Name: _____ Date: _____

Why Wet Skin Feels Colder Than the Air

Circle group

Step out of a pool on a warm, breezy day. You may start to shiver, even though the air is nice. Your skin is not colder than before. The shiver comes from water drying on your skin. Drying takes heat away from whatever is under it.

Water is made of particles that are always moving. They do not all move at the same speed. Some are quick and some are slow. The average speed of the group is what we measure as temperature. At the surface of a puddle or a drop, the fastest particles have enough energy to break free. They escape into the air as vapor. This is called evaporation.

Here is the key idea. When the quickest particles leave, the ones left behind are slower on average. So the water that is left is cooler. Heat then flows into that cooler water from around it, including from your skin. Your skin feels the loss.

Your body uses this on purpose. When you get hot, you sweat. As the sweat evaporates, it carries heat away from your skin. On a very humid day, the air already holds a lot of vapor. Sweat dries slowly, and the cooling is weak. That is one reason humid heat feels so bad.

People have used this effect for a very long time. A clay pot lets a little water seep through its walls. When that water evaporates outside, the water inside stays cooler.

Questions

1. Why might you shiver after leaving a pool on a warm, breezy day?

_____

_____

2. What is evaporation?

_____

_____

3. Why is the water that is left behind cooler?

_____

_____

4. How does sweating help the body cool down?

_____

_____

5. Why does humid heat feel so bad?

_____

_____

6. How does a clay pot keep the water inside cool?

_____

_____

Words to know

evaporation: when a liquid turns into a gas at its surface
vapor: water in the form of a gas
average: the typical amount found by combining a group
humid: full of moisture in the air
seep: to flow slowly through tiny openings

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Why Wet Skin Feels Colder Than the Air

Triangle group

Step out of a swimming pool on a warm, breezy day and you may start to shiver, even though the air is pleasant. Your skin is not colder than before. The shiver comes from water drying on your skin, and drying is a process that takes heat away from whatever is under it.

Water is made of particles that are always moving, but they do not all move at the same speed. Some are quick and some are slow, and the average speed of the group is what we measure as temperature. At the surface of a puddle or a drop, the fastest particles have enough energy to break free and escape into the air as vapor. This escape is called evaporation.

Here is the key idea. When the quickest particles leave, the particles that remain are, on average, slower. The water that is left is therefore cooler. Heat then flows into that cooler water from its surroundings, including your skin, and your skin feels the loss.

Your body uses this effect on purpose. When you get hot, you sweat, and as the sweat evaporates, it carries heat away from your skin. On a very humid day the air already holds a lot of vapor, so sweat dries slowly and the cooling is weak. That is one reason humid heat feels so uncomfortable.

People have used the effect for a very long time. A clay pot lets a little water seep through its walls, and when that water evaporates from the outside, the water inside stays cooler.

Questions

1. Why might you shiver after leaving a pool on a warm, breezy day?

_____

_____

2. What is evaporation?

_____

_____

3. Why is the remaining water cooler after the fastest particles leave?

_____

_____

4. How does sweating help the body cool down?

_____

_____

5. Why does humid heat feel so uncomfortable?

_____

_____

6. How does a clay pot keep the water inside cool?

_____

_____

Words to know

evaporation: when a liquid turns into a gas at its surface
vapor: water in the form of a gas
average: the typical amount found by combining a group
humid: full of moisture in the air
seep: to flow slowly through tiny openings

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Why Wet Skin Feels Colder Than the Air

Square group

Step out of a swimming pool on a warm, breezy day and you may begin to shiver, even though the air is perfectly pleasant. Your skin is not actually colder than it was before. The shiver is caused by water drying on your skin, and drying is a process that draws heat away from whatever lies beneath it.

Water consists of particles that are in constant motion, but they do not all travel at the same speed. Some are quick and some are sluggish, and the average speed of the whole group is what we measure as temperature. At the surface of a puddle or a droplet, the fastest particles possess enough energy to break free and escape into the air as vapor. This escape is known as evaporation.

Here lies the key idea. When the quickest particles depart, the particles that remain are, on average, slower, so the water that is left behind is cooler. Heat then flows into that cooler water from its surroundings, including your skin, and your skin registers the loss.

Your body exploits this effect deliberately. When you overheat, you sweat, and as the sweat evaporates, it carries heat away from your skin. On a very humid day, the air already contains a great deal of vapor, so sweat dries slowly and the cooling is feeble. That is one reason why humid heat feels so oppressive.

People have taken advantage of the effect for a very long time. A clay pot permits a small amount of water to seep through its walls, and when that water evaporates from the outside, the water inside remains cooler.

Questions

1. Why might you shiver after leaving a swimming pool on a warm, breezy day?

_____

_____

2. What is evaporation?

_____

_____

3. Why is the water that is left behind cooler after the fastest particles depart?

_____

_____

4. How does sweating help the body to cool down?

_____

_____

5. Why does humid heat feel so oppressive?

_____

_____

6. How does a clay pot keep the water inside it cool?

_____

_____

Words to know

evaporation: when a liquid turns into a gas at its surface
vapor: water in the form of a gas
average: the typical amount found by combining a group
humid: full of moisture in the air
seep: to flow slowly through tiny openings

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Why Wet Skin Feels Colder Than the Air

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Why Wet Skin Feels Colder Than the Air

Easier · 241 words · Flesch-Kincaid grade 3.9

1. The water drying on your skin takes heat away.
2. Fast water particles escaping from a liquid into the air as vapor.
3. The particles that stay are slower on average.
4. As the sweat evaporates, it carries heat away from the skin.
5. The air already holds a lot of vapor, so sweat dries slowly and cools less.
6. Water seeps through its walls and cools the pot as it evaporates.

Triangle: Why Wet Skin Feels Colder Than the Air

This passage · 257 words · Flesch-Kincaid grade 6.6

1. The water drying on your skin takes heat away.
2. The escape of fast water particles from a liquid into the air as vapor.
3. The particles that remain are slower on average.
4. As the sweat evaporates, it carries heat away from the skin.
5. The air already holds a lot of vapor, so sweat dries slowly and cools less.
6. Water seeps out through its walls and cools the pot as it evaporates.

Square: Why Wet Skin Feels Colder Than the Air

Harder · 270 words · Flesch-Kincaid grade 8.2

1. The water drying on your skin draws heat away.
2. The escape of fast water particles from a liquid into the air as vapor.
3. The particles that remain are slower on average.
4. As the sweat evaporates, it carries heat away from the skin.
5. The air already contains a great deal of vapor, so sweat dries slowly and cools weakly.
6. Water seeps through its walls, and evaporating from the outside cools the pot.