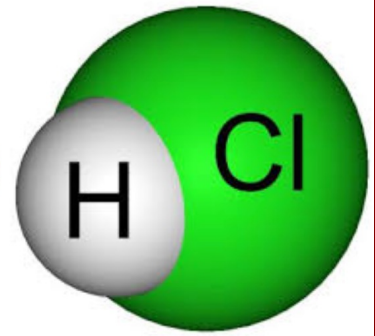
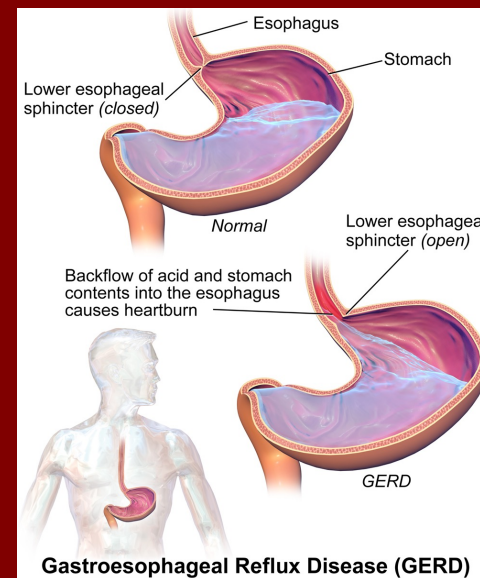
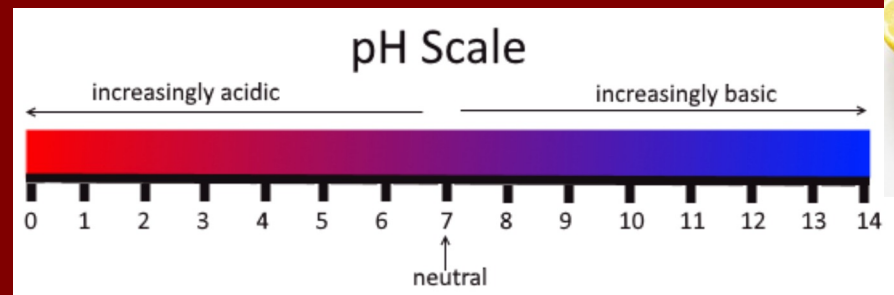


Acids, Bases, and Neutralization Reactions

- pH
- Acid Properties
- HCl
- Acid Precipitation
- Ocean Acidification
- Base Properties
- Neutralization Reactions
- Cleaning Up Chemical Spills
- Acid Reflux and GERD
- Indicators



Preview File

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- Some slides appear blank because they have been removed
- Student versions have portions of the text removed which is given in the teacher version and appear as _____ which the students are to fill in
- Other slides may have on them, this represents writing that has been removed on this sample

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Acids and Bases

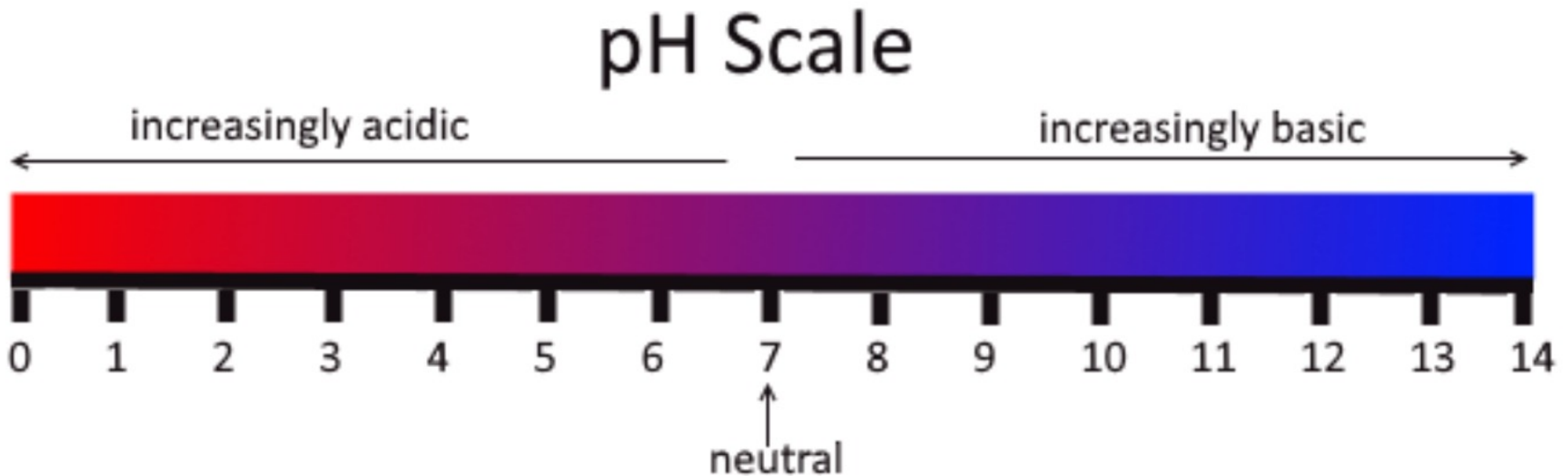
- _____
- An acid is a substance that will donate a proton or accept an electron pair in reactions
- A base is a substance that will accept a proton or donate a electron pair in reactions
- _____

