



Try This at Home Science: Jell-O Shoreline

Activity Overview:

Watch the effects of wave action on underwater and coastal landscapes using Jell-O and fruit cocktail. Once you're done, enjoy a yummy treat!

Materials:

- 8x8 container
- Heat proof bowl
- Jell-O mix
- 1 cup cold water
- 1 cup hot water
- 1 can fruit cocktail
- Tinfoil
- Large spoon
- Towels for clean up

Try this!

1. Open and drain the can of fruit cocktail before pouring it into a 8x8 container.
2. Take the tinfoil and form it into a "U"-shape to create a collection basin at one end of the container. Make sure the collection basin is the same width as the container.
3. Use the spoon to pile the fruit cocktail against the collection basin to make a ramp of sorts. This simulates the shoreline and shallow waters.
4. Pour half of the Jell-O mix onto the fruit cocktail shoreline so it looks like sand on a beach.
5. Very slowly pour 1 cup of cold water into the container.
6. Use the large spoon to create waves, and slowly increase the strength of the waves. Observe what happens to the fruit cocktail and collection basin as the waves grow in size. This simulates deep water wave action.
7. Take the second piece of tinfoil and squish it into a shape that could reduce wave action, and place it on the edge of the fruit cocktail shoreline. This is a **breakwall**, a vertical structure that helps to reduce the impacts of waves on coastlines.
8. Repeat Step 5. Observe, and compare your results with the breakwall in place to the results without the breakwall.
9. In a separate heat proof bowl, add the remaining Jell-O mix and 1 cup of hot water. Use a small spoon to mix until the powder has dissolved.
10. With an adult, pour the Jell-O mix into your 8x8 container. Mix thoroughly. Place in the fridge for 20 minutes.
11. Repeat Step 6-7. Observe.
12. Enjoy your Jell-O snack after cleaning up!

What's happening?

We have replicated the effects of wave erosion on a coastline with Jell-O! The fruit cocktail is acting as coastal structures such as beaches, reefs, and shallow waters, and the Jell-O powder is representing the sandy ocean bottom. The tinfoil trough represents the communities nearest the shorelines and is collecting the waves that have breached the fruit cocktail beach. Once we begin creating waves in the water with the spoon, we can see how the waves begin to grow in size and crest over the fruit cocktail shoreline flooding the tinfoil trough while also shifting the Jell-O sandy bottom.

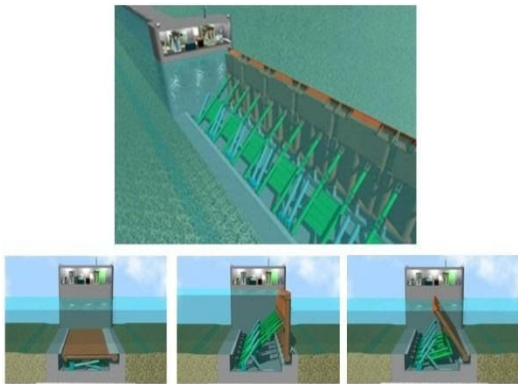


This demonstrates how wave action can erode the coastlines, so when we add in the tinfoil breakwall and start making more waves we notice that the breakwall slows down the waves which also lessens how much of the Jell-O powder shifts. This is because the breakwall is forcing the waves to slow down and redirect around the breakwall instead of heading straight towards the shoreline.



How does this relate to protecting communities?

Knowing how wave action affects communities, some coastal cities and countries have installed flap gates as protection. Flap gates are a moveable breakwall that can be installed at the entrance to a lagoon, harbors, lakefront property, or offshore in order to reduce the effects of waves on communities. For example, the famous sinking city of Venice, Italy has 60m of mobile breakwalls that can be raised in 30 minutes when unusually high tides are expected. These breakwalls protect the harbor of Venice by holding the tides at bay and preventing flooding throughout the historical city and neighborhoods.



Now try...

- Change the shape of the tinfoil breakwall to see if a different design will reduce the wave action on the shoreline. What do you notice? Is one shape more effective at reducing the waves than another?
- Change the length of the breakwall to cover more and less of the shoreline. What happens when waves hit the different lengths of breakwalls? How can we make these breakwalls animal friendly?

Additional Information

Watch a how-to video for a similar experiment here [Natural Disaster Project: Tsunami 602](#)

For more information about flap gates visit <https://www.pbs.org/wgbh/nova/venice/gates.html>

For more “Try This at Home Science” activities, visit www.mi-sci.org.