

Chemical Equation Types

A chemical equation has a general form, with the reactants on the left of an arrow, and the products on the right of the arrow. If more than one reactant or product exists, then a plus sign is placed in between the different reactants or products. Numbers are placed in front of each of the reactants or products to symbolize the number of moles of reactant or product that are involved in the reaction. Moles are discussed in depth at the [mole](#) page.



Decomposition Rxn

Decomposition



Single Replacement

Single Replacement



Double Replacement

Double Replacement



Formation

Formation



Combustion

Combustion

If the number of moles of an element on one side of the equation are different than the number of moles of an element on the other side of the chemical equation, then the numbers in front of the reactants or products are changed to account for each mole of an element. This process is called the balancing of chemical equations. This is necessary because of the Law of Conservation of mass that states that mass is neither created nor destroyed, but merely changes form.

It is important to understand the law of conservation of mass and also the law of conservation of energy when discussing alternative energy forms. In a nuclear reaction the mass of uranium changes form into the mass of nuclear waste, but is still present after the reaction is over. This waste creates pollution problems, something discussed at the pollution comparison page. This site has thoroughly mentioned that energy only changes form through the process of any alternative energy system, usually taking the path of potential to kinetic to mechanical and then to electrical energy.

This next paragraph relates several reaction types to [heat and power](#). If this confuses you please read the help page on it. The formation discussion reaction is important because so many reactions are exothermic and therefore could possibly be used as an alternative energy form. Many exothermic reactions in addition to formation reactions are single or double replacement reactions. In addition to nuclear reactions involving uranium, other decomposition reactions create heat and could someday be utilized as another alternative energy form. For more of a discussion of future alternative energy forms and areas that they might be developed, see the [main comparisons section](#) and also the [combustion](#) page.