

Investigating ocean pollution

Overview:

Investigate the Earth's oceans and see what you can find.

In this demonstration, a volunteer is selected from the audience to help investigate the Earth's 'water sample' in a water tank, to determine the health of the oceans. They fish out separate items from the tank piece by piece, that are briefly discussed and looked at by the doctor, trainee and Earth.

Programme use:

Family show.

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Main stories:

Climate change, ocean acidification and overfishing are all serious problems, but one of the main ways that humans are impacting the oceans is through plastic pollution. An enormous amount of the plastic produced each year will end up in the ocean, where it breaks up into tiny pieces.

Pieces of plastic in the ocean can cause many problems, but a key issue is that it is eaten by marine life, often making them ill or killing them. The plastic also makes its way up the food chain, and so impacts upon entire ecosystems, including humans that eat the fish and other marine animals. The pollution can be seen as larger pieces of plastic, like plastic bags, or plastic straws



(mega-plastic) or smaller pieces that are harder to detect, like microfibers (micro-plastic).

Environmental scientists don't have answers to the problem of plastic in the ocean, but can help find solutions, by studying the impacts closely through careful monitoring and research, from the ocean surface to the deep, using high tech research vessels and remotely operated vehicles.

How it works:

Before the show:

1. Fill up the water tank to a safe level, so that it can easily still be wheeled around.
2. Place it out of sight from the audience but somewhere it can easily be moved into view.
3. Inside the water tank, place the fish models, a plastic bag (from local shops ideally), and a couple of plastic straws.
4. Have the rubber gloves, goggles, pipet and microscope ready to the side.



During the show:

1. The doctor asks the Earth to provide a water sample. The Earth goes out of sight to collect the tank full of water.
2. Invite a volunteer down to the stage and give them their goggles and rubber gloves.
3. Explain that they are going to help check the Earth's water sample, to determine how healthy the oceans are.
4. Get the volunteer to take out objects one at a time to hand to the doctor for inspection.
5. Discuss each item in turn with the trainees and the Earth then place in a separate container for recycling, apart from the fish that are placed back in the tank.
6. Once the straw, fish, and plastic bag have been inspected, thank the volunteer and send them back to their seat.
7. Explain that some plastic pollution is small, so we should look at some of the sample under microscope.
8. Use a pipette to take a sample and place under the 'microscope', with image appearing on the PowerPoint slide behind of microfibers.
9. Explain where microfibers come from, their dangers, and what scientist are trying to do to stop them going into the ocean.

Key take home messages:

- A healthy ocean is biodiverse and abundant with life.
- Plastic pollution has a negative impact on the health of the ocean.
- Environmental scientists carefully monitor and study marine biodiversity and the impacts of plastic in the ocean so we understand the health of the ocean and take the best action to improve it.



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