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Disconnect

Goodwill and Dell, Exporting the Public's E-Waste
to Developing Countries

The e-Trash
Transparency Project

Disconnect:

Goodwill and Dell, Exporting the Public's E-Waste to Developing Countries



Made Possible by a Grant from:
The Body Shop Foundation

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Special thanks to MIT for its contribution in the development of the tracking platform (2011-2012) and the online access system and website map (2015-2016).

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E-Trash Transparency Project Overview

In 2014, BAN received a generous two-year grant from the Body Shop Foundation¹ for the purpose of conducting an electronic tracking investigation to reveal electronic waste movement within and from the United States.

This study was undertaken because there has been very little in the way of hard data that can indicate where electronic waste goes after it delivered by consumers or businesses to recyclers in the United States. First, we have anecdotal data based on what we can observe after it arrives in other countries (with asset tags and design characteristics showing it came from the US).

We also have highly imperfect studies, based on either limited and unreliable commodity (not waste) trade data, or on unreliable surveys of recyclers. Much of this trade is illegal under international law, so recyclers have little incentive to disclose accurate information in a survey of waste trade. Similarly, exporters often misrepresent the contents of shipping containers sent to developing countries, in order to get their shipments accepted at the port of entry.

The US Environmental Protection Agency (EPA) recognized the need for better data on e-waste flows, and in 2012, they held a stakeholder workshop² to ask experts

about the best way to collect accurate data and quantify export waste flows. That group rated the use of electronic tracking as being the most promising and effective way to determine actual waste flows. Stakeholders also warned that surveying companies and brokers in the business of exporting would not lead to reliable data, nor would using existing trade data which fails to distinguish electronic waste from electronic products.

The federal government has since funded two studies intended to quantify export of electronic waste from the United States.³ But the government did not follow the advice of the stakeholder group, citing high costs and difficulty in tracking actual exports. Instead of studying actual exports of e-waste, one study drew its conclusions based on inappropriate commodity trade reports or on surveys of recyclers that asked them how much they export. These studies vastly underreported what ethical recyclers were telling us was actually taking place in the market and what we were able to observe in the field in Asia and Africa.

Rather than continue to see the government and others rely on insufficient studies based on poor data, BAN decided to seek the funds necessary to conduct a study using real data.

We felt particular urgency to conduct this study because certain industry

¹ The grant was for approximately \$55,000. <http://thebodyshopfoundation.org/>

² Workshop described in introduction of the report: <http://msl.mit.edu/publications/CharacterizingTrans-boundaryFlowsofUsedElectronicsWorkshopSummaryReport%201-2012.pdf>

³ These two studies were mandated under the National Strategy for Electronics Stewardship 2011, https://www.epa.gov/sites/production/files/2015-09/documents/national_strategy_for_electronic_stewardship_0.pdf One study was conducted by the International Trade Commission and the other by a consortium of groups led by MIT.

associations, citing these flawed studies began to report that the environmentally damaging export to developing countries was no longer an issue of concern.

With the aid of the Body Shop Foundation grant, BAN sought to capture a more accurate snapshot of trade by monitoring actual e-waste movement as it occurred in and from the United States in the years 2014-2016. We have called this study the e-Trash Transparency Project.

The project sought to answer a basic question:

Does the public still need to fear that their e-waste, when delivered either to a charity or to a recycler, has a strong likelihood of being exported to a developing country instead of being recycled here in the United States?⁴

⁴ For the purposes of the e-Trash Transparency Project and this report, “developing country” is defined as any country that is not part of the European Union (EU), Organization for Economic Cooperation and Development (OECD) or European Free Trade Agreement (EFTA).

To answer this question we installed 200 small tracking devices (trackers) into used, non-functional electronic equipment: printers, flat-screens (LCD) monitors, and cathode ray tube (CRT) monitors. These tracker-enabled electronic devices were subsequently hand-delivered by BAN’s research team to publicly accessible e-waste recycling drop-off sites around the country. These deliveries were all made between the dates of July 1, 2014 and December 31, 2015.

With 200 trackers to deploy, we not only delivered the electronic waste to recyclers and their drop-off locations, but also focused our attention on one well-known charity thrift store chain – Goodwill Industries International, Inc. This chain had a reputation for a high level of responsible behavior, and had partnered with one of the world’s largest personal computer makers – