



HOW LONG TILL IT'S GONE?

This lesson plan developed by:



Overview:

Plastic pollution is one of the largest threats facing our oceans. Plastics pose an ever-increasing problem to marine ecosystems, as they are meant to last forever and don't biodegrade. They break down into smaller and smaller pieces, and don't get absorbed into our natural systems. This activity will help students understand how long it takes for different items (i.e. orange peel, newspaper, plastic bottle) to degrade and what they degrade into. By the end of the activity, students will learn how to be more environmentally aware of the items they purchase and use.

Key Concepts:

- Certain materials can break down in nature into nutrients to be used again by plants. Humans have interrupted this natural cycle by creating non-biodegradable materials (ex. plastic bottles), which if not reused or recycled will stay in the environment forever.
- In our daily lives, we can all make choices in what we consume and use to be more sustainable and help protect the environment.

Materials:

For instructor (needed for demonstration and discussion purposes):

- Item cards with years
- Piece of Styrofoam
- Apple
- Tape

Per group of students:

- | | | | |
|--------------------------|---------------|-------------------------|----------------|
| • Timeline cards | • Orange peel | • Tin or steel can | • Glass bottle |
| • 6-foot piece of string | • Newspaper | • Aluminum can | |
| • Plastic grocery bag | • Cardboard | • Plastic Straw | |
| • Paper towel or napkin | • Cotton rope | • Piece of fishing line | |

How Long Till It's Gone? (cont.)

Set-up Prior to Activity:

- Cut out item cards
- Cut out enough timeline cards (fastest and slowest) for each group
- Tape the timeline (fastest and slowest) cards to each end of the string (one per group)
- Place all of the items and timeline into the plastic grocery bag (one per group)

Duration:

30-45 minutes

Physical Activity:

Low

Activity:

Part 1: Introduction

1. Ask the whole group the following questions:
 - Has anyone participated in a beach clean-up or helped pick up waste outside?
 - What types of things have you found?
2. Discuss how different items break down at different rates and into different things.
3. Have the Styrofoam and apple visible. Ask the whole group the following questions:
 - What would happen to an apple if it is left out in the environment? *Turn into nutrients for the soil, rot, used for compost, etc*
 - What about Styrofoam? *Breakdown into smaller and smaller pieces but never disappear*
4. Tell the group that you are going to need their help figuring out how fast or slow different items degrade (days, weeks, months, years). Show them the timeline and each of the items (out of order) that they are going to put along the timeline.

Part 2: Placing Items Along the Timeline

1. Have the students break into groups. Pass out a plastic grocery bag full of items to each group. Tell them the plastic bag is a part of the timeline too.
2. Give the students about 5-10 minutes to sort the items along the timeline from fastest to slowest.

Discussion:

1. Have your item cards with the years ready to tape on the board or wall. Once all of the groups are ready, ask them what they thought degraded the fastest. Provide the answer (paper towel/napkin) and then ask how long they thought it took that item to degrade.
2. Put the correct answer on the board. Continue to ask which items degrade next/how long, until all of the item



How Long Till It's Gone? (cont.)

cards are taped to the board or wall. Students can adjust their timelines as the answers are revealed.

- Go back to the beginning of the timeline and ask where each of the items comes from. Then ask what the items will degrade into. Is there a common theme? Discuss which items go back into nature. The chart below will help with the answers.
- Discuss which materials are reusable, recyclable or compostable. Ask the students if they can replace any of the items along the timeline with more sustainable products.

Items	Time to Degrade	Comes From?	Degrades Into?
Paper Towel/Napkin	2-4 weeks	Tree	Compost/Soil
Newspaper	6 weeks	Tree	Compost/Soil
Cardboard	3 months	Tree	Compost/Soil
Orange Peel	6 months	Tree	Compost/Soil
Cotton Rope	2 years	Plant	Compost/Soil
Plastic Bag	10-20 years*	Oil	Microplastics (*never disappears)
Tin or Steel Can	50 years	Ore (rock/sediment)	Mineral
Plastic Straw	200 years*	Oil	Microplastics (*never disappears)
Aluminum Can	450 years	Ore (rock/sediment)	Mineral
Plastic Bottle	450 years*	Oil	Microplastics (*never disappears)
Plastic Fishing Line	600 years*	Oil	Microplastics (*never disappears)
Glass Bottle	1-2 million years	Sand	Sand

Note:

The time it takes for each item to degrade above are estimates. Plastics will “disappear” from the naked eye in that many years, but will last in the environment forever. Aluminum degrades slower than tin or steel because aluminum does not rust like steel and takes longer to corrode.

