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Urban Mining: The New Frontier

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In six short years, I've watched as the products coming into our electronics recycling business have grown to include not just computers and televisions, but now a wide range of products we never envisioned, but now can't imagine living without – Kindles and iPads, iPhones and mp3 players, and countless other devices.

By next year, every one of these innovative products will likely be obsolete – people will be buying new versions of their tablets, laptops, smart phones and flat-screen televisions. The question becomes: where will the old stuff end up and what will happen to it?

The answer regarding what to do with the fastest growing solid waste stream in the world today, e-waste, is not a simple one, but there is a viable solution – "Urban Mining."

When most people learn about the toxic elements contained in cell phones, computers and televisions, they want to do the right thing in terms of having them properly recycled and not dumped into landfills. Sensitive personal information can also be extracted from old devices, so it is very important as part of the recycling process that we make sure that we properly destroy technologies that store personal information.

When it comes to consumer electronics, perhaps the most important thing we can do is keep this stuff above ground, and then get it appropriately to smelters. That's where the concept of urban mining comes in.

Imagine a fleet of miners flocking to landfills and disassembling the dated electronics for their batteries and power supplies. Urban mining is a term I like to use to describe this process – and the budding global industry that encompasses essentially anything that's recyclable. Urban mining goes beyond electronics, too. It's everything that goes into a landfill that can be taken out and used.

Electronics are certainly a key element, however, especially since many contain precious metals like platinum, iridium and others that could have dramatic implications for energy independence and renewable energy in the United States. Many of the most valuable metals used in everyday electronic products are mined outside U.S. borders – China alone accounts for 97 percent of the rare earth metal market.

For a few years now, electronic recycling has been prompted by forward-thinking state laws seeking to prevent “e-waste,” or electronics that end up in landfills. California was first to pass e-waste legislation in 2003. The state has processed more than 1 billion pounds of e-waste since then and has 60 recyclers and 600 collectors.

Twenty-four other states have since followed suit, mostly in the past few years, but California’s law stands out because it charges a consumer fee on certain electronics. The fee goes on covered electronic devices, or any electronic item with a screen bigger than 4 inches. Buying a big-screen TV, for instance, may require a $10 fee that gets diverted into a recycling fund. The fund goes back to recyclers and collectors, who are paid a subsidy based on the amount of electronics they bring to a recycling plant. Collectors typically get about 30 cents per pound of e-waste.

Other states with e-waste laws take “producer responsibility” approaches and shift the burden of recycling costs from the taxpayers to the manufacturers. Manufacturers are pushed to make products that can be easily recycled or made from recyclable materials. The catch is, they have to pay for it themselves.

But despite e-recycling’s growth, most old electronics in the United States still end up in landfills. US EPA estimates that in 2009, more than 82 percent of discarded electronics went to landfills and incinerators. The Electronics TakeBack Coalition, which promotes responsible e-recycling, says 50 to 80 percent of electronics recycled in the United States are shipped overseas, and that is probably a conservative estimate.

Most people don’t recognize the value in their discarded electronics. Cell phones, for example. You may have an old one in your pocket right now that you’ve been thinking of replacing. Who would possibly want your crummy old cell phone, right? It’s actually very likely that there is someone out there who really would like to buy your phone — not to sign-up to a cheap call plan, but to strip it of the valuable materials used to build it, from iridium and indium to antimony and bismuth.

For the urban miner, it doesn’t matter whether your device is working or broken, new or old — what is at stake is mineral content, both rare earth metals and other elements like copper, iron, manganese, nickel, palladium, platinum, tin and zinc.

After the devices are processed and the materials separated, these valuable metals can be sold as high quality raw materials used to build new products, which in turn might someday be recycled. Manufacturers are beginning to recognize this, and are making commitments to purchase raw materials for their new products mined not from the earth, but from recycling collection points throughout our cities.

With our landfills reaching capacity, and the costs of mining and shipping rare earth metals increasing, there’ no better time to complete the electronics cycle and begin urban mining!

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