



Ocean Full of Debris Game

Objectives:

Students will recognize that container ship spills contribute to the problem of marine debris. They will connect their own consumer and community choices to this source of marine debris.

Concept:

There are four main sources of marine debris: land-based/personal use, marine industries & recreation, container ship spills, and natural disasters. Container ship spills are an often overlooked source of marine debris, but it is estimated that every year as many as 10,000 containers filled with products are spilled from shipping vessels. These container ship spills can result in novel and interesting things becoming marine debris, but the spilled products can pose a major threat to marine ecosystems. While individuals have no control over the rough weather that can cause these spills, individuals do have great power to change their own consumption habits and influence others to minimize the demand for plastic products that are shipped from overseas.

Materials:

- ⊙ Science notebooks
- ⊙ Pencils
- ⊙ Whiteboard, Flipchart, or SmartBoard with appropriate tool to write on it
- ⊙ Bowl, cloth bag, hat, or other container
- ⊙ Small slips of paper

Preparation:

Write the following objects on small slips of paper and fold the slips in half. Place in a bowl, bag, or otherwise opaque container.

Tiny pieces of plastic/nurdles
 Hockey Gloves
 Hockey Shinguards
 Nike Shoes
 Bags of Doritos Chips
 Legos
 Fly swatters
 Aluminum Briefcases
 Bananas
 Foam basketballs
 Rubber Duckies
 Plastic Turtles
 Plastic Frogs
 Plastic Beavers
 Car Tires
 Blue Water Bottles
 Flip-flops

Introduction:

Ask students to think back to a time they were on the coast or ocean. What kinds of litter and marine debris did they see?

Divide students into groups of 2-4. Give groups 2 minutes to make a list in their science notebooks of debris they have seen personally.

After the time is up, have groups share their debris items.

Write them on the board and discuss the items as you do. Where did they see these debris items? Was there a lot of them, or just one? Where might they have come from? What were the strangest items the students saw?

Procedures & Activities:

Explain that sometimes odd products spill off of container ships and end up as marine debris.



Ocean Full of Debris Game *Continued*

Container ship spills are an important component of marine debris. Anything that is shipped across the ocean may end up spilling in rough weather or if the ship is loaded in an unbalanced way.

Explain that debris from container ship spills is difficult to track because shipping companies are not required to report spills in international waters.

However, with ever-increasing amounts of products being shipped across the world's seas, the risk of container ship spills is great and increasing. Approximately 90% of worldwide cargo travels by sea, and at any moment in time an average of 6.7 million containers are in transit on the world's ocean. In 2010, more than 8 billion tons of goods were transported by sea. It is currently estimated that up to 10,000 containers are lost every year, sinking to the bottom of the ocean or spilling their contents to float in the currents.

Many strange items have made their way into ocean ecosystems and washed ashore after spilling from shipping containers.

Explain to students that you are going to play a game called "Ocean full of debris" to learn about some of the strange things that have spilled into the ocean from container ships.

Break students into two teams.

Have each team choose a name and write the names on the board.

Show the students a bowl, cloth bag, or hat and explain that it represents the ocean, and within it are the names of different items that have washed into the ocean due to container spills.

Have a representative from each team "rock, paper, scissors" to see which team will go first.

Explain that in the first round, a student from the first team will step forward to the front of the class and draw a slip of paper with the name of an object from the bowl.

The student has 30 seconds to describe the object without using any words listed on the piece of paper (so if the piece of paper says baseball bat, they can't say "base," "ball" or "bat").

His or her team tries to guess the object correctly. If they do, the team gets a point and the student draws a new slip of paper from the bowl.

When the 30 seconds are up, play stops. The student must return the slip of paper to the bowl if it has not been correctly guessed, but if it has been correctly guessed, the slip of paper is removed until the next round.

The second team sends a representative up. Like the first player, he or she has 30 seconds to get his or her team to guess as many objects as possible by describing them.

Play continues, alternating back and forth until all of the slips of paper have been guessed.

Then, the paper slips are placed back in the bowl and the second round commences, in which the student must get his or her team to guess the object by acting it out with out speaking or making any sounds.

At the end of that round, return all the slips to the bowl.

In the third round, players may only say one word for each slip they draw.





Ocean Full of Debris Game *Continued*

This word cannot be a word on the slip of paper. This round is difficult, but if students have been paying attention in earlier rounds, very much possible.

At the end of the third round, tally the points. The team with the most points wins.

Wrap-Up:

Discuss the "Ocean full of debris" objects used in the game with the students. Ask students if they were surprised by any of the objects.

Revisit the first round, in which students described the objects. Have them think about how they described the objects. How many times did students use phrases such as, "This is something you use to ____" or "I wear this to ____"? Reiterate that objects spilled into the ocean from container ships are often objects we use in our every day life.

Read the slips of paper one by one and ask students to raise their hands if that is similar to a product they have used or bought for themselves or someone else.

Discuss what it means to ship products hundreds and thousands of miles across the sea. Have students think about products that are made locally and discuss a few items as a class. Ask students to reflect in their science notebook, writing about the following questions:

- What products have I used in my own life that are similar to the products spilled from container ships?
- What is a product I use that could be grown, made, or repurposed locally?

Extensions & Lesson Connections:

Follow this lesson with a marine debris beach clean up, or use data sheets from a previous clean up to analyze how many objects, if any, on local beaches could be sourced to container ship spills. You can contact the Center for Alaskan Coastal Studies for information on recent debris sightings in Alaska thought to be linked to container ships.

This lesson pairs well with the "Plastics in Society" and "Marine Debris Source Relay" lessons.

Evaluation:

Review student science notebook entries, including the list of debris they have seen and their reflection on container ship spills and locally-made products. Assess these entries for completeness, effort, and understanding of the concepts.