

Key Stage 4 Worksheet

Podcast: Using Algae To Clean Up Industrial Waste Fumes - Dr Emma Preedy

From the series: Exploring Global Problems,
by Swansea University



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EXPLORING
GLOBAL PROBLEMS

Introduction

In this Exploring Global Problems podcast, Swansea University's Dr Emma Preedy talks about her work with the Reducing Industrial Carbon Emission (RICE) Project. Emma's research focuses on using algae to capture carbon dioxide gas released by industrial processes.

Listen to the podcast:

[www.swansea.ac.uk/
research/podcasts/algae/](http://www.swansea.ac.uk/research/podcasts/algae/)

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Why is research into carbon capture important?

Some gases which exist in the Earth's atmosphere trap infrared radiation by absorbing it and emitting it back to Earth. This means that when they are emitted in large quantities by burning fossil fuels, they enhance the greenhouse effect and warm the Earth. These gases are called greenhouse gases. Carbon dioxide is an example of a greenhouse gas.

The greenhouse effect is not a bad thing, without it the Earth would be too cold to support life, but when too much greenhouse gas is released into the atmosphere the greenhouse effect is enhanced and dangerous climate warming occurs. This is called global warming. The levels of greenhouse gases are so high in our atmosphere now that the average temperature across the surface of the Earth has warmed by 1°C and our planet is also experiencing more extreme weather events such as droughts and heat-waves.

Carbon dioxide is a really problematic greenhouse gas because a lot of the things people do release carbon dioxide; burning fossil fuels (oil and gas), burning wood, and deforestation all increase emissions of carbon dioxide to the atmosphere.

What is this podcast about?

Dr Emma Preedy introduces a research project called **RICE** (which stands for “Reducing Industrial Carbon Emissions”). Dr Preedy’s project is a ‘**carbon capture**’ project which uses the extra carbon dioxide in our atmosphere to grow algae (plants that live in water). The algae uses carbon dioxide to grow, and emits oxygen into the atmosphere. The algae then produces proteins which can be used in other products. The algae help to reduce carbon dioxide levels but also are useful themselves as a food product. The algae grow in something called a photo (light) bio (biology – the algae) reactor. The reactor will use light and carbon dioxide to grow algae. This produces oxygen and a source of protein, which are both useful products.

Why use algae?

Algae are a group of aquatic organisms that make their food the same way plants do, through photosynthesis. During photosynthesis carbon dioxide, water and light react to make sugar (glucose) and water.

There are advantages to using algae over plants. For example, the algae used by the RICE project is microscopic so a lot of it can be grown in a relatively small space. The RICE project grows their algae in long plastic tubes in a photobioreactor.

Questions

What does the term carbon footprint mean?

List 5 things you could do to reduce your carbon footprint.

Interactive: Click on box to start typing



