



A degrading experience

In the ocean some plastics, such as Polycarbonate, Polystyrene and PET sink, while LDPE, HDPE, Polypropylene and foamed plastics float on the ocean's surface. Sunlight and wave action cause these floating plastics to fragment, breaking into increasingly smaller particles but never completely disappearing. This plastic pollution is becoming a hazard for marine wildlife and ultimately for us.



Orientation:

How long does it take to break down? Eliciting Ss' prior knowledge - have a number of items that end up in the rubbish in front of the class, e.g. plastic bag, cigarettes, plastic bottle or apple core. Ask Ss in groups/pairs to decide which items will break down the fastest and make a list. Then see if Ss can guess how long it will take for each item to break down.

Building on prior knowledge:

Have Ss look at the 'marine debris from land and sea' diagram in the Lesson 4 A Degrading Experience PowerPoint presentation, which shows how long it takes for items to break down. Compare these facts to the elicited Ss' ideas. Spend some time focusing on how long it takes plastic to break down.

Degrade and biodegrade:

Ask Ss if they have ever seen degradable or biodegradable bags in the supermarket. Elicit ideas from Ss as to what these terms mean. Do your Ss know the difference between degrade and biodegrade? Help Ss to understand that it is bacteria in soils that help plastic bags degrade, but plastic never actually biodegrades. So what about the plastic bags in the ocean, can they degrade or biodegrade? Light also helps plastic break down – this is called photodegradation. However, when light breaks down plastic it doesn't really get rid of it, it just breaks it into smaller pieces making it easier for marine life to eat.

YEAR LEVEL

Years 7 - 10

MATERIALS

PowerPoint presentation
7-10 Lesson 4.ppt

Equipment for Ss to view
PowerPoint presentation

Gloves (if you are doing the
recycling game or rubbish
timeline activity)

KEY WORDS

- Degrade
- Biodegrade
- Photodegrade
- Organic
- Inorganic
- Recycle





A degrading experience

Human consumption patterns:

Have Ss reflect on human consumption patterns. Brainstorm different alternatives to plastic bags. For more information on plastic bags refer to the Department of Sustainability, Environment, Water, Population & Communities website: <http://www.environment.gov.au/settlements/waste/plastic-bags/index.html>. Ss could also use the internet to research more about the differences between degradable, biodegradable and photodegradable and what this means for the environment.

Recycling game:

This is a fun way to check Ss' understanding of recycling. Use a recycle bin or box and a normal rubbish bin. Have a large number of daily items that get thrown away regularly, e.g. toothbrush, cling film, plastic bottle, food scraps and aluminium foil. Using a timer get students to quickly put the rubbish into the correct bins. See how correct they are. How this activity is set up will depend on resources and the size of your class. As each region has different recycling facilities, check with your local city council before this activity to find out what can and can't be recycled in your area.

How are plastics recycled?

Ask Ss if they have ever noticed the different numbers on the bottom of plastic items. Do they know what this means? What is your local city council able to recycle? Not all city councils in Australia can recycle all the different numbered packaging, so it often ends up in landfill or being sent overseas for recycling. For interesting facts about the different numbers for recycling and what they mean, refer to this video clip on YouTube:

<http://www.youtube.com/watch?v=GwC8clzLQfc>.

Useful links:

For a short series on the seven different types of plastics, also look at these video clips. They are designed to be informative and quirky - probably funny for your students:

<http://www.youtube.com/watch?v=TFco7uaJmL8&playnext=1&list=PLDE5A69832ECC4D26>

Plastic poster:

There is a little rhyme that will help Ss remember which types of plastic are considered to be okay for food and drinks: With food and drink choose 4, 5, 1 & 2 – all the rest aren't good for you! Ss could create a poster showing their knowledge about the different types of plastic to help create awareness about single-use plastics. Reduce, Reuse, Recycle!

Timeline:

Students could go through a rubbish bin at school and see what is in it (use gloves for this!!). They could photograph or draw the items onto a timeline showing their understanding of the durability of each item and display it somewhere in the school to share information. Alternatively you could survey the school canteen to find out what plastic is used there.

