

## Types of Heat Transfer

**Convection** is the transfer of heat through **gases or liquids**.

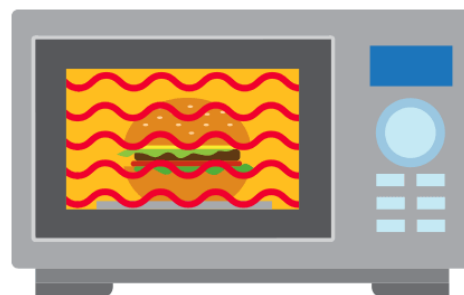
- the portions of the gas or liquid closest to the heat source warm first and become **less dense**,
  - causing them to rise and be replaced by cooler, denser portions of the gas or liquid.
- Convection is a combination of **conduction and mixing**.



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**Radiation** is the transfer of energy through waves of **electromagnetic energy** that travel rapidly through space.

- does not require **direct contact** between the energy source and food.
- When the waves traveling through space strike matter and are absorbed, they cause molecules in the matter to vibrate more rapidly, increasing the temperature.
- Two types of radiation are important in the kitchen:
  - **infrared and microwave**



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**Induction** cooking is a relatively new cooking method that transfers heat through a specially designed cooktop made of a smooth ceramic material over an induction coil.

- Coil creates a **magnetic current** that causes a metal pan on the cooktop to heat up quickly, yet the cooktop itself remains cool.
- Heat is then transferred to the food in the pan through conduction.
- **Cookware** must be flat on the bottom for good contact with the cooktop, and it must be made of ferrous (**iron-containing**) metals, such as cast iron, magnetic stainless steel, or enamel over steel.

