

Energy in the Desert transcript
Video 2 in Energy Transfers Around a Kangaroo Rat
Asombro Institute for Science Education

Welcome back. In the first video we talked about energy and energy transfers.

In this video, we're going to talk about energy transfers in the desert -specifically looking at one of the most common and underappreciated animals of the Chihuahuan desert the kangaroo rat.

The goal of this video is to understand how kangaroo rats get and use energy.

[Gizelle] So this is a kangaroo rat

[Kelly] These scientists are studying kangaroo rats at the Chihuahuan Desert Nature Park in Las Cruces. You may have seen these little rodents if you go out at night. They're nocturnal and they live in the deserts of North America.

They're called kangaroo rats because they stand up on their back feet and hop, much like a kangaroo. In this next clip, these powerful back feet are helpful when a kangaroo encounters a rattlesnake.

Let's watch that video again but think about energy this time.

The kangaroo rat is full of chemical potential energy which it got from eating seeds. When the snake strikes, the kangaroo rat reacts very quickly and launches itself into the air - transforming chemical energy into motion energy.

At the top of its jump before it falls back to the ground, what type of potential energy does the kangaroo rat have? (Students answer this question in Edpuzzle)

At the top of its jump the kangaroo rat has gravitational energy, which is converted to motion energy as it falls, and then the kangaroo rat uses more chemical energy to leap again.

If the snake had caught and eaten the kangaroo rat, what energy transfer would have happened? (Students answer this question in Edpuzzle)

Energy transfers are occurring constantly in living things. Just like you, the kangaroo rat got its energy from eating. Kangaroo rats are herbivores and eat mostly seeds. Your body converts the food you eat into energy. We call this process metabolism. Your body uses that energy to grow, keep your heart pumping and your lungs breathing, and move you around.

Here's another way kangaroo rats use energy. Listen to this kangaroo rat drum its foot on the ground as a warning to a snake.

[foot drumming]

You can hear the foot drumming because motion energy is being transformed into what type of energy? (Students answer this question in Edpuzzle)

What energy transfers are happening here? The kangaroo rat is transferring its stored chemical energy into motion energy by moving its foot. But the motion energy transforms into sound energy this time.

Let's consider another important energy transfer happening in the desert. Many desert animals including kangaroo rats and snakes are most active at night because of this energy transfer happening all day long.

When the sun is out, it's transferring energy to the earth. What type of energy is coming from the sun? (Students answer this question in Edpuzzle)

The earth is warmed by the sun because the earth absorbs the light energy as what form of energy? (Students answer this question in Edpuzzle)

The light energy from the sun hits the earth and is absorbed as thermal energy. Reptiles like this rattlesnake depend on the environment to regulate their body temperature, so the rattlesnake stays in the sun to warm up.

These are just a few of the energy transfers happening in the Chihuahuan desert ecosystem.

Now take what you know about energy to identify energy transfers both in the desert and at home.

Special thanks to the Ninja Rat research team. Check out their website and YouTube channel for more videos.