



Teacher Guide

UNIT 4 LESSON 1: PLASTIC PRODUCTION AND POLLUTION

Theme

The production of plastics and the pollution created reduces natural resource availability and overall quality of the environment.

Missouri Science Standards: ESS3.C.1

Vocabulary



Plastic - synthetic or semi-synthetic materials that can be molded into various shapes with heat and pressure.

Polymers - long chains of repeating chemical units

Biodegradable - capable of being decomposed by biological agents

Nurdles - small pellets that are the first step in the process of making any plastic thing.

Video 1: Introduction to Plastic Pollution

Video Description: In celebration of the June 8th World Oceans Day, Future Frogmen produced an animated video discussing what you can do to reduce plastic pollution. This video serves as a nice, short introduction to the issue of plastic pollution and what the students can do.

Video Link: <https://www.youtube.com/watch?v=wclaJrLu7ys>

Teacher Notes:

- Video is 3 min total in length

Follow-Up Questions:

1. Fill in the blanks. The influx of plastic materials into the environment is _____.
2. How long can plastic last in the ocean?
3. Microbeads (or microplastics) are pieces of plastic that are < _____ mm.
4. List 5 of the 8 steps mentioned that YOU can take to reduce plastic pollution.

Video 2: Can We Actually Clean Up the Plastic Pollution Problem?

Video Description from YouTube: There's been a lot of talk on YouTube lately about ocean plastic pollution. But there hasn't been enough talk about the ridiculously unthinkable scale of the ocean plastic pollution problem or how it intersects with other environmental issues like climate change. And here's a spoiler alert: Nearly all environmental scientists agree that ocean plastic pollution isn't a problem we can clean our way out of. So, what CAN we do? That's what this video is about.

Video Link: <https://www.youtube.com/watch?v=6jkN5OX9gZc>

Teacher Notes:

- *Video is 15 min and 54 seconds long. It is recommended that the students watch the whole thing.*
- *Video gives information in a light manner that does not take away from the seriousness of the issue.*
- *Video may be overwhelming for students if they haven't heard much about the plastic pollution issue before. If this is the case, make sure to pause frequently and check in with students.*

Follow-Up Questions:

1. True or False? If we don't understand the truth of what we are up against, we can't fix it. And we can fix it if we take the right steps.
2. Fill in the blanks. Plastic has only been around for less than _____.
3. True or False? Plastic doesn't biodegrade. Meaning plastic does not break down naturally through the action of biological agents.
4. What are the little plastic pellets called?
5. What percentage of plastic gets recycled in the United States?
6. True or False? Plastic pollution is more than just litter. It is also a climate and greenhouse gas problem.
7. List the 8 steps we can take to reduce plastic pollution mentioned in the video.
8. True or False? Every type of plastic is equally recyclable.
9. True or False? We have the tools we need for the solution to plastic pollution.



Activity: Plastic Scavenger Hunt

Activity Summary: In this activity students will take a "pre-quiz" to determine their gaps in knowledge about plastic pollution. Then they will do a scavenger hunt to find items made of plastic. With each plastic item they will determine what type of plastic it is made of and research how long it takes for that plastic type to breakdown.

Teacher Notes:

- *Students will need an internet capable device to be able to take the quiz and research the types of plastic.*

Concluding Questions/Assessment

*Student worksheet included in packet.

1. What were two things that surprised you about the plastic pollution issue that you learned in this lesson? Please be specific about what surprised you.
2. When you first heard about the scale of the plastic problem, how did you feel? How do you feel now?
3. Explain why recycling is problematic as a solution to plastic pollution. In other words, explain why we would be unable to recycle our way out of this problem.
4. What are two alternatives to using single-use plastic bottles or plastic bags?
5. What is one thing you are going to do to reduce your own plastic use or help fix the plastic pollution issue?

