

# Chemical Reactions

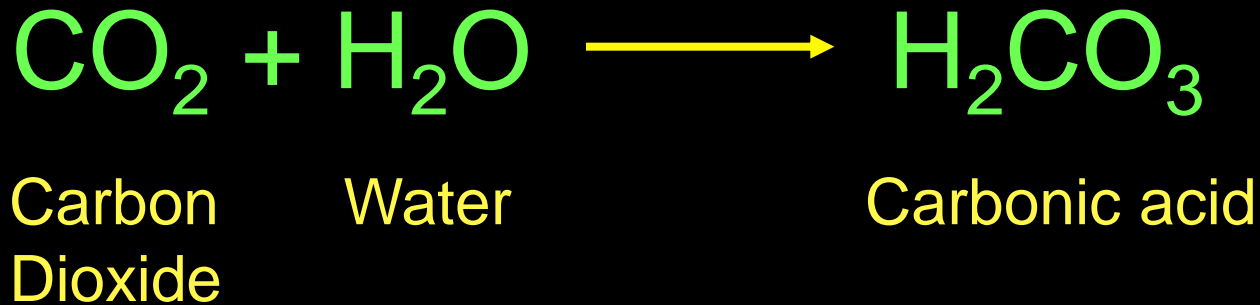


# Learning Objectives

- Define the following terms: chemical reaction, reactant, product, and activation energy
- Explain how chemical reactions affect chemical bonds in compounds

# Chemical Reaction

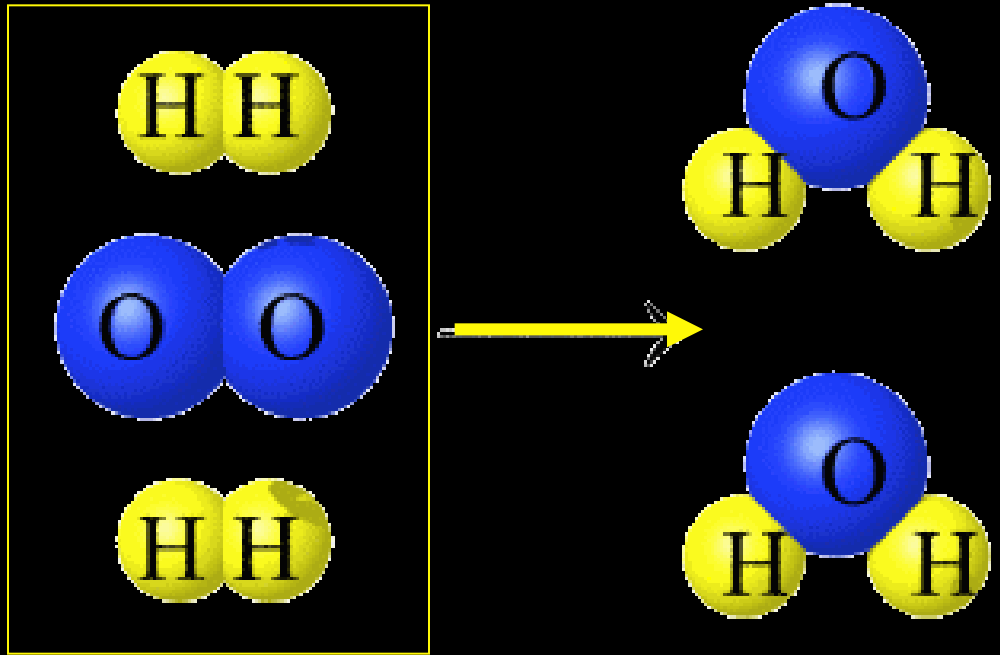
A chemical reaction is a process that changes or transforms one set of chemicals into another.



