CHEMICAL REACTIONS

ENERGY IN CHEMICAL REACTIONS

- **All** chemical reactions either release or absorb energy.
- The energy can take many forms: **HEAT**, **LIGHT**, **SOUND**, and **ELECTRICITY**
- Chemical **bonds** are the source of this energy.
- When most chemical reactions take place, chemical bonds must be **broken** and breaking these bonds takes **energy.** Forming new chemical bonds **releases** energy.

ENERGY IN CHEMICAL REACTIONS

MORE ENERGY OUT:

- Chemical reactions that release energy are **exergonic** reactions.
- Examples include glow sticks, heat packs, burning a match.
- If **heat** is the energy released, it is called an **exothermic** reaction. "Thermic" means heat.

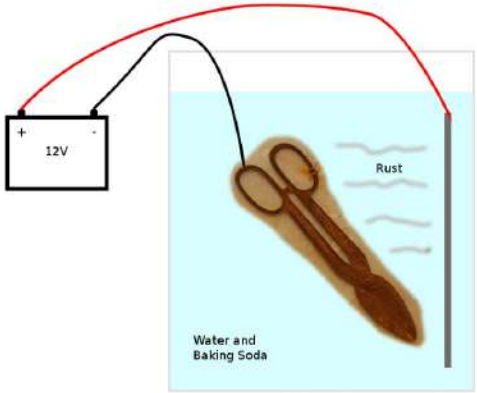
In an exothermic reaction, energy is released into the surroundings as heat. As a result, the temperature of the surroundings increases.

ENERGY IN CHEMICAL REACTIONS

MORE ENERGY IN:

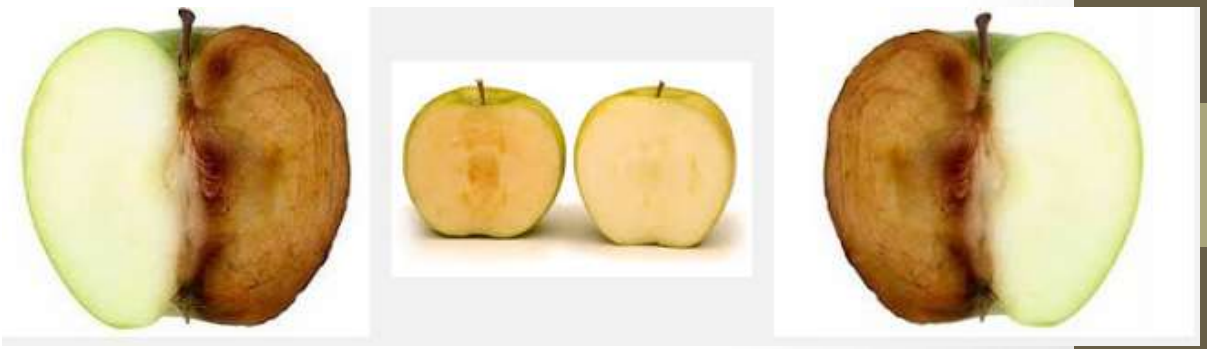
- Chemical reactions that absorb energy are **endergonic** reactions.
- Examples include cold packs and rxns that require electricity to work.
- If **heat** is the energy absorbed, it is called an **endothermic** reaction.

In an endothermic reaction, energy is absorbed from the surroundings. As a result, the temperature of the surroundings drops.



CHEMICAL REACTION SPEED

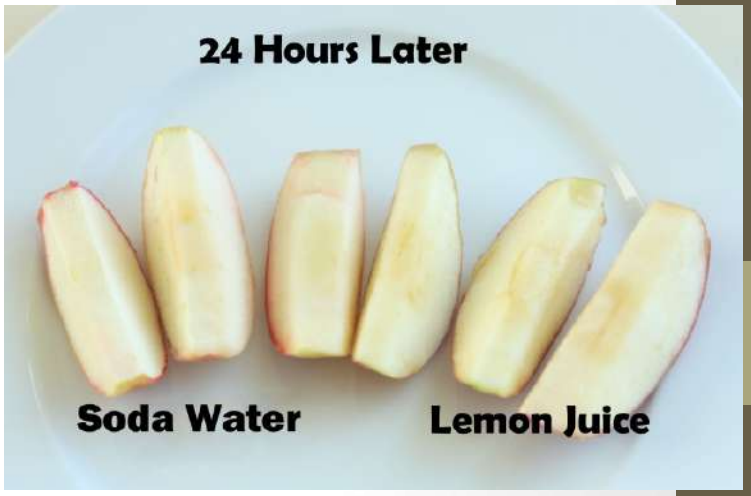
- Some reactions proceed **too slowly**.
- To speed a chemical reaction up, a **catalyst** can be used.
- A catalyst is a substance that **speeds up** a chemical reaction without being **permanently** changed itself.
- The catalyst is there at the **beginning** of the reaction and it is there at the **end** of the reaction.
- The catalyst can be recovered and **used again**.
- Example: when you cut an apple and it turns brown, that is due to an **catalyst/enzyme** which speeds up the browning process.



