it away is causing a big problem for our planet as plastic can take an extremely long time to decompose (or break down).

If it is not recycled and is thrown into a landfill site (where non-recycled rubbish ends up once it's collected by rubbish trucks), it can last for up to 500 years!

Plastic also contains toxins (a poisonous substance), that is harmful to wildlife.





Plastic waste

8 out of 10 pieces of plastic made over the last 7 years have been thrown away

99% of seabirds have eaten plastic

160,000 plastic bags are used around the world every second

Each year, 400 million tons of plastic is produced and 40% of that is single use (plastic that is only used once)



Worldwide, 73% of beach litter is plastic: filters from cigarette butts, bottles, bottle caps, food wrappers, grocery bags, and polystyrene containers





What can WE do?

Reduce: To reduce your waste, try and recycle wherever you can — remember to use all your waste collection bins for different rubbish

Reuse: Reusing everyday items that have outlived their original purpose cuts down on potential wastage and rubbish sent to landfill. Before you dispose of something, ask whether it can be reused in another way

Recycle: Use your recycling bins at home or school to separate your waste, and you'll be amazed at how little rubbish you end up with in your waste bin



What can WE do

Problem 1

Reduce single use plastic

Use less single use plastic. Anything that is designed to be thrown away after use such as plastic cutlery, take-away containers, plastic water bottles



Solution

Refuse any single use plastics and instead use your own carrier bags, water bottles, coffee cups and paper straws. Why not bring your own cutlery with you instead of using plastic cutlery offered to you?



What can WE do

Problem 2

Litter

Worldwide, 73% of beach litter is plastic which is devastating for marine life



Solution

Place litter in the bin and recycle as much as you can in the correct box / bin. If there is no bin where you are, take your litter home and recycle it there



What can WE do

Problem **3**

Recycle, Recycle, Recycle! Across the world, only 18% of plastic

is recycled — meaning we could all do MUCH better



Solution

Take an interest in your own home recycling and make sure that everything that can be recycled, is recycled



Class challenge

Working in pairs, use the internet to research and select one 'plastic problem' of your choice and design a campaign to promote a solution to this problem. Perhaps you can find your own unique solution to the problem.

Remember to:

Communicate the problem to your audience in a clear way Deliver a proposed solution to this problem Create a logo to support your idea Think about a catchy slogan that people will not forget

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- a. Miniplastic
- b. Maxiplastic
- c. Microplastic



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Question 3: How long does it take for some plastics to break down?

- a. Up to 500 years
- b. Up to 50 years
- c. Up to 5,000 years



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Question 5: What does biodegradable mean?

- a. Something that animals like to eat
- b. Something that can break down and rot
- c. A washing powder that gets your clothes extra clean





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