Reactants

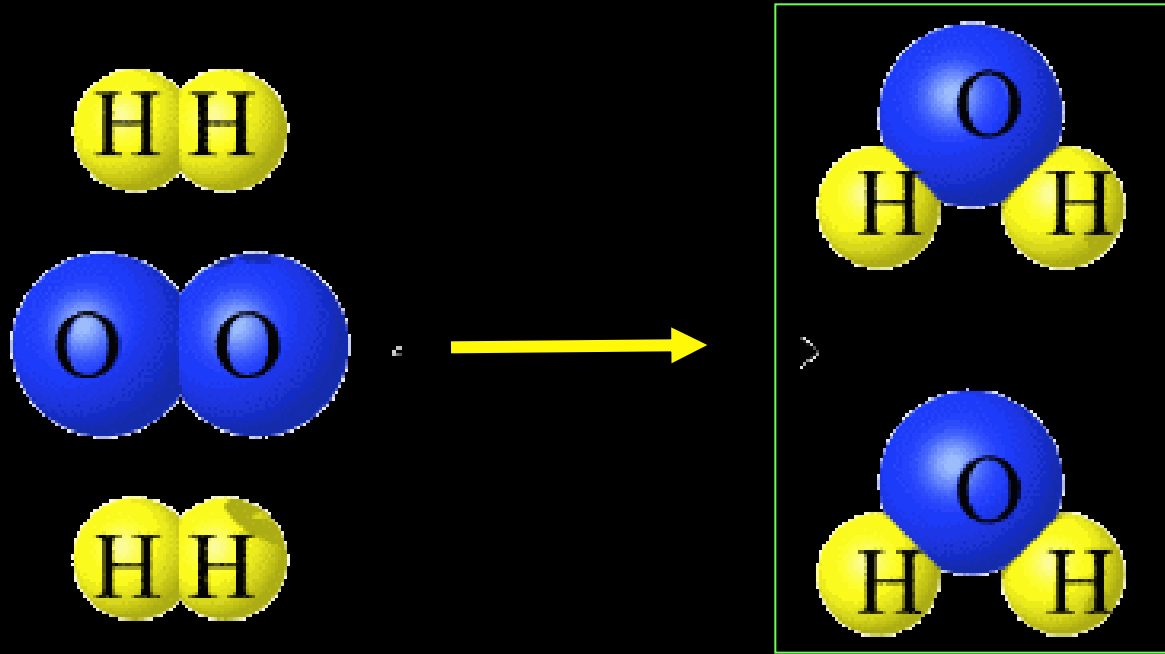
Product

# Reactants



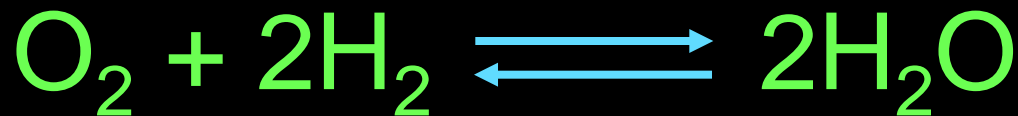
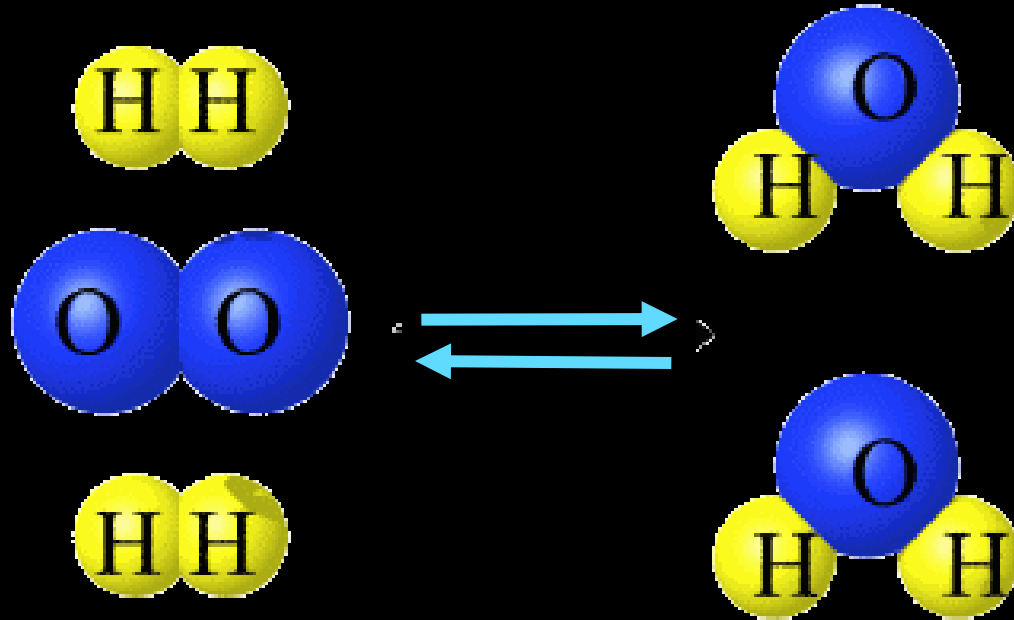
Reactants - elements or compounds that enter into a chemical reaction.