pH

- We can determine how acidic or basic a substance is based on where it falls on the pH scale
- _____
- It is measured on a scale from 0-14

< 7 (Acidic) = e.g. Vinegar

> 7 (Basic) = e.g. Ammonia (household cleaner)



Acids

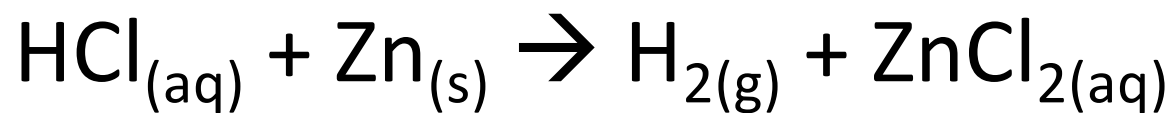
- _____
 - Ex. $\text{HCl}_{(\text{aq})} \rightarrow \text{H}^{+}_{(\text{aq})} + \text{Cl}^{-}_{(\text{aq})}$
- _____
- Sour-Tasting
- Reactive (explosive, corrosive)
 - They can be very dangerous



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Acids

- _____
 - Kills microorganisms that make food go bad
- React with metals to produce Hydrogen
 - Hydrogen gas is highly combustible!!



Acids

- ---

 - Although they are molecular compounds, when placed in water they collide with water, breaking the acid into ions. These ions are used to conduct electricity
 - $\text{HCl}_{(\text{aq})} \rightarrow \text{H}^{+}_{(\text{aq})} + \text{Cl}^{-}_{(\text{aq})}$
 - You will notice that the chemical formula for acids start with an H and are followed by an aq.
- ** The H^{+} is responsible for the acid's properties****

•

Acid Precipitation

- Fossil fuels are made from dead organisms which have been buried underground for millions of years.
- Fossil fuels (coal, oil, gas) are burned to make energy
- During this
- _____
- _____
- These acids then fall to earth as acid precipitation in the form of rain, sleet or snow

Effects of Acid Precipitation

- Forest soils lose valuable nutrients killing plant life
- Can cause serious problems in aquatic ecosystems killing fish, amphibians and other



• _____

Ocean Acidification

- _____
- The acidity of the oceans has increased by 26% since about 1850
 - This is approximately 10 times faster than any time in the last 55 million years
- A decrease in pH will have a significant impact on marine ecosystems
- _____
- The impacts of acidification will extend up the food chain to affect economic activities such as fisheries, aquaculture and tourism



Bases

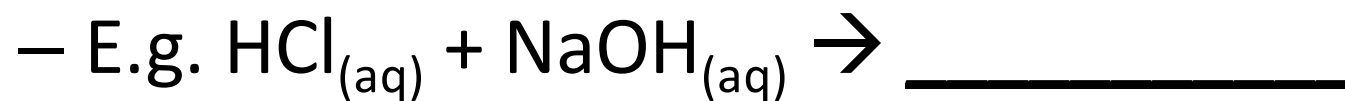
- Also called alkaline
- Release hydroxide ions in water (OH^-)
 - $\text{NaOH}_{(s)} \rightarrow \text{Na}^+_{(aq)} + \text{OH}^-_{(aq)}$
- Your bases will contain an OH^- (Hydroxide) as a reactant
- _____
- _____
- Examples: Drain Cleaner, Soap, Antacids



