

E-waste Reduction Revolution

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Project Objectives

The projects goal is to create a set of policies or guidelines that, when placed into effect, will either have decrease the total amount of e-waste created, or a stronger control over the path the processing the e-waste faces after being recycled, rather than discarded. This will be done by enhancing what system is already set in place, replacing the current one if it is beyond repair, or introducing our own policies where there is a lack of them. In addition to the policies we will also aim at increasing e-waste awareness and the danger of our current destructive path.

Recommendations

1. Manufacturers are responsible for the disposal of their own waste products.
2. Manufacturers are encouraged to redesign their products to make them more environmentally-friendly.
3. Tax breaks programs are open to companies that take great effort to redesign their products and recycle their e-waste.
4. Community and school recycling networks for electronic appliance waste recycling are to be built.
5. Consumers are responsible, and obligated by law, to return discarded appliances to retailers or designated collection points, and bear the final financial responsibility through the recycling fee on new product purchases.

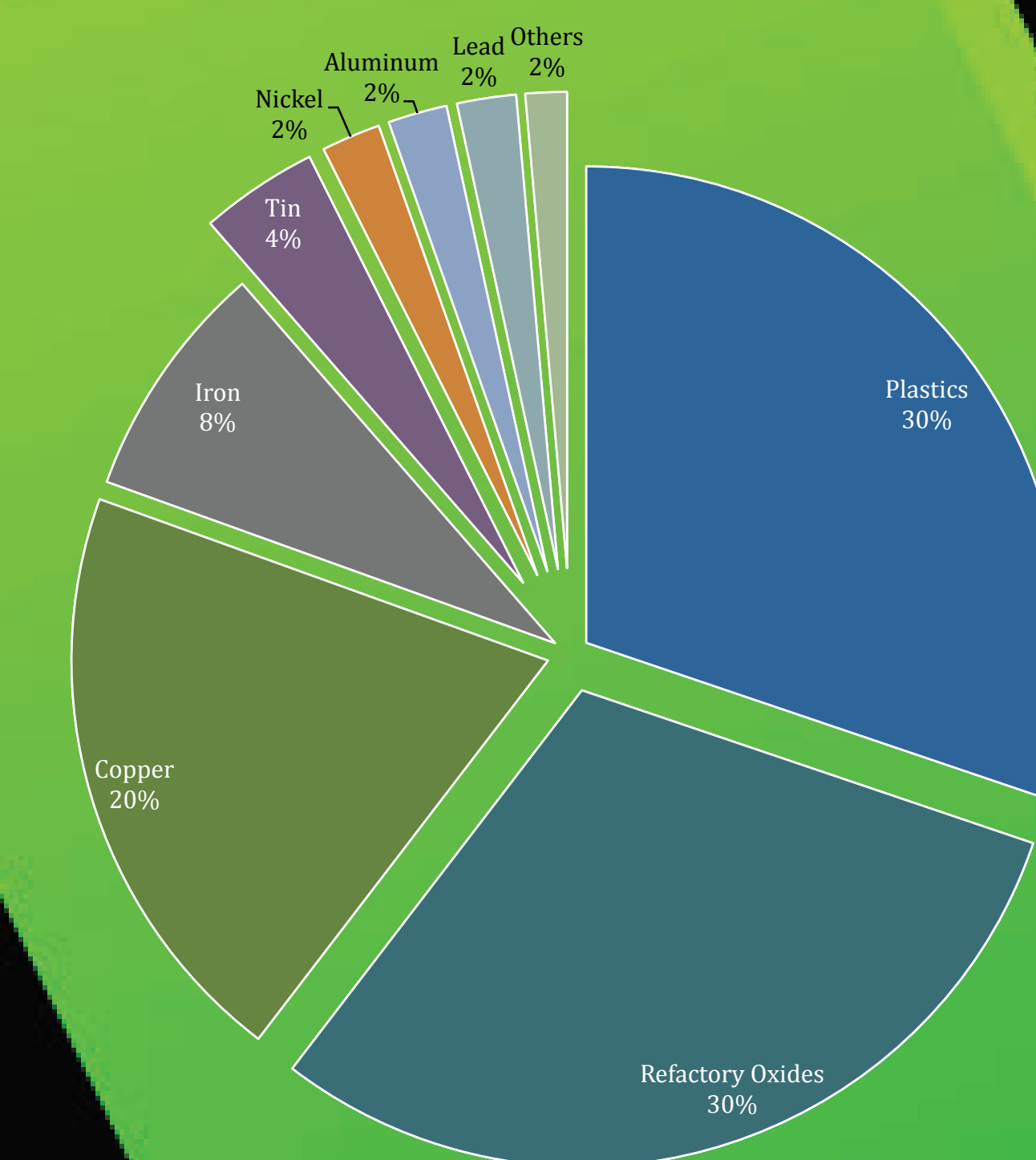
Background

Electronic waste is any electronic device that is thrown away, either after its useful life or before. Used televisions, computers, and cell phones can all be regarded as electronic wastes. All electronics are composed of a myriad of elements. For example, the standard computer chip has around 60 elements in it these days compared to 20 years ago. More than half the elements are inorganic, about 8 of those poisonous to the human body. Lead can be found on every circuit board, and mercury is used in all fluorescent bulbs. Most of these elements are not dangerous when they are kept safe within their given devices, but it is during the after-life of these products where problems arise. In 2002 there was an estimated 720 million computers in use, and the number is increasing year by year. If all these used electronic equipment are not recycled properly, the environment and human health will be in dangerous situation.

