

Recycling saves energy



Learning objectives

At the end of the activity, children will:

- be aware of the most common uses of aluminium;
- understand the basic material properties of aluminium;
- understand the environmental and financial benefits of recycling aluminium; and
- know how much energy can be saved by recycling drinks cans.

Curriculum Links

Science, Citizenship.

Sustainable Schools Doorway

2 Energy and Water, 4 Purchasing and Waste.

Introduction

Investigating aluminium and the environmental benefits of recycling aluminium drinks cans is a great way to show students how easy it is to save energy and reduce the school's carbon footprint.

This activity takes place over two lessons a week apart, with homework in between.

Lesson 1

1 Ensure you book the ICT suite for the first lesson, which involves web-based research on aluminium.

2 Start by discussing as a class what the most common uses of aluminium are, how it is produced and what its material properties are. Much of this information can be found on www.alupro.org.uk

3 Working in small groups, students should then investigate the use and recycling process of aluminium drinks cans and take research notes for their homework activity.

4 Ask them to answer the questions on the worksheet as part of their research, using the web links provided.

Homework

1 Students should complete the research started in class and compile their findings into a leaflet, explaining why people should recycle their aluminium cans.

2 Ask them to rinse out and collect all their drinks cans used at home over the course of a week (including drinks cans from family members). Everyone should bring their cans to school for the second lesson.

Lesson 2

1 Collect students' leaflets and recap the answers to the worksheet questions from the first lesson.

2 Working in small groups, students should pool the drinks cans they

have brought in, and test each one with a magnet to test whether it is made from aluminium or steel. Filter out the steel cans, then count and weigh the aluminium cans using spring balances. Record the results on the student worksheet.

3 Bring the class back together to find the total number and weight of aluminium cans collected by the class during the week and record the figures on the worksheet.

4 Assuming that the consumption of aluminium cans by the class and their families is typical of the rest of the school, how many and what weight of aluminium cans would the whole school generate in one week or one year?

5 Working on the basis that a recycled aluminium can saves enough energy to run a television for three hours, calculate how many hours of 'TV power' your school could generate by recycling cans for a year. Then use the answer to question 9 to calculate how many kilowatts of energy would be saved.

Extension ideas

- Find out what price your nearest 'Cash for Cans' centre currently pays for aluminium (see websites listed on the worksheet). Calculate how much money your school could raise each year by recycling all its cans. Even better, set up a can recycling facility at your school.



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Lesson 1



Use the websites listed below to answer the following questions about aluminium cans:
www.alupro.org.uk www.thinkcans.com www.recycle-more.co.uk/nav/page524.aspx

1 How many aluminium drinks cans are sold in the UK every year?	
2 How can you tell if a drinks can is made from aluminium or steel?	
3 List three reasons why recycling aluminium cans is good for the environment.	
4 How many aluminium cans does the average person in the UK use in a year?	
5 How many times is it possible to recycle an aluminium can?	
6 How many kilograms of bauxite (aluminium ore) are saved by recycling one kilogram of aluminium cans?	
7 What percentage of energy is saved when producing a recycled aluminium drinks can, compared with producing a new can from scratch?	
8 How long could you run a TV using the energy saved from recycling one aluminium can?	
9 How many kilowatts of energy are saved by recycling one kilogram of aluminium?	
10 Where can you recycle your used aluminium cans in your local area?	

Use the information above to produce a leaflet to persuade people to recycle their aluminium cans!

Lesson 2



1 How many aluminium cans did you collect in a week?	Group:	Class:
2 What is the weight (kg) of the collected cans?	Group:	Class:
3 Estimate the overall number of aluminium cans used in your school (number of collected cans in your class x number of classes)	In a week:	In a year:
4 Estimate the overall weight (kg) of aluminium cans used in your school (class weight x number of classes)	In a week:	In a year:
5 Using your answer to question 8 above, how many 'TV hours' worth of energy could your school generate in a year by recycling its aluminium cans?		
6 Using your answer to question 9 above, how many kilowatts of energy could you save in a year if your school recycled all its aluminium cans?		