



GREEN-EDU Learning Activity

Title: Cleaning up our Oceans

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Summary

Lesson plan summary

Through this lesson plan students will learn about green Chemistry, the ocean and how human activities can affect the environment. After an introduction to green chemistry and the oceans, they will discuss environmental problems related to the oceans such as plastics and oil spills. They will use the design cycle to find ways to clean the ocean from an oil spill and from plastics. Through this activity students will learn about mixtures and separation techniques.

Subject	Green Chemistry
Topic	Cleaning up our oceans
Age of students	Elementary 6-12
Preparation time	30 Minutes
Teaching time	180 Minutes
Online teaching material (links for online material)	<p>Introducing Green Chemistry: The Science of Solutions https://blossoms.mit.edu/videos/lessons/introducing_green_chemistry_science_solutions</p> <p>The oceans</p> <p>The Pacific</p> <p>Oil spill</p>
Offline teaching material	<ul style="list-style-type: none"> "12 Principles of Green Chemistry" from Figure 4.1: (p.30). 12 Principles of Green Chemistry from Green Chemistry: Theory and Practice (1998) by Anastas P and Warner J. By Permission of Oxford University Press. American Chemical Society Green Chemistry Institute EPA Green Chemistry



- [Beyond Benign](#)
- <https://www.youtube.com/watch?v=PqxMzKLYrZ4>
- <https://www.youtube.com/watch?v=RzkJkEKV8Yk>
- <https://www.youtube.com/watch?v=IDhapt7nw4A>

Aim of the lesson

By the end of this lesson students will:

- 1) Understand what Green Chemistry is
- 2) Learn about the Ocean and its importance for life
- 3) Use the design cycle to find ways to clean an oil spill
- 4) Use the design cycle to find ways to clean the Ocean from plastics

Trends

STE(A)M Learning , Collaborative Learning, Problem solving



Activities

Name of activity	Procedure	Time
Introduction to Green Chemistry	<ol style="list-style-type: none"> 1. Start the lesson with introductory questions: What does a chemist do? What are some chemical products? What do you think about when you hear the words "Green Chemistry"? What is environmental science? 2. Students can watch the introductory video ... 3. Students will be introduced to the 12 Principles of Green Chemistry. Activity: Think about what Green Chemistry means to you. Present the 12 principles in your own words. Students will be divided in groups. Each group will be assigned with a green Chemistry principle and will be asked to present it with a skit, a drawing or even a song to their classmates. 	45 min
Our Oceans	<ol style="list-style-type: none"> 1. Start the lesson by giving the students some information about the Oceans 2. Use Google Oceans 	45min
Oceans of Plastic	<ol style="list-style-type: none"> 1. Motivate students to be part of the greening effort for a sustainable future. 	90 min
Oil spills in the Ocean	<ol style="list-style-type: none"> 1. 	45 min

Assessment

Describe here the assessment method of the lesson, if any. For example, if you plan on assessing your students with a quiz, include here questions and answer options with color-coding the correct answers.