CHEMICAL REACTION SPEED

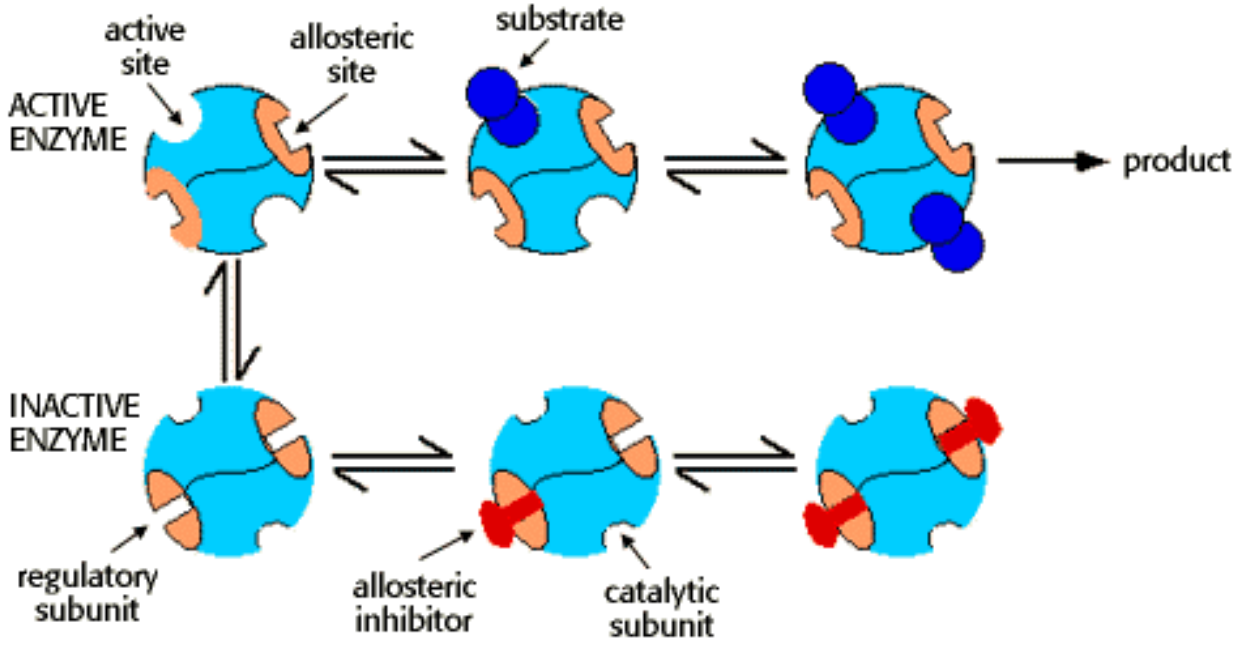
- Some reactions need to be **slowed down.**
- To slow down a chemical reaction, an **inhibitor** can be used.
- An inhibitor is a substance that slows down a chemical reaction or **prevents** it from occurring by **bonding** with a reactant.
- This ties up the reactant so it cannot form the **original** product.

- Example: You can pour lemon juice on your cut apple to **prevent** the catalyst/enzyme from reacting.



CHEMICAL REACTION SPEED

- Catalysts and inhibitors **do not** change the **amount** of reactants used or products formed.
- They only change the **speed** of the reaction.



TO DO

- Watch: Exothermic and Endothermic Reactions
- DO: Energy and Chemical Reactions on the back side of the Classifying Reactions handout. Due tomorrow.
- Vocabulary Quiz is Thursday