

Making Predictions HW

- Describe what you think you would observe for the following reactions.
 - $\text{Mg(s)} + 2 \text{HCl(aq)} \rightarrow \text{H}_2\text{(g)} + \text{MgCl}_2\text{(aq)}$
 - $2\text{H}_2\text{O}_2\text{(aq)} \rightarrow \text{H}_2\text{O(l)} + \text{O}_2\text{(g)}$
- Write a chemical equation for the following reaction description:
“When you light a Bunsen burner, you are causing methane gas (CH_4) to react with oxygen in the air. This produces carbon dioxide and water.”
- Some chemicals are extremely dangerous and harmful to the body, even in small amounts. Match the following descriptions (A-C) with their chemical equations (x-z).
 - “Crack,” or “free base,” is the most toxic form of cocaine ($\text{C}_{17}\text{H}_{21}\text{O}_4\text{N}$). It is made by treating cocaine with sodium hydroxide. Methanol and sodium ion are also products.
 - Carbon monoxide binds very strongly to hemoglobin, a compound in blood. The carbon monoxide-hemoglobin complex prevents hemoglobin from carrying either oxygen or carbon dioxide and causes a person to suffocate.
 - Sodium cyanide is a poisonous white powder. It also reacts with hydrochloric acid to form the very toxic gas hydrogen cyanide. Sodium chloride is a by-product of this reaction.
 - $\text{C}_{17}\text{H}_{21}\text{O}_4\text{N(s)} + \text{NaOH(aq)} \rightarrow \text{C}_{16}\text{H}_{18}\text{O}_4\text{N}^-\text{(aq)} + \text{Na}^+\text{(aq)} + \text{CH}_3\text{OH}$
 - $\text{NaCN(s)} + \text{HCl(aq)} \rightarrow \text{HCN(g)} + \text{NaCl(aq)}$
 - $\text{CO(g)} + \text{FeHb(aq)} \rightarrow \text{FeHb(CO)(aq)}$
- Label the reactions in #3 as physical or chemical change.
- Do your best to translate the following equation into a description of what is happening: $2\text{CH}_3\text{OH(l)} + \text{O}_2\text{(g)} \rightarrow 2\text{CH}_2\text{O(l)} + 2\text{H}_2\text{O(l)}$

Selected Answers:

1b. Bubbling would form in a liquid (because gas is being produced). We might not see the new liquid forming unless the new liquid has a different color. Since the new liquid is water, it would be clear so if the original liquid was colored, the remaining liquid would now be a lighter color.

3. A = x; B = z; C = y

4. The answer for Reaction A (=x) is a chemical change, because there are new substances on the product side. Reactions B through C are on your own.

5. A gas (oxygen) is being bubbled into liquid CH_3OH and a new solution forms (made up of CH_2O and water).