

# RAFT IDEAS

**Topics:** Observation,  
Molecules, Plastics,  
History of Technology

## Materials List

- ✓ Preforms used to make beverage containers (2-liter bottles)
- ✓ Screw caps (optional)

This Activity can be used to teach:

CO Science Standard 1:  
Physical Science

- Organic Chemistry
  - Molecular Structures
  - Science Investigation and Experimentation
- 21<sup>st</sup> Century Skills:

- Critical Thinking and Reasoning
- Self-Direction
- Invention

Grades: PK, K, 1, 3, 6, 8,  
& HS

## What the Heck is a Preform?!?

### The Makings of a Container Revolution



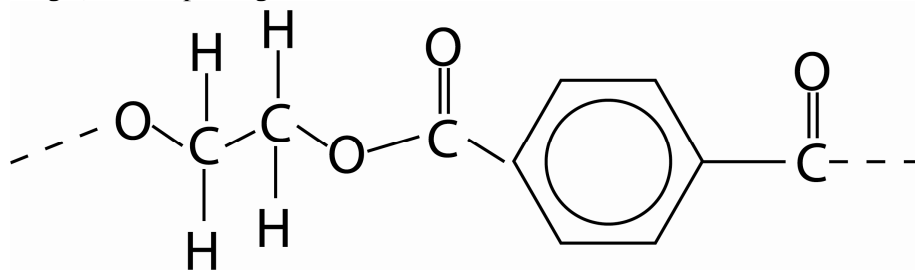
The last decades of the 20<sup>th</sup> century saw a major change in the way products were sold at markets around the world. Plastic containers are now a common form of packaging for everything from soda to soap, more durable and safer than glass.

### To Do and Notice

1. Allow students to take a good look at the plastic tube called a preform. Ask them to make observations about the preform and try to figure out what it is used for.
2. You might want to give students the following hints:
  - Students probably see a form of these objects every day.
  - Take a good look at the opening. Does it look familiar?

### The Science Behind the Activity

Plastics are organic (carbon-based) polymers, manufactured from crude oil. Polymers are long-chain molecules of repeating smaller units (monomers). These preforms are made of Polyethylene Terephthalate (PET or PETE, recycle #1). They are transported in this non-inflated condition to save on shipping expenses, then heated and blown into the desired shape at the bottling plants (a process known as “blow molding”). The repeating monomer in PET is illustrated below:



### Taking it Further

Preforms can be used for a multitude of activities in the classroom, replacing test tubes for almost any activity that does not require heat (i.e. – a Bunsen burner). They are extremely sturdy, dishwasher safe, and excellent for transporting liquids when capped.

**Web Resources** - Visit [www.raft.net/more](http://www.raft.net/more) for how-to videos and more ideas!