

**Directions:** Write balanced chemical equations for each of the following.

1. Ozone gas is a form of elemental oxygen containing molecules with three oxygen atoms,  $O_3$ . Ozone is produced from atmospheric oxygen gas,  $O_2$ , by the high-energy outbursts found in lightning storms. Write the balanced equation for the formation of ozone gas from oxygen gas.

2. When steel wool(iron) is heated in pure oxygen gas the steel wool bursts into flame and a fine powder consisting of iron(II)oxide and iron(III)oxide. Write separate equations for each reaction.

3. A common experiment in introductory chemistry involves heating powdered potassium chlorate in a test tube. This reaction results in the formation of oxygen gas and solid potassium chloride.

4. Placing a piece of sodium metal in water will cause a violent reaction resulting in the formation of aqueous sodium hydroxide and hydrogen gas.

5. If ordinary gasoline ( $C_8H_{18}$ ) is mixed with pure oxygen gas, and ignited it will produce carbon dioxide gas and water vapor.

6. Although they were formerly called the inert gases, the heavier elements of Group 18 do form relatively stable compounds. For example, at high temperatures in the presence of an appropriate catalyst, xenon gas will combine directly with fluorine gas to produce solid xenon tetrafluoride.