



SeaKeepers Documentary Series
Lesson 4: Microplastics



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Grade Level: 8-10

Estimated Time: 60-90 min

Lesson Overview:

Our oceans face many threats today, including climate change and pollution. In order to protect and preserve our oceans, we need to understand these threats and how the oceans respond to them. The International SeaKeepers Society supports marine research and education by connecting scientists with yacht owners, creating research opportunities for scientists to better understand our oceans - and to create plans to protect them.

You don't need to be a scientist to help save the oceans! Understanding marine ecosystems and how we affect them is just as important. This lesson explains how **plastic degrades into microplastics**, and focuses on the difficulty of removing plastic once it is too small. The goal of this lesson is to explain why marine plastic pollution is a problem, how plastic can penetrate into every terrestrial and aquatic ecosystem, and teach students how they can help stop the spread of plastic pollution.

Lesson Breakdown:

- SeaKeepers Documentary Series: Episode 2 (6 min)
- Presentation about ocean plastic pollution (PDF [here](#)*) (10 - 15 min)
- Activity: Activity and Worksheet (30-60 min)
- Assessment: Discussion (15 min)

*Email Maggie@Seakeeper.org for powerpoint file

Educational Standards Addressed:

- Florida: SC.912.L.17.20: Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability.
- National: HS-LS2-7: Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

Anticipated learning objectives:

- Understand that plastic can be found everywhere
- Understand that it never breaks down and is a long term problem
- Identify why plastic can be hazardous for marine life

Tips:

This lesson is part of a 3-part documentary series by The International SeaKeepers Society. This lesson would fit best surrounded by lessons of similar themes (ocean conservation), including other lessons from this series as well as lessons from other ocean conservational organizations.

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Preparation & Materials

Students will need background information on what plastic is and how it can harm sea life. A powerpoint presentation is included for the lesson, but feel free to use other materials you have to explain these concepts. For the activity, students will need:

- Access to a park, parking lot, or beach where loose sand or gravel can be sifted for microplastics.
- A sieve (multiple sizes) or kitchen strainer
- Dissecting microscopes
- Forceps

Activity instructions for teachers:

1. This activity would be best if accompanied by a field trip or outdoor excursion. Bring students to a beach, a park, or any outdoor space where small plastics can be observed and the dirt or gravel is loose enough to sift through. If this is not possible, the instructor may fill a small tub with sand/gravel and small plastic pieces for sifting in the classroom.
2. Have students use a sieve or kitchen strainer to sift through the sand, locating the largest pieces of debris.
3. Under a dissecting scope or magnifying glass, students should look at the pieces they've removed and attempt to identify biological and non-biological pieces of debris. They can use the worksheet to record their findings, and may attempt to identify the items they are finding. All non-biological pieces should be removed and collected in a central container.
4. Students with different size sieves or strainers should compare findings.
5. Finish the activity by gathering the class for a discussion. Identify what biological and non-biological items were found, and discuss where each may have come from, and which were most abundant. In the areas where samples were collected, were there sources of runoff nearby? Bodies of water? What sources most likely contributed to the plastic identified in the samples?
6. Discuss how sizes varied as well. How can small pieces of plastic be removed from an ecosystem? These questions are all open ended, and intended to make the class consider where plastic originates and how it becomes a problem for wildlife.
7. As a class, discuss ways to reduce your own plastic pollution, or consider ways that the classroom as a whole may be able to limit plastic.
8. This exercise can be expanded by dividing the class into groups, and asking them to design group projects that will reduce plastic usage in the classroom.

If you'd like to provide feedback on this lesson plan, click [here](#)! We'll use your comments to improve existing and future SeaKeepers lessons.

Microplastics



Student Questions

1. How are microplastics defined? (1 pt)
2. Where do microplastics come from? List 2 potential sources. (2 pts)
3. List 2 reasons why microplastics are a larger environmental hazard than macroplastics. (2 pts)
4. What items are most commonly discarded, contribution to plastic pollution? List 3. (3pts)
5. How can we, as individuals, reduce our plastic consumption? (1 pt)
6. How can we, as a society, prevent further plastic pollution? (1 pt)