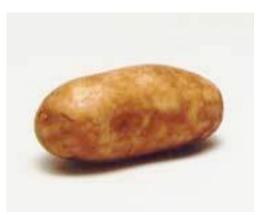
How Potato Batteries Work

The Powerful Potato

Potatoes are great mashed, roasted, baked or in **clocks**. That's right, potatoes are nature's tastiest <u>battery</u>. Check out the 411 on the science behind this **powerfully delicious** snack.



How to Make a Potato Battery

Making a clock run on **potato power** is easier that you might think. This project is easy, <u>bizarre</u> and makes a sweet <u>science fair project</u> or chemistry experiment. Who knew potatoes could be so **empowering**?

What You Need:

- Two Potatoes
- Two short pieces of heavy copper wire
- Two common galvanized nails
- Three <u>alligator</u> clip/wire units (alligator clips connected to each other with wire)
- One simple low-voltage **LED clock** that functions from a 1-to 2-volt button-type battery (Radio Shack)

Steps:

- 1. Remove the **battery** from the battery compartment of the clock.
- 2. Make a note of which way around the positive (+) and a negative (-) points of the battery went.
- 3. Number the potatoes as one and two.
- 4. Insert **one nail** in each potato.
- 5. Insert one short piece of the copper wire into each potato as **far away** from the nail as possible.
- 6. Use one <u>alligator</u> clip to <u>connect</u> the copper wire in potato number one to the positive (+) terminal in the clock's battery compartment.
- 7. Use one alligator clip to connect the nail in **potato number two** to the negative (-) terminal in the clock's battery compartment.
- 8. Use the third alligator clip to **connect the nail** in potato one to the copper wire in potato two and set the clock!



How the Potato Clock works

A potato battery is an **electrochemical battery**, otherwise known as an electrochemical cell. An electrochemical cell is a cell in which <u>chemical</u> energy is converted to <u>electric energy</u> by a spontaneous electron transfer. In the case of the potato, the zinc in the nail reacts with the copper wire. The potato acts as a sort of buffer between the **zinc ions** and the **copper ions**. The zinc and copper ions would still react if they touched within the potato but they would only **generate heat**. Since the potato keeps them apart, the electron transfer has to take place over the copper wires of the circuit, which channels the <u>energy</u> into the clock. Presto! You have potato power.