

Climate and Clothing

To remain healthy, the human body must maintain a temperature of about 37.0°C (98.6°F), which becomes increasingly difficult as the surrounding air becomes hotter or colder than body temperature.

Unless the body is properly insulated, its temperature will drop in its attempt to reach thermal equilibrium with very cold surroundings. If this situation is not corrected in time, the body will enter a state of hypothermia, which lowers pulse, blood pressure, and respiration. Once body temperature reaches 32.2°C (90.0°F), a person can lose consciousness. When body temperature reaches 25.6°C (78.0°F), hypothermia is almost always fatal.

To prevent hypothermia, the transfer of energy from the human body to the surrounding air must be hindered, which is done by surrounding the body with heat-insulating material. An



The Inupiat parka, called an *atigi*, consists today of a canvas shell over sheepskin. The wool provides layers of insulating air between the wearer and the cold.

extremely effective and common thermal insulator is air. Like most gases, air is a very poor thermal conductor, so even a thin layer of air near the skin provides a barrier to energy transfer.

The Inupiat people of northern Alaska have designed clothing to protect them from the severe Arctic climate, where average air temperatures range from 10°C (50°F) to -37°C (-35°F). The Inupiat clothing is made from animal skins that make use of air's insulating properties. Until recently, the traditional parka (*atigi*) was made from caribou skins. Two separate parkas are worn in layers, with the fur lining the inside of the inner parka and the outside of the outer parka. Insulation is provided by air that is trapped between the short inner hairs and within the long, hollow hairs of the fur. Today, inner parkas are made from sheepskin, as shown on the left.

At the other extreme, the Bedouins of the Arabian Desert have developed clothing that permits them to survive another of the harshest environments on Earth. Bedouin garments cover most of the body, which protects the wearer from direct sunlight and prevents excessive loss of body water from evaporation. These clothes are also designed to cool the wearer. The Bedouins must keep their body temperatures from becoming too high in desert temperatures, which often are in excess of 38°C (100°F). Heat exhaustion or heatstroke will result if the body's temperature becomes too high.



The Bedouin headcloth, called a *kefiyah*, employs evaporation to remove energy from the air close to the head, which cools the wearer.

Although members of different tribes, as well as men and women within the same tribes, wear different types of clothing, a few basic garments are common to all Bedouins. One such garment is the *kefiyah*, a headcloth worn by Bedouin men, as shown in the photograph above. A similar garment made of two separate cloths, which are called a *mandil* and a *hatta*, is worn by Bedouin women. Firmly wrapped around the head of the wearer, the cloth absorbs perspiration and cools the wearer during evaporation. This same garment is also useful during cold periods in the desert. The garment, wound snugly around the head, has folds that trap air and provide an insulating layer to keep the head warm.