



Today's lesson is an overview of plastic pollution and the Toys for Turtles project. Students will learn about the timeline of plastic production, where plastic is used, and how it is getting into the marine environment.

# WHAT IS MARINE DEBRIS?



Marine debris is any human-made waste that ends up in oceans, seas, rivers, or other water bodies.

It includes a wide range of materials such as plastics, glass, metal, rubber, and more.

Common types of marine debris include plastic bottles, bags, fishing nets, cigarette butts, and food wrappers.

Can anyone think of any type of marine debris that they have seen?

# PLASTIC PRODUCTION

- PLASTIC WAS FIRST PRODUCED COMMERCIALY IN THE EARLY 1950s
- SINCE THEN, PLASTIC PRODUCTION HAS GROWN
- NOW, WE PRODUCE MORE THAN 380 MILLION TONNES EACH YEAR

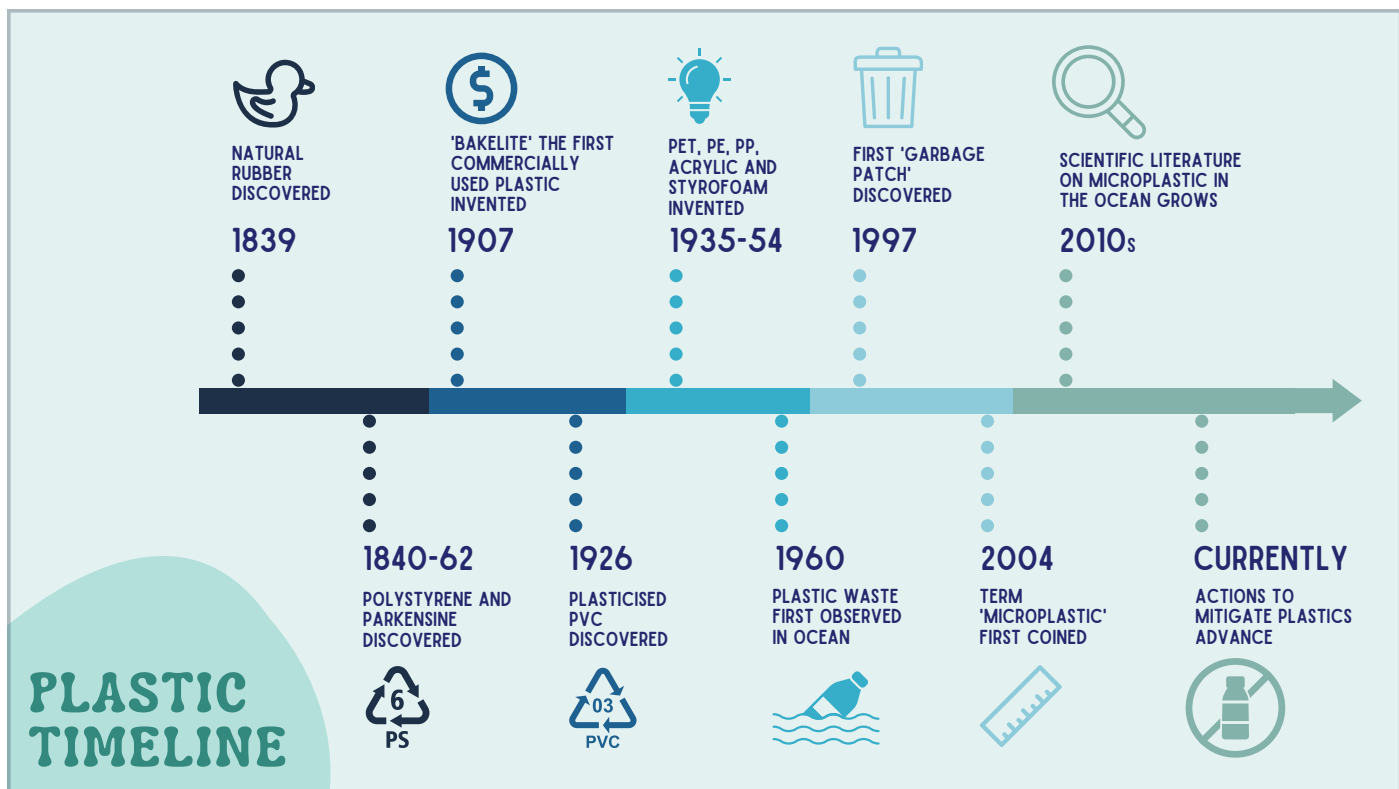


Plastic production has increased a lot since it was first used broadly in the 1950s.

We now produce more than 380 million tonnes each year across the world - a lot of plastic!

This number is only set to continue increasing.

Students could be asked why is plastic production still increasing? The answer is demand and population size also increasing.



This timeline shows when the first commercially used plastic was first invented (bakelite in 1907), and then the different types of plastic following.

Microplastics were only first discovered formally in 2004.

The students may be asked if they think microplastics would have still existed prior to the term being coined? In reality, microplastics made from the breaking down of larger pieces of plastic could have been occurring as early as plastic was first produced. So likely microplastics have been around since the mid 1950s.



