

Memo

To: Dr. J. Greenbaum, Professor
From: Dzhantam Warren, student, CIS-100
Subject: Electronic Waste
Date: Nov/22/2005

Element I: Outlook on Electronic Waste

Electronic waste or (e-waste) has become a growing concern in the United States as well as many other nations around the world. Electronic devices that use hazardous chemical or metal components are beginning to pile up in dangerous numbers. Without an adequate and efficient means to recycle or dispose of these devices and their harmful components, they can begin to seriously pollute our environment. Some major facts about electronic waste, acquired from extensive research, are as follows:

- E-waste is a national problem that needs a national solution. Since the year 2000, the US has increased the number of electronics entering the waste stream by at least 10 million units. (Weiss, May 2005)
- Rapid advancements in technology have led to increasing sales of new electronic devices, particularly televisions, computers, and computer monitors. Approximately 62 percent of U.S. households had computers in 2003, compared with only 37 percent just 6 years earlier. (Stephenson, July 2005)
- Over 20 million personal computers became obsolete in 1998 but only 13 percent were reused or recycled. (EPA, June 2001)

Element II: The Dangers of Electronic Waste

Electronic waste is fast growing into a serious problem inside and outside of the United States. Current research shows that chemical and metallic components of electronic devices are being released, in large quantities, into the ground water and soil of landfills. In addition when these chemicals are burned they release deadly toxins into the air.

Examples of these problems are as follows:

- There are hazardous materials, such as lead, mercury, and hexavalent chromium, in circuit boards, batteries, and color cathode ray tubes (CRTs). Televisions and CRT monitors contain as much as four pounds of lead. (EPA, June 2001)
- Toxic substances such as lead, which have well-documented adverse health effects, can potentially leach from used electronics. (Stephenson, July 2005)
- Mercury from electronics has been cited as a leading source of mercury in municipal waste. In addition, brominated flame retardants are commonly added to plastics used in electronics. If improperly handled, these toxins can be released into the environment through incinerator ash or landfill byproducts. (EPA, June 2001)

Another factor in the increase of electronic waste is the relaxed laws in most states that provide little incentive to corporations and the general public to reuse or recycle their old electronic equipment. An example of this is as follows:

- Federal regulatory requirements provide little incentive for environmentally preferable management of used electronics. The governing statute, the Resource Conservation and Recovery Act (RCRA), bars institutions that dispose of more

than 220 pounds of hazardous waste per month from depositing it, including some used electronics, in landfills. However, RCRA does not prohibit bodies that generate less than 220 pounds of hazardous waste from sending it to municipal landfills. (Stephenson, July 2005)

Not only is electronic waste a growing problem in the US but it is becoming increasingly critical in countries like China and India who dismantle our discarded electronic devices. A major problem which was recorded by analysis is as follows:

- Researchers from Greenpeace International said in a report Wednesday that they detected high levels of toxic metals in more than 70 samples collected in March from industrial waste, river sediment, soil and ground water around the southern Chinese city of Guiyu and the suburbs of New Delhi in India. Dust from electronics-dismantling workshops contained the highest levels of contaminants. (Chea, August 2005)

Element III: Proposed Solutions for Present and Future Cleanup

There are a number of improvement solutions to help combat the growing menace of electronic waste. Research shows that expansion in regulatory state laws, to include e-waste management, can help to force companies and the general public to take the threat of electronic waste more seriously. The development of better recycling and disposal procedures can also aid, as a countermeasure, in the war against e-waste. An analysis of the research gathered suggests, as a course of action, these proposals:

- Four members of the U.S. House of Representatives have created the Congressional E-Waste Working Group to work on standardizing national laws for recycling and disposing of discarded electronic and computer equipment. (Weiss, May 2005)
- European countries have passed "producer takeback" bills, and several U.S. states are considering such legislation. A measure pending in Congress would direct the Environmental Protection Agency to develop a national electronic recycling program. (Chea, August 2005)
- The Environmental Protection Agency (EPA) is promoting greater product stewardship of electronics by developing a life-cycle approach to product stewardship, including environmentally conscious design, manufacturing, and toxics reduction for new electronic products. (EPA, June 2001)
- Households, companies, and governmental organizations can encourage electronics manufacturers to design greener electronics by purchasing computers and other electronics with environmentally preferable attributes and by requesting takeback options at the time of purchase. (EPA, June 2001)

Environmental activist groups, such as Greenpeace, have pushed for the creation of laws that will minimize the damage, done by electronic waste, on the outlining countries which currently manage the disposal of US electronic devices. An important fact is as follows:

