

Lesson Plan: Plastic Rain

<Header Image: <https://elements.envato.com/plastic-and-microplastic-in-the-sand-beach-S8NHEZV>>

Overview

As a **High School** or introductory **Undergraduate Environmental Sciences** or **Chemistry** teacher, you can use these computer based tools to teach about **environmental pollutants like airborne microplastics** and their impact on Earth's climate.

This lesson plan examines environmental pollutants like microplastics, their sources, their environmental impacts, impact on human health and how airborne microplastics are contributing to climate change. Students will also be able to calculate their contribution to plastic pollution and learn ways to limit their use of single-use plastics.

Thus, the use of this lesson plan allows you to integrate the teaching of a climate science topic with a core topic in **Chemistry** and **Environmental Sciences**.

Learning Outcomes

The tools in this lesson plan will enable students to:

1. learn about plastic rain.
2. determine the contribution of airborne microplastics to climate change.
3. explore the possible impacts of microplastics on human health and the environment.
4. learn about the fundamental links between climate change and marine plastic pollution.
5. explore ways to eliminate single-use plastics.

Teacher-contributed lesson plan by **Dr. Shikha Gulati (Sri Venkateswara College, University of Delhi)**, and **Dr. Shefali Shukla (Sri Venkateswara College, University of Delhi)**.

Want to know more about how to contribute? [Contact us](#).

About

Grade Level	High School, Undergraduate
Discipline	Environmental Sciences , Chemistry
Topic(s) in Discipline	Environmental Chemistry , Environmental Pollution, Pollution , Air Pollution, Water Pollution, Plastics, Microplastics, Greenhouse Gases , Marine Ecosystems
Climate Topic	Climate and the Atmosphere ; Climate and the Hydrosphere ; Climate and the Biosphere
Location	Global
Access	Online
Language(s)	English
Approximate Time Required	40-50 minutes

Mapped Sustainable Development Goal(s), apart from 4 and 13	SDG 11: Sustainable Cities and Communities SDG 6: Clean Water and Sanitation SDG 3: Good Health and Well-being
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Step-by-step User Guide

Here is a step-by-step guide to using this lesson plan in the classroom/laboratory. We have suggested these steps as a possible plan of action. You may customize the lesson plan according to your preferences and requirements.

1	Introduce the topic by playing a video micro-lecture Video (7 min)	Use this video micro-lecture titled “How is it raining plastic?” developed by the American Chemical Society to introduce the topic of plastic rain. It can also be used to explain the main sources/causes of plastic rain, introduction to microplastics, the contribution of airborne microplastics to climate change, and possible impacts of microplastics on human health and the environment. This can be accessed here .
2	Demonstrate how it is related to Climate Change through this Reading Reading (20 min)	Next, use the reading titled “The fundamental links between climate change and marine plastic pollution”, by Ford et al. published in Science of The Total Environment, to describe how plastic contributes to greenhouse gas (GHG) emissions throughout its life cycle. It also discusses how an increase in the number of extreme weather events, as a result of climate change, will worsen the spread of plastic in the natural environment. The reading will help students understand the impacts of plastic pollution on marine ecosystems. This can be accessed here .
3	Engage through Classroom/Laboratory Activity to calculate individual plastic pollution Classroom/ Laboratory Activity (15 min)	Use the classroom/laboratory activity created by earthday.org to calculate and assess the students' contribution in plastic pollution. In order to manage our plastic pollution, we need to measure it and this can be done using the calculator created. This calculator enables individuals to track their daily and yearly consumption of single-use plastics and also helps to explore ways to reduce it. This activity can also be used to provide alternatives to single-use plastic and take part in local clean-up actions to reduce plastic footprint. This can be accessed here .

Questions

Use this Lesson Plan to help the students to understand and find answers to:

1. What is Plastic Rain? How is it raining plastic?
2. What are the main sources of plastic rain?
3. How do airborne microplastics contribute to climate change?
4. What are the impacts of microplastics on health and the environment?
5. What are the fundamental links between climate change and marine plastic pollution?
6. Discuss the best practices to mitigate single-use plastics.

Additional Resources

1.	Reading	This research article can be used to help students understand about the spread of plastic production, its sources and consequences of microplastics in the atmosphere. This can be accessed here .
2.	Classroom/Laboratory Activity	This activity presents plastic pollution through a myriad of activities such as word puzzles, surveys, and games, amongst others to help reduce, reuse, and recycle plastics at individual level. This can be accessed here .
3.	Video	This video presents different possible ways to eliminate single-use plastics. This can be accessed here .

Credits

1.	Video “How is it raining plastic?!”	Developed by American Chemical Society , powered by Science X Network
2.	Reading “The fundamental links between climate change and marine plastic pollution”	An article by Ford, Helen. V. et al. published in Science of The Total Environment , Volume 806, Part 1, 2022.
3.	Classroom/Laboratory Activity titled “Plastic pollution calculator”	An article on earthday.org
4.	Reading “Constraining the atmospheric limb of the plastic cycle”	An article by Brahney, Janice et al. published in PNAS April 20, 2021 118 (16)
5.	Reading “Plastic Pollution: Curriculum and Activity Guide”	A curriculum was written and published by 5 Gyres Institute .
6.	Video “How to eliminate single-use plastics on vacation”	A video by National Geographic , 2015-2021