



CHEMISTRY

Name \_\_\_\_\_



Diffusion & Osmosis

# Diffusion Lab

## SAFETY NOTES



Goggles must be worn during this investigation.  
Iodine is toxic and will make a permanent stain on your clothes.



### Background Information:

Solution - a homogeneous mixture of two or more substances; a mixture of a solvent and a solute.

Solute - a substance that is dissolved in another substance, forming a solution.

Solvent - a substance that dissolves other substances, forming a solution.

Hypotonic - the solution on one side of a membrane where the solute concentration is less than on the other side.

Hypertonic - the solution on one side of a membrane where the solute concentration is greater than on the other side.

Concentration gradient - change in the concentration of a substance from one area to another.

Diffusion - the movement of a substance from an area of high concentration to an area of low concentration. The process tends to distribute the particles more evenly.

Osmosis - the diffusion of water through a selectively permeable membrane

Selectively permeable - a barrier that allows some chemicals to pass but not others

Indicator - a substance that changes color in the presence of the substance it indicates.

**Purpose:** In this lab you will observe the diffusion of a substance across a selectively permeable membrane.

### Materials:

Plastic bag	Spoon	Corn starch
Iodine or Lugol's Solution	Beaker	Water
Apron	Goggles	Eyedropper

**Procedure:**

1. Fill a plastic baggie with a teaspoon of corn starch and a half a cup of water tie bag.
2. Fill a beaker halfway with water and add ten drops of iodine.
3. Place the baggie in the cup so that the cornstarch mixture is submerged in the iodine water mixture.
4. Wait fifteen minutes and record your observations in the data table
5. While you are waiting, answer the questions.

**Data:**

	<u>Starting Color</u>	<u>Color after 15 minutes</u>
Solution in Beaker		
Solution in Bag		

**Data Analysis**

1. Based on your observations, which substance moved, the iodine or the starch?
2. How did you determine this?
3. The plastic baggie was permeable to which substance?
4. Is the plastic baggie selectively permeable?
5. Sketch the cup and baggie in the space below. Use arrows to illustrate how diffusion occurred in this lab.

### Conclusion Questions:

1. Define diffusion.
2. Define osmosis
3. What is the main difference between osmosis and diffusion?
4. Why is iodine called an indicator?
5. Molecules tend to move from areas of \_\_\_\_\_ concentration to areas of \_\_\_\_\_ concentration.
6. Is the baggie or beaker more concentrated in starch?
7. Is the baggie or beaker more concentrated in iodine?
8. Iodine solution: is the baggie or the beaker hypertonic?
9. Starch solution: is the baggie or the beaker hypertonic?
10. Which one is hypotonic in relation to starch, baggie or beaker?

### Expansion - Make Some Predictions

11. If the baggie was permeable to starch, which way would the starch move, into the bag or out of the bag? Explain your answer.
12. If the baggie was permeable to iodine, which way would the iodine move, into or out of the bag? Explain your answer.
13. If the baggie was permeable to iodine, what color would you expect the solution in the baggie to turn? Explain your answer. What about the solution in the beaker? Explain your answer.

14. If the baggie was permeable to starch, what color would you expect the solution in the baggie to turn? Explain your answer. What about the solution in the beaker? Explain your answer.

15. Make a prediction about what you think will happen if you did an experiment in which the iodine solution was placed in the baggie, and the starch solution was in the beaker? Be detailed in your description.