



# Heat

It's 12:00 and outside it's ninety-two degrees Fahrenheit. Relative humidity is seventy-five percent. Today's forecast calls for a mix of hazy sun and clouds . . ."

Whhhhhew. It's hot! Your radio is blaring while you lounge on the beach, catching some rays from the Sun. When you squint and look down the beach you see waves of heat floating above the hot sand. You can practically feel the earth sizzle. Your skin is absorbing the radiant energy from the Sun, making you hotter. Your skin begins to sweat to help cool you off by radiating some of the heat away from your body. Lying in the shade of your beach umbrella also helps to cool you down. The umbrella absorbs the Sun's radiant energy and conducts heat through the metal rod into the sand, just as a lightning rod deflects a bolt of lightning from a house.

So, is it temperature that makes you so hot? Not exactly. Temperature is only the measure of heat. All objects have heat, some more and some less. The sand absorbs the energy from the Sun and so does the ocean water, but each does so in a different way. The sand absorbs energy more quickly while bodies of water absorb it more slowly. This explains why the sand is extremely hot at noon while the ocean water is relatively cool. Heat is a form of energy that an object has when its atoms and molecules move.

Heat is all around you; it's transferred in three ways.

## Radiation

The energy from the Sun reaches you by electromagnetic radiation, especially the infrared variety. The Sun's energy you get at the beach is largely infrared radiation. Your body absorbs the radiation and transforms it to heat energy. Not all the energy is absorbed, though. When you do absorb this heat, the energy of your body increases and you feel hotter.

## Conduction

The heat in your beach umbrella rod travels by conduction; the molecules inside the rod increase their energy of motion. As you sit on the beach, the sand absorbs sunlight and is also a pretty good conductor of heat. If one part of the sand is heated by the Sun, a direct source of heat, the neighboring parts will also become heated. All

## Convection

Hot air rises, right? Right. The heat of one area of air is physically moved by currents. This is convection. When the air around you is heated, the lighter, warmer air rises, while the colder, denser air sinks. The uneven distribution of heat creates more air currents. Remember: Heat is