## ADVANTAGES

## Throwaway Living

**DISPOSABLE ITEMS CUT DOWN HOUSEHOLD CHOICES**

The object flying through the air in this picture is a paper plate. It's one of the many disposable items that have become a staple in the modern home. While most people are aware of the environmental impact of these items, many are not aware of the impact they have on the economy. Disposable items are a major source of inflation, as they are often more expensive than their reusable counterparts. This is because disposable items are often made from cheap materials and are designed to be used only once. This means that they are often more expensive than reusable items, which can be used over and over again. Disposable items also contribute to the problem of waste, as they are often thrown away after a single use. This can lead to a large amount of waste, which can be costly to dispose of. Disposable items are also a major source of pollution, as they often end up in landfills or in the ocean. This can lead to a large amount of pollution, which can be costly to clean up. Disposable items are a major source of inflation, as they are often more expensive than their reusable counterparts. This is because disposable items are often made from cheap materials and are designed to be used only once. This means that they are often more expensive than reusable items, which can be used over and over again. Disposable items also contribute to the problem of waste, as they are often thrown away after a single use. This can lead to a large amount of waste, which can be costly to dispose of. Disposable items are also a major source of pollution, as they often end up in landfills or in the ocean. This can lead to a large amount of pollution, which can be costly to clean up.

# PLASTIC COMMERCIALS

**SARAN  
WRAP 1953**



**TUPPERWARE  
1960S**



**PEPSI-COLA  
1978**



**AMERICAN  
PLASTICS  
COUNCIL 1997**



These videos can be played to provide another style of learning for the students. Audio will be helpful. The videos are all between 30 seconds - 2 minutes

Saran wrap 1953

<https://www.youtube.com/watch?v=hiXGiCaBxtM>

Tupperware 1960s

<https://www.youtube.com/watch?v=FgD5uDQj9q8>

Pepsi-cola 1978

<https://www.youtube.com/watch?v=bCrkFlqZOys>

American plastics council 1997

<https://www.youtube.com/watch?v=8IJPB9LMNB0>



Activity: Class brainstorms and answers 'what can you think of that is made out of plastic in the room right now?'

Some great examples to give that the students may not have thought of is the clothes that they are wearing, the carpet and the computer screen.

# PLASTIC ENTERING THE MARINE ENVIRONMENT



**8 MILLION TONNES**  
OF PLASTIC ENTERS THE MARINE  
ENVIRONMENT EVERY YEAR



**1 RUBBISH TRUCK**  
WORTH EACH  
MINUTE

Plastic enters the marine environment and can affect a lot of marine life.

It is estimated that around 8 million tonnes of plastic enters the marine environment each year. Which on average, equals out to one rubbish truck worth of plastic enters the marine environment each minute.

Students could be asked if they have ever seen plastic pollution in the marine environment? If so, where did they see it and what type of plastic was it?

# PLASTIC IN THE OCEAN



This video can be played to provide another style of learning for the students. Audio will be required, although there are audio cues. The video goes for just over 3 minutes.

[https://www.youtube.com/watch?v=vrPBYS5zzF8&ab\\_channel=InsiderScience](https://www.youtube.com/watch?v=vrPBYS5zzF8&ab_channel=InsiderScience)

# SOURCES OF MARINE PLASTIC POLLUTION



**MISMANAGED  
PLASTIC WASTE  
(LITTER)**



**SEA-BASED PLASTIC  
DEBRIS**



**MICROPLASTICS**

There are three main ways that plastic can enter the marine environment.

1. Plastic litter. Who has ever seen plastic waste outside in the play yard?
2. Sea- based litter. This often comes from fishing vessels or transport vessels.
3. Microplastics. We will learn more about microplastics later in the series but these are small pieces of plastic that are hard to pick up and collect.



# PLASTICS AND MARINE LIFE



Plastic can have many negative effects on marine life.

What effects do you think plastics might have?

Examples: entanglement in nets, eating the plastic, using the plastic as a shell (hermit crab)



# PLASTIC POLLUTION IN AUSTRALIA



ALL THIS PLASTIC  
WAS FOUND ON  
AUSTRALIAN  
BEACHES



Although Australia has some of the most pristine and clear beaches in the world, we still face the plastic pollution crisis in Northern Australia.



Here we have NE Arnhem Land as a case study.

Most of the marine debris washing up on the shore is not from Australia. Majority of it is coming from other countries in the Indo-Pacific region, often Southeast Asia. The debris is carried through the ocean by tides, winds and currents, with the worst of it towards the end of the SE trade wind season (May - October).

Many of the countries that the plastic pollution originates from are overwhelmed with plastic pollution, and do not have the resources and tools for appropriate waste management.



What can we all be doing to help reduce the impact that plastic waste is having?

We can recycle - putting the bottles and recyclable items in the correct bins.

We can find plastic alternatives. Using a reusable drink bottle and reusable shopping bags are a great idea.

We can do research by completing beach clean ups and finding out what kind of plastic is present in our area.

We can stay educated by sharing the information we learn with others.

Reduce reuse recycle

# DISCUSSION POINTS

**WHAT BEACHES IN THE AREA HAVE YOU  
SEEN PLASTIC?**

**HAS ANYONE EVER HELPED OR WANTS TO  
HELP WITH A BEACH CLEAN?**

Start by asking if the class already knew that there was a significant marine debris problem in Australia.

Talk with the class about the beaches where lots of plastic is seen. Why might this happen?

Has anyone ever helped with beach clean ups in the area?

Would you be interested in helping?

\*Note that this can be re-directed depending on the school location. If there is a river nearby you could focus on that rather than beaches.

# **PRACTICAL**

**COMPLETE THE WORKSHEET ABOUT  
PLASTIC POLLUTION**

Students can fill in the worksheet provided in the lesson pack