# Products



Products - elements or compounds produced by a chemical reaction.

# Equilibrium



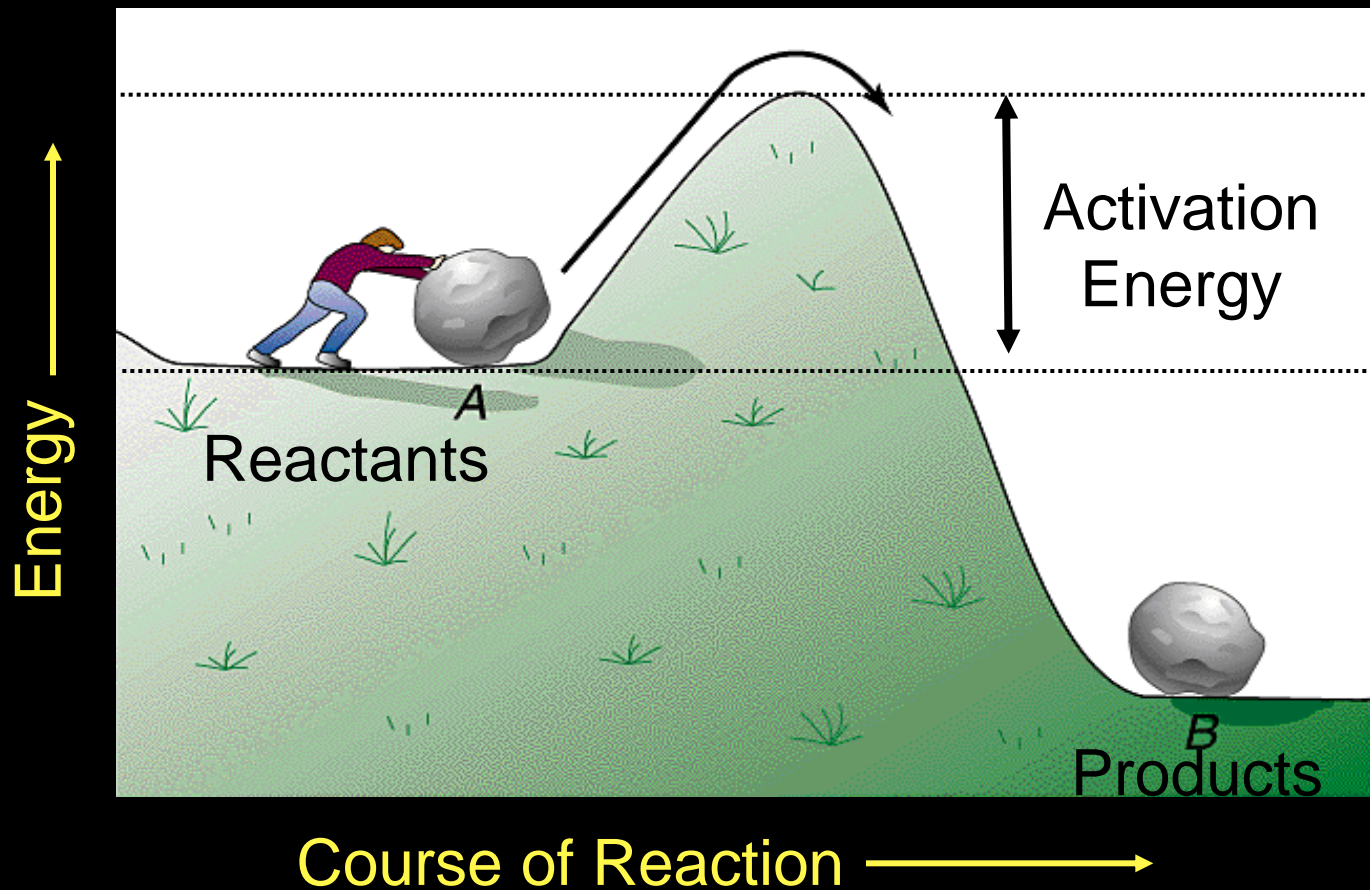
Equilibrium - the reaction takes place at an equal rate in both directions and the reactant and product concentration stays the same.