Additional Resources:

To learn more about the activity, check out our [How Long Till It's Gone “how to” video](#).

How Long Till It's Gone? (cont.)

Ocean Literacy Principles:

Ocean literacy is an understanding of the ocean's influence on us, and our impact on the ocean. There are seven [Ocean Literacy Essential Principles](#) that all people of our blue planet should have an opportunity to learn and understand. This activity touches upon the following Essential Principles:

5. The ocean supports a great diversity of life and ecosystems
6. The ocean and humans are inextricably interconnected

Further Your Impact with Sailors for the Sea Powered by Oceana:

As sailors and water-lovers, you are among the first to notice changes to our seas such as fewer marine animals, more pollution and damaged marine habitat. Through our Green Boating initiative, Sailors for the Sea Powered by Oceana provides opportunities for you and your community to address pressing ocean health issues. As a Green Boater, you will be provided with the information, resources and access to combat marine plastic pollution, prevent habitat destruction, source responsible seafood and protect marine animals. From demanding plastic-free alternatives to choosing sustainable seafood, your voice and actions are an important part of restoring the abundance of our oceans and protecting marine habitats. [Join our growing Green Boating Community today.](#)

Paper Towels and Napkins



2-4 weeks

Newspaper



6 weeks

Cardboard



3 months

Orange Peels



6 months

Cotton Rope



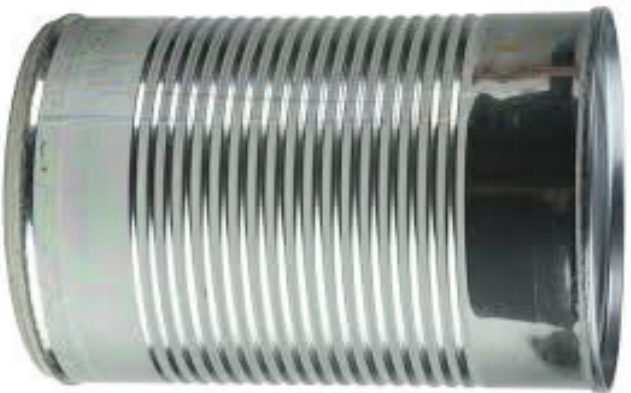
2 years

Plastic Bags



**10-20
years**

Tin or Steel Cans



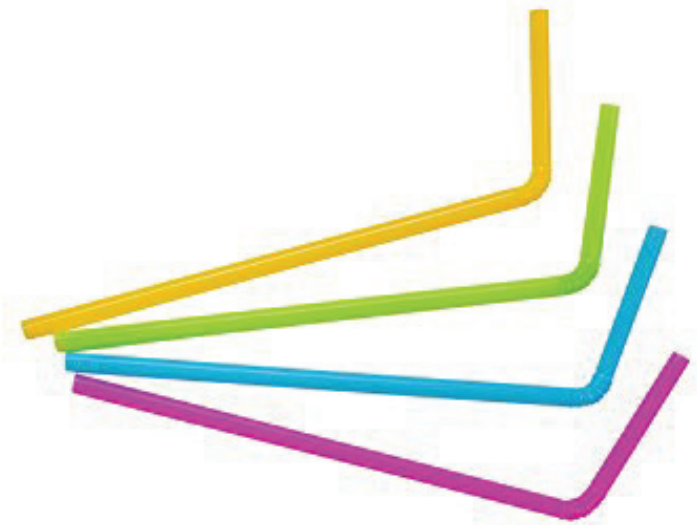
50 years

Aluminum Cans



450 years

Plastic Straws



200 years

Plastic Bottles



450 years

Plastic Fishing Line



600 years

Glass Bottles



**1-2 million
years**