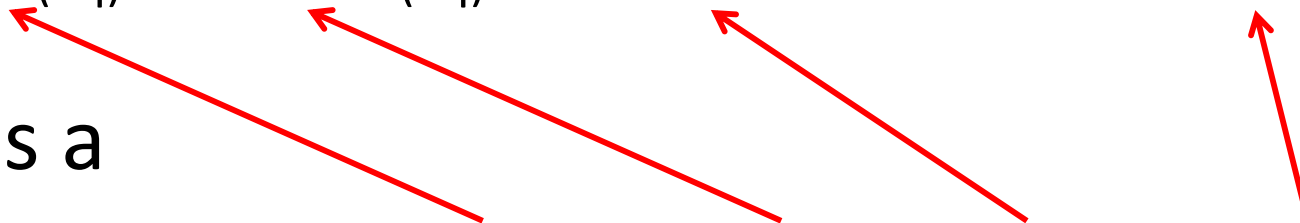
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Neutralization Reactions

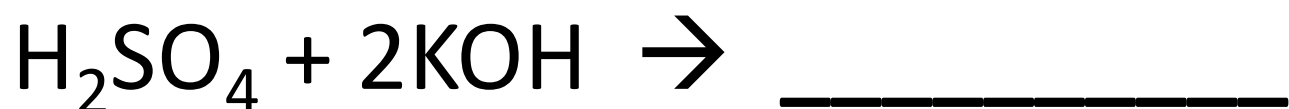
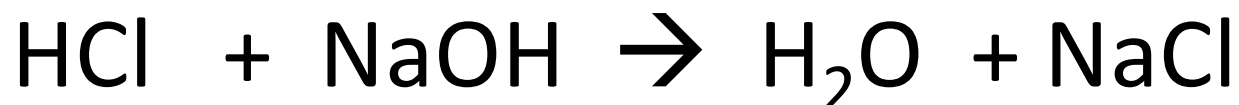
- When an acid reacts with a base
- pH moves towards 7
- Double displacement reaction



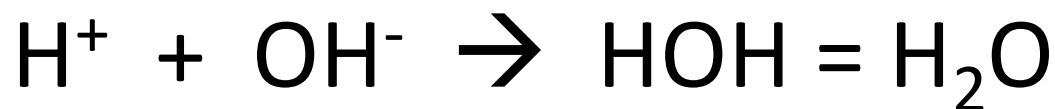
- Produces a



Neutralization Examples



Basically...



The other portions of the acid and base join to make a salt.

What is a salt?

- A combination of positive and negative ions formed by the reaction of an acid and a base (ionic compound)

- _____



Neutralization Reactions – Cleaning Up Chemical Spills

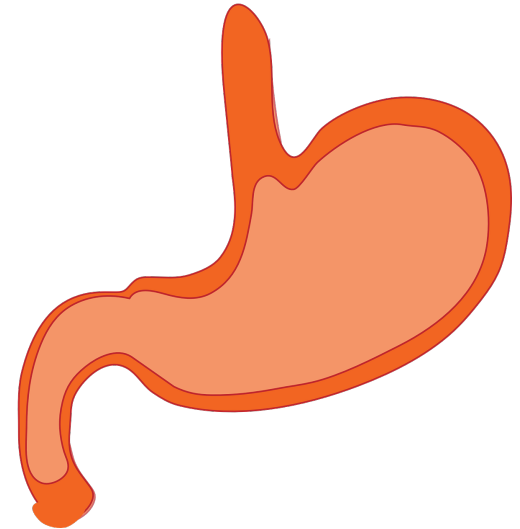
In 2007, a train containing 150,000 L of sulfuric acid suddenly derailed and spilled some of its cargo into the

The emergency response crew added calcium oxide (lime), CaO(s) , to the river slightly upstream from the spill site in order to neutralize the acid.

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Application – Acid Reflux

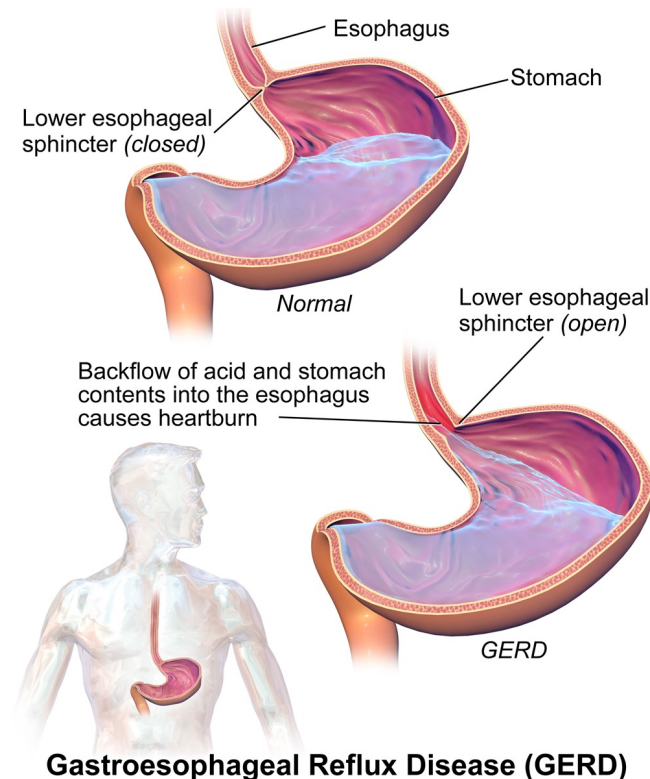
-
- Luckily, our stomach has a protective lining of mucus which keeps it safe from the acid and a one-way valve which only allows food and liquids to travel into the stomach