# Chemical Reactions Require Energy



Chemical reactions always involve changes in the chemical bonds that join atoms in compounds. These reactions **require energy**.

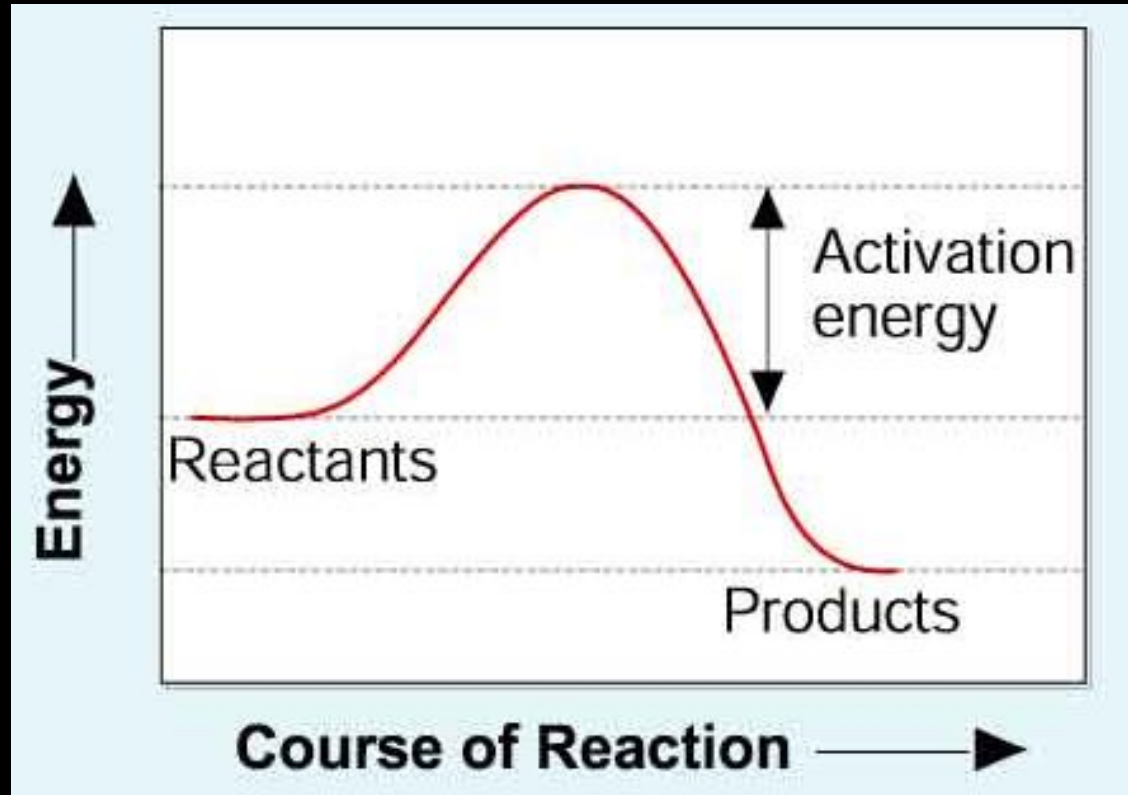
# Activation Energy



Activation energy - the amount of energy required for a chemical reaction to get started.



