TARWATER ELEMENTARY SCHOOL STEM LAB

Activity ID: R-6

Activity Name: Diaper Polymers

MATERIALS:

Materials Provided in Bin:

Item:	Quantity:	Notes:
lesson Plan	1	
Diapers	1 Per Group	
Spoon/Stick	1 Per Group	
Plastic Cups	1 Per Group	
Ziploc Bags	1 Per Group	

Materials In STEM Lab or Classroom {Common Items):

Item:	Quantity:	Notes:
Goggles	1 Per Student	
Scissors	1 Per Group	

Materials Teacher/Parents Need to Provide:

Item:	Quantity:	Notes:
Water	½ Cup Per Group	
Table Salt	Teaspoon Per Group	

WHAT ARE WE DOING?

Today we will be investigating a special substance that is very useful to our everyday lives: polymers. Polymer means *large molecule.* There are natural polymers found in rubber and cornstarch, but there are manmade polymers that are in many products that we use, like diapers.

VIDEOS / LINKS:

None

SAFETY NOTES:

Students should wear goggles for the entirety of the experiment.

SCIENCE TERMS:

Polymer
Hydrophobic
Hydrophilic
Synthetic
Sodium Polyacrylate

STEPS:

- Open the diaper and trim away the mesh lining in the inside center of the diaper.
- When the mesh is pulled back, pick out the cotton that is under the mesh and place it in the baggie.
- When all the cotton is in the baggie, close the top, leaving air inside.
- Shake the bag until you see a loose powder in the bottom of the plastic bag that has separated from the cotton.
- Open the bag; pull out the cotton and dispose of it in the garbage.
- Shake the powder into an empty cup and discard the bag.
- Now, slowly pour 1/2 cup of water into the cup of powder and stir the mixture.
- To remove the absorbed water, add some table salt to the cup.

QUESTIONS TO ASK STUDENTS:

What happens to the powder when you mix it with water?
What happens when you add the salt to the mixture?
What else would you like to experiment based on what you learned today?

CLEAN-UP:

Into the Bin= Lesson Plans, Spoon/Stick.

Back to Lab/Classroom = Goggles, Scissors.

Trash/Recycle= Plastic Cups, Plastic Bags, Diapers.

IF RUNNING OUT OF A SUPPLY IN THE BIN, PLEASE CONTACT LAURIE JONES IN THE OFFICE (X4307) JONES.LAURIE@CUSD80.COM

Baby Diaper Polymer

Introduction: Today you will be investigating a special substance that is very useful to our everyday lives: polymers. Polymer means *large molecule.* There are natural polymers found in rubber and cornstarch, but there are man made polymers that are in many products that we use, like diapers.

Materials: To find the polymers in the diaper, you will need the following: goggles, disposable baby diapers, large baggies, scissors, 5 oz. plastic cup, water, and a spoon or wooden stick.

Steps: Open the diaper and trim away the mesh lining in the inside center of the diaper. When the mesh is pulled back, pick out the cotton that is under the mesh and place it in the baggie. When all the cotton is in the baggie, close the top, leaving air inside. Shake the bag until you see a loose powder in the bottom of the plastic bag that has separated from the cotton. Open the bag; pull out the cotton and dispose of it in the garbage. Shake the powder into an empty cup and discard the bag. Now, slowly pour 1/2 cup of water into the cup of powder and stir the mixture. What do you notice?

Types of Polymers: There are synthetic polymers (man made, not found in nature). They are hydrophobic, or water-fearing polymers. These are found in plastic products, like cups. Then, there are hydrophilic, or water-loving polymers that absorb water. This is the type found in baby diapers.

Note: A teaspoon of this material can often absorb over 100 drops of water. That's how the baby's bottom stays dry. This amazing powder is called sodium polyacrylate and is considered a super-absorbent polymer because it can absorb hundreds of times its weight in water. To force the water that was absorbed out of the powder, have students add some table salt.

Class discussion: Can you see the benefits of having a polymer powder in a disposable diaper? Can you think of other applications for hydrophilic polymers?