

Lesson plan for *Reactants, Products, and Leftovers* Activity 1:

Introduction to Chemical reactions

<http://phet.colorado.edu>

Time for activity

Learning Goals:

Students will be able to:

- Relate the real-world example of making sandwiches to chemical reactions
- Describe what “limiting reactant” means using examples of sandwiches and chemicals (*at a particle level.*) [I decided to leave out the “particle level” in the student directions since this activity would be done before the idea of moles is introduced. If you do this after the students are using mole amounts, then you might want to include this phrase]
- Identify the limiting reactant in a chemical reaction
- Use your own words to explain the Law of Conservation of Particles means using examples of sandwiches and chemical reaction

Background:

My students will have done a lab called Carbohydrate Chewies which I have included, so they will have had an introduction to how cooking can be used as an analogy for chemical reactions. We discuss that real chemists do not necessarily get to make their own ratios, but that those are often fixed as in the second tab of this simulation.

***Reactants, Products, and Leftovers* Introduction:** This sim shouldn't require any introduction. Check the [Teaching Tips](#) from the design team for some helpful information.

Lesson: I gave this as a homework following Reactions and Rates 1
<http://phet.colorado.edu/en/contributions/view/2984>