# Activation Energy



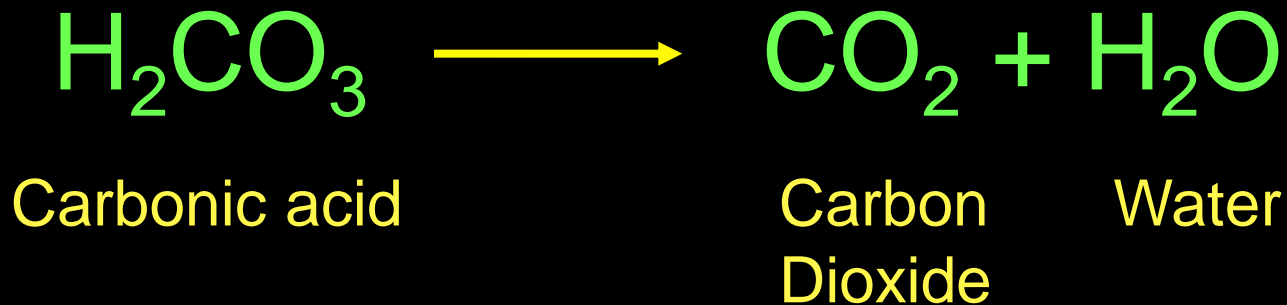
Activation energy - the amount of energy required for a reaction to get started.

# Types of Metabolism: Synthesis



Synthesis – “building up” reactions.

# Types of Metabolism: Decomposition



Decomposition – “breaking down” reactions.

