

Plastic Pollution

What is plastic and why is it useful?

Plastic is a synthetic material and almost all plastics are made from petrochemicals – chemicals that are made from oil or natural gas that are found deep underground. Most plastics are polymers, which means that they are made from many different components (*poly* means *many*). Chemicals from oil are therefore mixed with other chemicals to make different plastics. Polymers have an advantage because scientists can vary them to have different properties so that different plastic polymers are suitable for many different uses: this is why there are such a wide range of plastics. Mobile phones, shopping bags, chairs, furniture, water bottles and even clothes can all be made of plastic. What other uses do you know for plastic?

Plastics are very useful materials because they can be moulded into many different shapes. They can be quite cheap to make and they last for a long time so most plastic objects can be used repeatedly. As well as being reusable, some plastics can be recycled. This means that old plastic is broken down by machines and used to make new objects. For example, some plastics can be recycled to make furniture, plastic bins and even clothing such as fleeces. However, many plastic items are thrown away after just one use (single-use plastic) and this is costly and wasteful because manufacturing plastic uses a lot of oil, which is a useful natural resource and the process also uses a lot of water and heat energy. If we simply throw plastic items away after just one use, it is a huge waste of natural resources. The British Government* say that 13 billion plastic bottles are used every day yet only 7.5 billion are recycled.

What happens to plastic when it is thrown away?

Some plastics cannot be recycled. Some of these plastics are burned in incinerators but most of them are buried underground in huge holes called landfill sites. Most other waste, such as leftover food or paper, biodegrades (breaks down) quite easily and small creatures called microbes can eat the waste and help it to decompose. However, no creatures can eat plastic and it does not break down, or biodegrade, easily so plastic that is buried can stay underground or in environments such as rivers and oceans for many years.

What is plastic pollution and why is it harmful?

Plastic pollution means pieces of plastic that have been thrown away are found in rivers, in soil, on the beach or in the sea. Plastic pollution not only looks horrible but it can damage the environment and harm animals and wildlife too. Some plastic pollution is made of large pieces of plastic like bottles or plastic bags but sunlight and the action of moving water, such as rain or the sea, can make plastic break down into smaller pieces, called microplastics, and these can be buried in the soil or float in rivers and seas without biodegrading.

While recycling seems like an environmentally-friendly solution, items such as plastic bottles are often down-cycled and broken down into small pieces to be used to make carpets or fleeces. This seems like a positive use of these plastics but when items such as synthetic fleeces are cleaned, tiny plastic fibres are washed into the waterways and they cannot be filtered out so they end up in rivers, lakes and oceans.

When plastic pollution reaches rivers and seas, the results for habitats and wildlife can be disastrous. Large pieces of plastic like nets, bottles and bags can trap or injure animals. Microplastics or small plastic fibres can look like food to marine creatures, such as fish or even microscopic plankton so they eat these plastics that contains chemicals and toxins. With tummies full of plastic these creatures are deprived of nutrients that they would usually get from their natural food and eventually, some animals die because they have swallowed so much plastic. In addition, it should be considered what the effect could be on humans as they eat fish and other creatures that have been contaminated by toxins from plastics.

What can we do to help?

Join the *Kids Against Plastic* campaign and see if you can help by following these three simple steps:

1. Reduce your use of plastic. That means try to use other materials instead of plastics. Try to refuse the 4 main plastic polluters: plastic cups, plastic straws, plastic bags and plastic bottles and use reusable items instead.
2. Pick up litter! Join the *Kids Against Plastic* goal to collect 100,000 pieces of single-use plastic
3. Can you become a 'Kid Against Plastic'? Find out as much as you can about the effects of plastic pollution and help to tell others and involve them in reducing the use of single-use plastic.

References

* House of Commons Environmental Audit Committee (2017) *Plastic bottles: Turning Back the Plastic Tide*
<https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/339/339.pdf>

Comprehension

Define these words:

synthetic

petrochemicals

manufacture

biodegrade

decompose

micro-plastic

microscopic

deprived

toxins

Questions

Looking on the surface

What is plastic?

What is plastic made from?

Which word tells you that plastic is not a natural material?

Explain why not all plastics are the same.

Which resources are used in the manufacturing of plastic?

Give two advantages of using plastic.

What happens to plastics that cannot be recycled? Give two answers.

Why doesn't plastic biodegrade?

What is plastic pollution?

Describe ways that plastic pollution can harm animals.

Can you name the 4 main plastic items that cause pollution?

Looking deeper...

Do you think plastic waste should be buried under the ground in landfill sites?

If you looked into a landfill site, what plastic items might you see?

How might we reduce the amount of water in landfill sites?

What animals might be harmed by plastic pollution?

Do you think it is OK to use plastic?

What are the advantages and disadvantages of using plastic?

How do you know if the plastic you are using can be recycled?

What are the issues with single-use plastic?

Do we need to recycle waste?

What can we do to help to stop plastic pollution?

How can we reduce our use of plastic cups, straws, bags and bottles? What other materials could be useful?