

Marine Pollution - Classroom demonstration



INTRODUCTION

Human societies inevitably generate immense amounts of waste arising from the production and utilization of food as well as industrial and consumer goods. A considerable amount of this waste eventually ends up in the oceans - it is either dumped directly in the oceans, or reaches the oceans either through the rivers or wind. Once in the oceans, it continues to concentrate and accumulate there as there is no way of removing the waste from there. The problem is so severe, that assisted by ocean currents, garbage has started accumulating in the oceans.

“Great Pacific Garbage Patch” created by the North Pacific Gyre is one such example. It was discovered between 1985 and 1988.

Eco-Schools Steps: Curriculum linkages, Inform and Involve

Curriculum Linkage: Science/ Environmental Studies/Social Science

It spans from the West Coast of North America to Japan.

Estimated to be twice the size of Texas, 7 million tons of garbage by weight, Up to 9 feet deep.

The lesson plan encourages students to investigate marine pollution. The learning processes includes hands on demonstration and classroom interaction.



Objective:

Students will be able to

- explain that it is easy to pollute the oceans and difficult to clean/ treat them.

Time required/ Duration:

- **Classroom session 1:** 45 minutes for the teacher to do a classroom demonstration and background introduction to marine pollution and purpose of undertaking the particular demonstration with students.

Resources Required:

- Resources 1 and 2 will be useful for the teacher to prepare the background for the activity
- A bucket of water
- bowl/ dish and strainer
- Some dirt
- Detergent or liquid soap
- A toothpaste containing microbeads and / any other product containing microbeads
- Cooking oil, food colouring, candy/ chocolate wrappers, gloves
- Garbage/ trash bag



Activity

Classroom session **1**

- Tell the students that they will perform an activity together and discuss the observations.
- Place a bucket full of water on the desk and ask students to form a circle around it so that the bucket is visible to all.
- Distribute different things like detergent, toothpaste, dirt, oil, food colouring, wrappers, etc. to different children and ask them to throw these into the bucket of water.
- Ask students to put in the different types of waste one at a time. Record the time spent in putting in the different types of waste.
- Ask the students to remove the various things from the water - wrappers, detergent, toothpaste, etc. The strainer and gloves could be used for this purpose.
- Ask the students to observe and make a list of things that they are able to remove from the water and things which are not possible to remove from water through a physical process.
- Make a note of the time taken by students to remove various things from water.
- Explain to the students that they may not be able to remove things which have dissolved in water and this might require other processes.
- Give a background of marine pollution and its impacts. Resource 1 (How your clothes are poisoning our oceans and food supply) and Resource 2 (Did you know?) will be useful for the same.

Evaluation

Ask the students about the impacts of different products on marine life. Both products which have dissolved and those which had not. It would be possible to judge from their answers, whether they were able to grasp the concept of marine pollution and its impacts.

Resources

Resource 1

“How your clothes are poisoning our oceans and food supply” -

Common ground Environment

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How your clothes are poisoning our oceans and food supply



▲ Microplastic pollution is devastating our oceans. New research indicates that the biggest culprit may be the shirt off your back Photograph: Getty Images

New studies show that alarming numbers of tiny fibers from synthetic fabrics are making their way from your washing machine into aquatic animals

Source: <https://www.theguardian.com/environment/2016/jun/20/microfibers-plastic-pollution-oceans-patagonia-synthetic-clothes-microbeads>

Resource 2

Did you know?

1. Washing your face or brushing your teeth can harm the ocean, yourself and your children.
2. 67 different microplastics are currently used by the industry (https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/microplastics_manual_voor_de_website_env2.pdf)
3. Microplastics can be found in different types of cosmetics
4. Labelling on products is not always easy for people to understand - the names are not recognised as microplastics, the text size is too small to be read and sometimes there is no list of ingredients!
5. Some products which have zero microplastics are indicated by the zero plastic inside symbol
6. Explore the list of products and details of whether they contain microplastics or not from the (<http://www.beatthemicrobead.org/product-lists/>)