- Environmental groups have called for U.S. legislation that would ban the export of electronic waste to developing countries and require electronics manufacturers to safely recycle their products after they become obsolete. (Chea, August 2005)

Attachments: Sources Cited, First page of all sources/ x4

Sources Cited:

- Chea, Terence, “Environmental Groups Renew Call for Better Electronics Recycling”, Associated Press, August 17, 2005, Lexus-Nexus
- Stephenson, John B., “Handling of Electronic Waste”, Congressional Quarterly, July 26, 2005, Lexus-Nexus
- United States Environmental Protection Agency, “Electronics: A New Opportunity for Waste Prevention, Reuse, and Recycling”, Solid Waste and Emergency Response, June 2001, www.epa.gov/epr
- Weiss, Todd R., “U.S. Congressional Group Eyes E-Waste Disposal Laws”, PCworld, May 25, 2005
www.pcworld.com

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August 17, 2005, Wednesday, BC cycle

SECTION: Business News

LENGTH: 705 words

HEADLINE: Environmental groups renew call for better **electronics** recycling

BYLINE: By TERENCE CHEA, Associated Press Writer

DATELINE: SAN FRANCISCO

BODY:

Toxic **waste** from computers, TVs and other **electronic** devices discarded in the United States and dismantled in China and India is an even more severe problem than previously feared, according to environmental groups that seek better recycling programs.

Researchers from Greenpeace International said in a report Wednesday that they detected high levels of toxic metals in more than 70 samples collected in March from industrial **waste**, river sediment, soil and ground water around the southern Chinese city of Guiyu and the suburbs of New Delhi. Dust from **electronics**-dismantling workshops contained the highest levels of contaminants.

"The extent of the contamination is even worse than we had feared. The levels analyzed are really scary and very concerning," said Ted Smith, founder of the Silicon Valley Toxics Coalition and chair of the Computer TakeBack Campaign, which wants a ban on the export of **electronic waste** to developing countries where worker protections and environmental standards are weak.

Smith described the Greenpeace study as "the most comprehensive environmental assessment of the damage done by e-**waste** recycling."

A report three years ago by Smith's group and the Basel Action Network described the problem of exporting **electronic waste** and tested a small number of samples for lead contamination. But Smith said the new study analyzed a larger number of samples for a wide range of toxic chemicals.

Public health advocates said the report demonstrated the need to conduct larger studies of the impact of **electronics** recycling on the environment and human health.

Rick Goss, director of environmental affairs at the Arlington, Va.-based **Electronic Industries Alliance**, said U.S. producers "do not participate or condone the sending of used **electronics** to facilities or countries that can't manage them."

"What's going on in China and India shouldn't be happening," Goss said. He blamed secondary

July 26, 2005 Tuesday

SECTION: CAPITOL HILL HEARING TESTIMONY

LENGTH: 7265 words

COMMITTEE: SENATE ENVIRONMENT AND PUBLIC WORKS

SUBCOMMITTEE: SUPERFUND, TOXICS, RISK AND **WASTE** MANAGEMENT

HEADLINE: HANDLING OF **ELECTRONIC WASTE**

TESTIMONY-BY: JOHN B. STEPHENSON, DIRECTOR

AFFILIATION: UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE

BODY:

Statement of John B. Stephenson Director Natural Resources and Environment United States Government Accountability Office

Committee on Senate Environment and Public Works Subcommittee on Superfund, Toxics, Risk and **Waste** Management

July 26, 2005

Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to discuss our work to date on the issues surrounding the growing volume of used **electronics** accumulating in the nation's basements, attics, and landfills. Rapid advancements in technology have led to increasing sales of new **electronic** devices, particularly televisions, computers, and computer monitors. Approximately 62 percent of U.S. households had computers in 2003, compared with only 37 percent just 6 years earlier. With this increase comes the dilemma of how to manage these products when they come to the end of their useful lives. The Environmental Protection Agency (EPA) has estimated that in 2003 alone, about 50 million existing computers became obsolete, but one estimate forecast that less than 6 million were recycled.

Disposal of used **electronics** creates potential problems that can be averted through recycling or reuse. For example, concerns have been raised because toxic substances such as lead, which have well-documented adverse health effects, can potentially leach from used **electronics**. Concerns have also been raised over used **electronics** that are exported from the United States to countries with less stringent environmental regulations. In addition, computers contain precious metals, such as gold, silver, and platinum, which require substantial amounts of energy and land to extract. These metals can often be extracted with less environmental impact from used **electronics** than from the environment. The U.S. Geological Survey, for instance, reports that 1 metric ton of computer scrap contains more gold than 17 tons of ore and much lower levels of harmful elements common to ores, such as arsenic, mercury, and sulfur.