# Chemical Reactions



# Disintegration



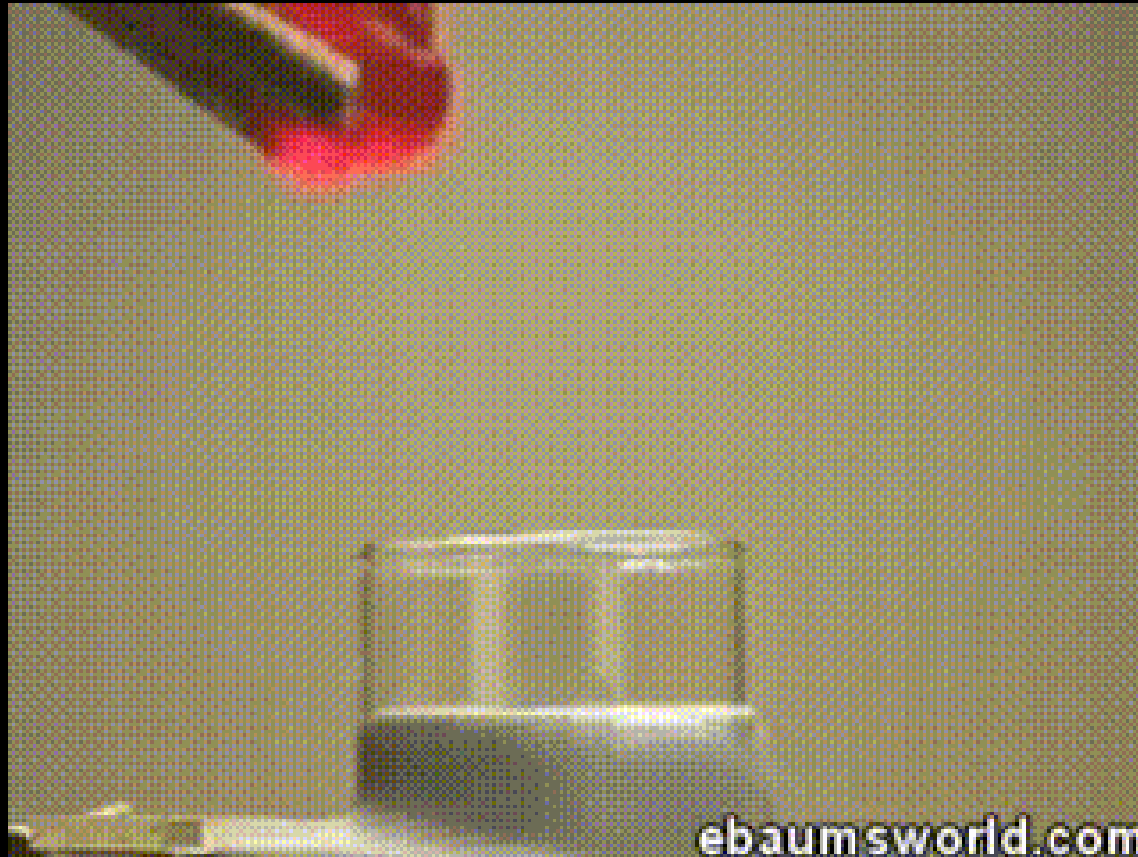
Mercury reacting to aluminum

# Pharaoh's Serpent



Mercury reacting with oxygen

# Decomposition



Potassium chlorate reacting with a gummy bear

# Single Displacement



Iron reacting with copper sulfate



# Fire Bottle



Alcohol reacting with oxygen

# Instant Snow



Sodium Polyacrylate reacting with water

# Elephant Toothpaste

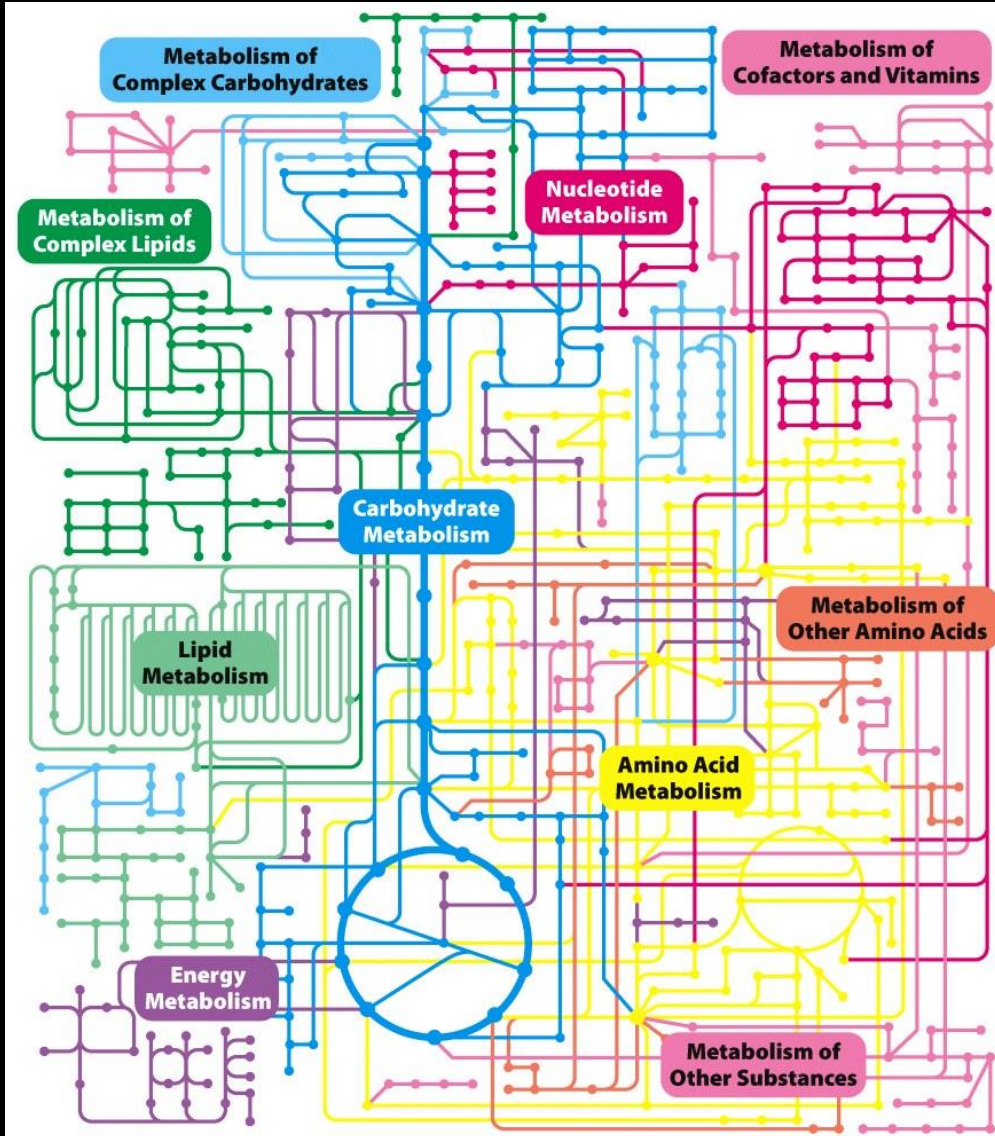


Iodine reacting with hydrogen peroxide

**STOP HERE!**



# Metabolism



Metabolism – all chemical reactions and changes that occur in a cell or organism.