



# LINKS TO AGRICULTURE



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## Glue From Milk

Many years ago, there were no refrigerators so people didn't have a way to keep their milk cold. The milk would go bad and when people would drink it, they would get very sick. So a man named Gail Borden, Jr. did a bunch of experimenting, and he discovered that "condensing milk" (heating milk so that much of the water content is removed) would keep the milk from spoiling. The heating killed any bacteria in the milk.



Mr. Borden's Company produced condensed milk as well as many other milk products. In 1861 the U.S. government even ordered 500 pounds of condensed milk from the Borden Company for troops fighting in the Civil War.



Now every team needs a mascot and Mr. Borden chose Elsie the Cow. She was a big hit at the 1939 New York World's Fair, and soon afterwards the character of Elmer the Bull was created as Elsie's husband. Many years later, Borden's Company started making glue and asked to use Elsie for its new white glue product.



The thought of Elsie representing a non-food product didn't seem right, so as a compromise, Elmer was loaned to the chemical division as their very own "Spokes-bull". To this day, Elmer the Bull still represents the most well known glue company.



Elmer's School Glue is used in schools throughout the nation. The glue is so popular because it is washable. Year's ago, we used to have paste. The teacher would scoop out a bunch of paste and put it on the table in front of a group of students. But, it was messy and it got all over your fingers. Then along came Elmer's glue! Each student could have his/her own bottle. No one had sticky fingers anymore!

And just to set the story straight, even though there is a bull on the bottle, Elmer's does not use animals or animal parts to make glue. Their glue products are made from synthetic materials and are not taken from processing horses, cows, or any other animals.

### What Do You Remember?

#### 1. Gale Borden's original experiment was

- to learn how to make paste.
- to learn how to make glue.
- to keep people from getting sick from spoiled milk.

#### 2. The Borden Company originally

- made cheese.
- made condensed milk.
- made glue.

#### 3. Elsie the Cow

- lived on a farm.
- made paste.
- was the Spokes-cow for Borden's Foods.

#### 4. Elmer the Bull

- was turned into hamburgers.
- was Elsie's husband.
- fought in the Civil War.

## Career Corner

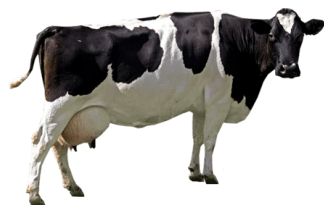
**Milk Transporter** - Milk transporters drive the trucks and equipment that move milk from the farm to your plate. They work around the clock, depending on the farmer's schedule, to ensure milk is not left sitting and is delivered fresh.

### How Milk Transporters Benefit Agriculture:

- Transport milk to its destination
- Test milk for inspection purposes

### Milk Transporters Study:

- Food Science
- Biology



SCAN ME



## Farm Facts

- \* Pennsylvania produces around 10.7 billion pounds of milk every year!
- \* In 1611, the first cow arrived in America. Today there are over 10,000,000 dairy cows in the United States.
- \* Modern milking machines can milk 100 cows an hour.
- \* Milk delivered to stores and schools today was in the cow two days ago.



## WOW, Look at that Milk Mooove!

### Materials:

Food Coloring

Liquid Dish Soap



Shallow Bowl/Dish

Q-tips

Whole Milk and Fat Free Milk (Room Temperature)



### Directions:

1. Pour some milk into the bowl( do not fill to the top). Allow the milk to come to room temperature.
2. Add a few drops of different colored food coloring into the bowl of milk.
3. Dip a Q-tip into the dish soap and then place the tip of the Q-tip into the bowl of whole milk.
4. Watch to see what happens.
5. Repeat steps 1-4 with Fat Free milk.

### What did you notice?

Did the food coloring move the same in both types of milk? Which milk was faster? Which milk was slower?

### How does it work?

The fat in the milk is broken down by the liquid soap. This causes the food coloring to swirl and make some interesting designs.

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