

The Plastic Diet: Micro-plastics and how to fight them.

1. Introduction to the subject

Micro-plastic pollution is a growing problem around the globe, but many of us don't realise that we are introducing micro-plastics into our oceans through our every day lifestyle. Recent research has shown that we can now find micro-plastics in the food we eat. This is not a new problem, it has been circulating in our oceans and our food chain since plastic was first invented, and if we do not act now, we will reach the point of no return.

This lesson aims to make students question the consequences of their everyday actions and to give them the tools necessary to reduce their personal contribution to the global plastic pollution issue.

2. Key objectives

- To know the definition of micro-plastics.
- Understand how micro-plastics effect the environment and human health.
- Identify ways to prevent micro-plastics becoming a global issue.

3. Video presentation

- Are you eating plastic for dinner? <https://www.youtube.com/watch?v=FjT8GG0ETQg>

What are Micro-plastics, how are they effecting our ecosystems and how are they ending up on our dinner plates.

- The New Way Micro-plastics Are Devastating Marine Life.
<https://www.youtube.com/watch?v=PD88nTu8TTI>

The micro-plastic problem in relation to marine life, with emphasis on the amplification of the problem from ingestion by zoo-plankton to mega-fauna to human consumption.

- Fighting the Plague: How to save our seas from plastic pollution.
<https://www.youtube.com/watch?v=hE9bDq1UZQA>

Be a part of the solution; simple changes you can make in your everyday life to tackle the micro-plastic problem.

4. Questions.



In School

Break off to discuss questions. Split the class into 5 groups, each group to discuss one of the following questions (20 mins)

Each group to present to the class the findings of their discussions (5 mins per group)



Online Classroom

Using a virtual classroom or conference style video calls, each group to discuss one of the following questions (20 mins)

Each group to submit a presentation of their conclusions to the teacher (5 mins per group)



Independent Online Learning

Read each of the questions below. Make notes on each question and submit them to your teacher via email (20 mins)

Film a short video clip outlining your key points for each question. Submit to your teacher (5 mins per question)

Discussion

Presentation

- How does plastic end up in the sea, what can we do to prevent this?
- There are 5 trillion pieces of plastic waste in the ocean, how do we remove this plastic from the sea?
- Name 10 ways we can all reduce the amount of plastic we use in everyday life?
- Name 10 ways your school can use less plastic today!
- Imagine you are in a position of power (I.e. the Prime Minister), what laws would you impose to tackle the plastic pollution problem.

5. Workshop/Activity



In School

At home, record/collect all the plastic you use in the week. Bring in the following week to be placed in a box in the classroom and see how much plastic we all use in one week. Now what do we do to ensure this doesn't end up in our oceans?



Online Classroom

At home, record/collect all the plastic you use in the week. For the on-line classroom, you can take a picture of the quantity to show the rest of classroom. Now what do we do to ensure this doesn't end up in our oceans?



Independent Online Learning

At home, record/collect all the plastic you use in the week. Send a picture to your teacher to visualise how much plastic we use in a week. Now what do we do to ensure this doesn't end up in our oceans?

6. Action plan/ fund-raiser

- Be a part of the largest clean up in history. Host a fund-raising event to support THE OCEAN CLEAN UP. <https://theoceancleanup.com/>

7. Take home assignment

- Ask the students to design a community clean up action plan, to place recycling efforts within the school and further into the local community. The winning action plan will be published on The Fair Earth Foundation website and given an award, that will include a Global Citizenship Voucher. Send the action plan to mimi@fairearthfoundation.org
- Create a list of simple swaps you can do today to reduce your plastic footprint. E.g. Plastic bag to reusable organic cotton tote bag.

Useful links for further research:

- <http://oceanrangers.org/plastic-crusades/plastic-statistics/>
- <https://www.nationalgeographic.com/environment/2019/06/microplastics-spread-throughout-deep-sea-monterey-canyon/>
- https://oceancare.org/wp-content/uploads/2016/07/Factsheet_Microplastik_EN_2015.pdf

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Primary micro-plastics, which are 5mm or less in size before entering the environment.

Secondary micro-plastics, which degrade over time into smaller fragments. Soda bottles, fishnets and carrier bags are some examples of these.

Micro-plastics are **deadly**. Up to **one million people** and **100,000 marine animals** are dying every year as a result of micro-plastic pollution.

Micro-plastics are **consumed** by virtually all marine creatures, including cetaceans, birds, pinnipeds, fish, crustaceans, cephalopods and even plankton!

Many primary micro-plastics are derived from **cosmetics**, like toothpaste, face scrub and shower gels.

From consumption, micro-plastics enter the **human food chain**. Plastic particles eaten by haddock, cod, prawns and mussels will end up on **your** plate - potentially causing **tissue damage, reduced fitness, inflammation**

The average human **consumes** more than 50,000 plastic particles in a **year**. Micro-plastics can also be **breathed in!**

We can help to **fight the plastic plague** by:

Reduce the amount of **single-use plastic** products that we use, such as straws and carrier bags.

Switch to **alternative** cosmetics that use natural ingredients such as crushed nutshells.

Use products made with **natural**

materials - such as cotton reusable cotton tote bags

Advocate for **changes in the law** to dramatically reduce the production, consumption and disposal of plastic in our society.

Educate the public and encouraging people to **get involved** in organisations working to remove the plastic blight from our oceans.

Encourage and fund **research** for the development of **technologies** that can help to clean our

oceans and reduce the **toxic impact** on our environment and ecosystems from **all kinds** of plastic.

5.25 trillion pieces of plastic debris in our oceans - with as much as **8 million tonnes** per year being added to the pile.

Fair Earth's Gateway to Global Citizenship. A series of lessons that aim to make students aware and understand the wider world and their place in it. Every lesson has an 'In school,' 'Online Classroom' and 'Independent Online Learning' option.

WE CANNOT DO EVERYTHING BUT WE CAN ALL DO SOMETHING, IF EVERYBODY DOES SOMETHING EVERYTHING GETS DONE



Teacher Guide on Micro-plastics Lesson Plan (2 x 50 minute lesson)

1. Introduce the subject to the students with a short summary on the topic, provided in the lesson plan. (5 minutes)
2. State the key objectives with the students so that they know what the lesson will achieve. (2 minutes)
3. Show the students the three video presentations on Micro-plastics shown in the lesson plan. Ask the students to take notes on the three different videos, to fully take in the information. (20 minutes).
4. Bring the students into groups to discuss the questions stated in the lesson plan. Once they have discussed questions, they should prepare a 5 minute presentation on their answers (to be presented in the next lesson) (20 minutes).
5. Inform them of the at home activity listed on the lesson plan, to collect their plastic waste (ask them to rinse/clean it so it does not smell) into a box or bag until next lesson (a week).

Break

6. Summarise what the previous lesson was about, a quick mention of the video presentations. (5 minutes).
7. Each group of students will come up and present their answers on the questions, and the discussion results. (5 minutes each)
8. Remind the students of the at home task they had about the plastic waste and ask them to take a picture before the second lesson.
9. As a take home final assignment, ask the students to plan out an action plan to help recycle the plastic waste they have accumulated during that week, and to expand it to the local community. Make it a competition, as mentioned in the lesson plan. (5 minutes)
10. As an extra assignment, ask the students to go home and create a swap list with all the plastic products they can replace for environmentally friendly alternatives. (5 minutes)