ABSTRACT

As humans have evolved, so has our technology. As electronics flourished, they became more common placed in daily life, controlling much of the ebb and flow of life. Yet, same as their creators, all the electronics have a life span, and an end. The current path old electronics take is one of environmental destruction, material squandering, and human self-affliction. Team E-Cactus has research not only the current state of electronic waste, but also how many countries, companies and even local organizations try to recover any electronics so they can see that they are remade for a better use. In par with what has already been laid down in terms of standards and policies for countries and companies alike, Team E-Cactus has taken towards making it possible to adapt and implement these fore standing practices to be used by any and all where the need be applied. This is with the hope that discarded electronics are not so, but rather recycled, reclaimed or reused, for a better healthier, and more plentiful future.

Electronic Waste Composition



Methods

1. Research the existing incentives and policies on e-waste management in major countries such as China, Japan, Switzerland, India, and the United as well as the state regulations existing here in the US.
2. Researched the policies the major manufacturing companies such as Sony, Dell, Samsung, IBM, Toshiba, Lenovo, and Panasonic.
3. Go through federal government data bases such as EPA and DOE and analyze their data along with NGO databases, individual blogs, newspaper articles, company websites and online encyclopedia sources.
4. Interview people from specialized fields related to the topic of our project.

Results

CHINA requires mandatory recycling of e-waste, elements or parts, discarded by the consumers as well as in the process of manufacturing and maintaining electrical and electronic appliance.

JAPAN's e-waste laws require manufacturers and importers to take back end-of-life electronics for recycling and waste management.

SWITZERLAND is the first county in the world to develop and implement the well organized and formal e-waste management system for collection, transportation, recycling/treatment and disposal of e-waste. It has a clear definition of roles and responsibilities of all stakeholders involved.

U.S.A. currently focuses on landfill disposal and exportation, where e-waste is growing faster than any other country because people are purchasing, upgrading and discarding electronic products more frequently than ever before.

BIBLIOGRAPHY

- Hoggard, Stuart. "China Approves E-waste Regulation – Systems Proposed, Penalties Established | Ewasteguide.info." Ewasteguide.info | A Knowledge Base for the Sustainable Recycling of E-Waste. 13 Oct. 2008. Web. 26 Nov. 2011. <<http://ewasteguide.info/china-approves-e-was>>.
- Mathias. "Recycling Electronic Waste in Japan: Better Late than Never | Ewasteguide.info." Ewasteguide.info | A Knowledge Base for the Sustainable Recycling of E-Waste. 06 Oct. 2010. Web. 26 Nov. 2011. <<http://ewasteguide.info/recycling-electronic>>.
- Kahhat, Ramzy, et al. "Exploring e-Waste Management Systems in the United States." Resources, Conservation and Recycling 52.7 (2008): 955-64. Web.
- Wath, Sushant B., et al. "A Roadmap for Development of Sustainable E-Waste Management System in India." Science of The Total Environment 409.1 (2010): 19-32. Web.
- Khetriwal, Deepali Sinha, Philipp Kraeuchi, and Rolf Widmer. "Producer Responsibility for e-Waste Management: Key Issues for Consideration – Learning from the Swiss Experience." Journal of environmental management 90.1 (2009): 153-65. Web.
- Byster, Leslie, Sheila Davis, Madhumita Dutta, Richard Gutierrez, Asma Hussain, Jim Puckett, and Sarah Westervelt. "Exporting Harm: The High-Tech Trashing Of Asia." 25 February, 2002. PDF file. <<http://www.ban.org/E-waste/technotrashfinalcomp.pdf>>
- Davis, Crystal. "Ask EarthTrends: Why Is Electronic Waste a Problem? | EarthTrends." EarthTrends | Environmental Information. 21 Dec. 2006. Web. 27 Nov. 2011. <<http://earthtrends.wri.org/updates/node/130>>.
- Legard, David. "PC Sales Surpass One Billion | PCWorld." Reviews and News on Tech Products, Software and Downloads | PCWorld. 1 July 2002. Web. 27 Nov. 2011. <http://www.pcworld.com/article/102386/pc_sales_surpass_one_billion.html>.
- Longo, – Ben. "How Many Cell Phones in the US Are Decommissioned Every Day? | Gizmodo, the Gadget Guide. Web. 27 Nov. 2011. <<http://gizmodo.com/258789/how-many-cell-phones-in-the-us-are-decommissioned-every-day?tag=gadgets&cellphonemurder>>.

