**Teacher’s Guide-**

**Potatoes and Iodine**

INTRODUCTION:

In this lesson, students will conduct experiments in groups that demonstrate the difference in reaction rate between the same materials (potatoes and iodine) with varying surface area. In this lab, students are given specific directions. This should help prepare them for the following lesson, in which they must design their own procedures. This activity is designed for lab group of 3-4.

OBJECTIVE: Students will observe-

* Smaller particles of the same substance will react more quickly and more thoroughly.

TIME: 50 min

MATERIALS (per group):

* 1 potato, peeled and cut in half
* Potato Flakes
* 3, 2cm potato cubes
* Iodine
* Water
* Stirring Rod
* 4 Beakers (or cups), at least 250 mL
* Dropper
* 100 mL Graduated cylinder
* “Potatoes and Iodine” Student Sheet, Lesson 2.2b (1 per student)

PROCEDURES:

1. Peel and prep all potatoes and potato cubes. The potatoes will begin to brown as soon as you peel them, so the longer you can wait to prep them, the better for student results. If they do begin to brown, point out the color change to the students so they can distinguish between browning and reaction with iodine. You may have students prep their own potatoes if you so choose.
2. Divide the class into groups of 3-4 and distribute supplies.
3. Explain to students that in each segment of today’s lab, they will observe a reaction between potatoes and iodine. The Iodine changes color from brownish-red to purple-black in the presence of starch. Because potatoes are mostly starch, they should cause this reaction to take place. The student’s job is to observe how quickly and how completely the different forms of potato react.
4. Remind student of the Flour Fire demo (Lesson 2.2a) in which they saw the same material react when prepared in different ways. This lab is similar to the demo.
5. Remind students that Iodine is a poison when ingested. They should be very careful when working with the iodine, follow laboratory rules and wash their hands when done with the assignment.
6. Point out that in part 3, they will need to estimate % of a surface with a color change. Clarify for students that this should be on the cut, fresh surface. You may wish to distribute guides for estimating % change, which are found at the end of this document.
7. Circulate and offer guidance to groups as they work through the assignment. They should ultimately draw similar conclusions as they did from the demo: smaller particles mean a quicker, more complete reaction. Encourage students to use specific evidence and data from the experiment when writing the “Take Home Point.”

**Percent Abundance Estimation Chart:**

**\***In this chart, the white represents unreacted potato, and the black represents potato + iodine.

