

## Limiting Reactants (PbI<sub>2</sub>)

### Purpose

To demonstrate the concept of limiting reactants.

### Materials

5 test tubes	graduated cylinders
water	0.10 <i>M</i> Pb(NO <sub>3</sub> ) <sub>2</sub>
0.20 <i>M</i> NaI	

### Procedure

1. Add 10.0 mL of 0.10 *M* Pb(NO<sub>3</sub>)<sub>2</sub> to each of the test tubes.
2. Add the following amounts of water to the respective test tubes: 8.0 mL, 6.0 mL, 4.0 mL, 2.0 mL, 0 mL.
3. Add the following amounts of 0.20 *M* NaI to the respective test tubes: 2.0 mL, 4.0 mL, 6.0 mL, 8.0 mL, 10.0 mL.
4. Let the test tubes sit for several minutes and notice the amounts of precipitants in each. There will be an increase in product from tubes 1 through 3, but this levels out in tubes 4 and 5.

### Additional Information

1. Have the students predict what will happen before you add the NaI.

### Disposal

The solutions in the test tubes should be placed in properly labeled waste containers. Care should be taken when emptying out the test tubes to ensure all of the product gets washed into the waste container.