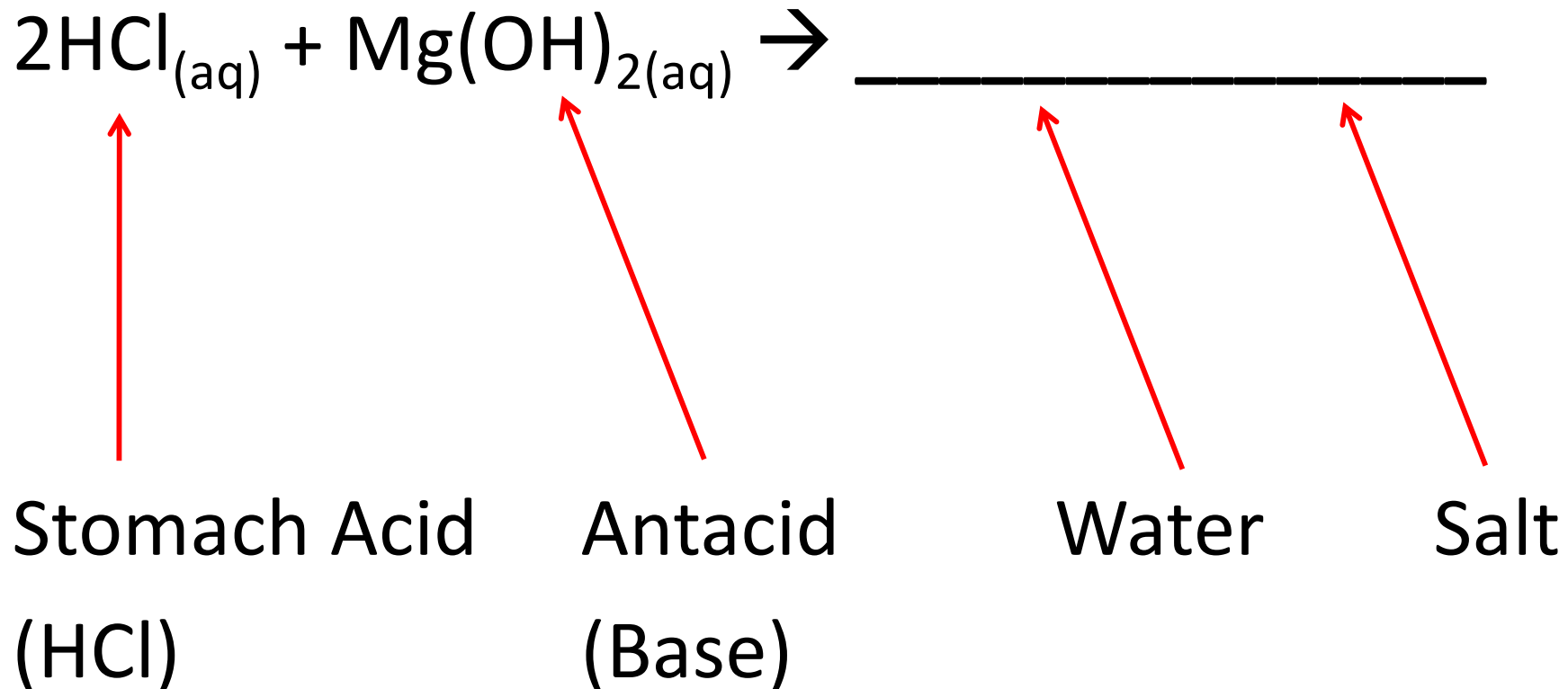
Application – Acid Reflux

- Occurs when acid exits the upper part of your stomach and comes in contact with your esophagus
- Results in a burning sensation often called heartburn

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Acid Reflux Neutralization Reaction



Indicators

- Several chemicals change color when they are placed in acidic or basic solutions

- _____
- Some

