

Do you know where your favorite electronics come from? Many parts start in rare-earth mines, like this one.

Precious Metals



Did you know your tech devices contain some very valuable metals?

Neodymium (nee-oh-DIM-ee-uhm). Lanthanum (LAN-thuh-nuhm). Yttrium (IH-tree-uhm). You may never have heard of them, but you probably own a bit of each. These are just some of the **rare-earth metals** that make your high-tech gadgets fast, small, and colorful.

Rare-earth metals have special **properties**, or characteristics, that make them useful. For example, neodymium is used to make the world's strongest magnets. These magnets often power a device's moving parts, like a cell phone's vibrate function.

Lanthanum is used to make lenses—like the ones in phones and cameras. Other rare-earth metals, including yttrium, create the colors in TV screens and computer monitors.

Hard to Get

Rare-earth metals are actually common in Earth's rocky crust. But instead of being concentrated in one spot, bits of the metals are spread out and mixed with other materials. To separate them, factories must use strong chemicals. The separation process produces waste that can be very dangerous if it's not treated carefully.

Scientists are trying to make the process safer. That's important because the demand for gadgets—and the rare-earth metals in them—continues to grow. But practical answers may be years away.

In the meantime, we can all help reduce the need for dangerous separation processes. Take care of your high-tech gadgets to make

them last as long as possible. And once they stop working, don't trash them. Recycle them!

Every Little Bit Counts

Even factories can recycle more. For instance, when rare-earth magnets are cut and shaped, a dusty material called **swarf** is left behind. Swarf is filled with valuable metals. It would cost a lot of money and make more waste to separate the materials for reuse.

Scientist Ikenna Nlebedim (ih-keh-nuh nleh-be-dim) of the Ames Laboratory in Iowa, wondered if there was a way to reuse the swarf as it is. He experimented by mixing swarf with a kind of plastic. He found he could make the mix into a new kind of magnet, keeping the rare-earth metals from going to waste.