In this context, you and several other Members of the Congress asked that we address a number of issues surrounding this problem. Specifically, we were asked to (1) summarize existing information on the volumes of, and problems associated with, used **electronics** and

EPA Electronics: A New Opportunity for Waste Prevention, Reuse, and Recycling

In the past decade, technological advances in electronic data management and communications have spurred economic growth and improved people's lives in countless ways. However, our growing dependence on electronic products both at home and in the workplace has given rise to a new environmental challenge: electronics waste. A recent study by EPA shows that electronics already make up approximately 1 percent of the municipal solid waste stream. Research completed in Europe shows that electronics waste is growing at three times the rate of other municipal waste. To the extent possible, electronics waste should be prevented, and older electronics should be reused and recycled.

Why Prevent Electronics Waste?

End-of-life electronics:

Are a fast-growing waste stream.

Over 20 million personal computers became obsolete in 1998. Only 13 percent were reused or recycled. Many municipalities are facing the dilemma of what to do with growing amounts of retired electronics. Rapid changes in computer technology and the emergence of new electronic gadgets exacerbate the problem.

Can contain hazardous materials.

There are hazardous materials, such as lead, mercury, and hexavalent chromium, in circuit boards, batteries, and color cathode ray tubes (CRTs). Televisions and CRT monitors contain four pounds of lead, on average (the exact amount depends on size and make). Mercury from electronics has been cited as a leading source of mercury in municipal waste. In addition, brominated flame retardants are commonly added to plastics used in electronics. If improperly handled, these toxics can be released into the environment through incinerator ash or landfill leachate.

Are made with valuable materials.

In 1998, over 112 million pounds of materials were recovered from electronics, including steel, glass, and plastic, as well as precious metals. Reusing and recycling the raw materials from end-of-life electronics conserves natural resources and avoids the air and water pollution, as well as greenhouse gas emissions,

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U.S. Congressional Group Eyes E-Waste Disposal Laws

Group calls for national guidelines for properly disposing of discarded electronics.

Todd R. Weiss, Computerworld

Wednesday, May 25, 2005

Four members of the U.S. House of Representatives have created the Congressional E-Waste Working Group to work on standardizing national laws for recycling and disposing of discarded electronic and computer equipment.

In an announcement earlier this week, the four representatives said they had formed the bipartisan working group to find ways to make the recycling and disposal process more efficient nationwide.

"E-waste is a national problem that needs a national solution," said Rep. Louise Slaughter (D-New York) in a statement. "Since the year 2000, we've increased the number of electronics entering the waste stream by at least 10 million units. As we continue to dispose of more and more units each year, finding a national disposal approach becomes more and more critical. We can no longer afford to ignore this growing problem."

Joining Slaughter were Reps. Mike Thompson (D-California), Randy "Duke" Cunningham (R-California) and Mary Bono (R-California). Meanwhile, legislation that would give tax breaks to individuals and businesses that safely dispose of computers and other worn-out electronic devices [has been introduced](#) in the U.S. Senate.

50 Million Discards Per Year

The Congressional working group will explore [potential solutions](#) to the growing problem of electronic waste, and at the same time will educate members of Congress about the consequences of ignoring the situation. More than 50 million computers are disposed of each year, the working group said, and the machines contain harmful elements such as lead, cadmium and mercury that can leach into the environment if not disposed of properly.

"Electronic recycling has not received the attention it deserves from the federal government, and this is why we have established the E-Waste Working Group," Cunningham said in a statement. "My colleagues and I stand here today to show our personal commitment to solving this important issue."

Two states, California and Maine, already have e-waste laws, and Maryland recently joined them in the cleanup effort, according to the working group. Another 24 states are considering their own laws.

But facing different disposal laws in different states creates a problem for computer and electronics makers, retailers, and others, the working group said. It recommends creating standardized national regulations that establish uniform disposal procedures across the country.

Manufacturers have tried to create standards in the past but have split over how best to devise such a program.

The working group hopes to hold a congressional hearing on the issue this summer. After its creation was announced Tuesday, representatives of the Consumer Electronics Association, the Consumer Electronics Retailers Coalition, the Electronics Industries Alliance, Panasonic, Sony, Hewlett-Packard, and Goodwill Industries met for a congressional staff briefing on the topic.