

BIG BAG BAN

TEACHER GUIDE

OVERVIEW

The EU has recently approved tough new measures to slash the use of plastic bags. New targets will force each country to reduce plastic bag use by 80% before 2019.

In this activity students examine degradable plastic bags as a possible alternative to ordinary plastic bags. They choose questions to ask experts, and come to a reasoned decision in answer to the dilemma question: will degradable plastic bags solve the problems caused by ordinary plastic bags?

LEARNING OBJECTIVE

In this lesson students will decide whether to replace ordinary polythene bags with degradable bags using:

- Materials: properties of polymers
- Science in society: evaluate the merits of a solution to a real-world problem

BLUEPRINT CURRICULUM LINK

- Unit: Structure & bonding
- Concept: Structure & properties: Physical properties depend upon the structure of a substance, the energy to overcome forces between particles and the ability of charged particles to flow
- Skills: Read: Make inferences
- Learning stage: Analyse

TEACHING MATERIALS

- The presentation PowerPoint contains both the teaching presentation and the Student Sheets.
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STAGE/PURPOSE	RUNNING NOTES
<p>Starter The EU has imposed limits on plastic bag use. Will degradable plastic bags solve the problems caused by ordinary plastic bags?</p>	<p>Display (2) to show that plastic bag waste kills animals and looks unsightly. Point out that the EU is imposing limits on future plastic bag use.</p> <p>Display (3) and ask student pairs to identify possible alternatives to plastic bags. Answers include paper bags, cardboard boxes, cloth bags, and extra strong plastic ‘bags for life.’ Then display (4) and tell students that this lesson will focus on just one possible alternative – degradable bags. Emphasise the dilemma question: will plastic bags solve the problems caused by ordinary plastic bags?</p> <p>Display the objectives (5).</p>
<p>Main Students are reminded about the structure of polythene, and its properties. They choose questions to ask experts to solve the dilemma question.</p>	<p>Display (6) to remind students of the structure of polythene. Emphasise that it is the structure and bonding of polythene that determine the properties of the material. Students discuss the question at the bottom of the slide – what other properties make polythene suitable for bags?</p> <p>Display (7) which outlines the key difference between ordinary bags and degradable bags.</p> <p>Display (8) to outline the main task:</p> <ul style="list-style-type: none"> • Choose four students to become experts. Give each expert one of SS2a, b, c or d. Ask them to do the first two tasks on the SS. • At the same time, give SS1 to the rest of the class. Student pairs follow the instructions to rank the questions. <p>Then organise a meeting, in which each student pair in turn asks their chosen question to the panel of experts, and the experts give their answers.</p> <p>All students then individually complete the third task on (8). Will biodegradable bags solve the problem? Once students have started this task, display (9) to help them to structure their responses.</p>
<p>Plenary Students reflect on the decision and peer-assess each others’ responses.</p>	<p>Display (9). Students peer assess each others’ answers using the criteria given.</p> <p>Lead a discussion to enable students to reflect on the responses as a class. Overall, are degradable bags a good solution to the problem? If so, which type: oxo-degradable bags or biodegradable bags? What reasons best support the decisions made?</p>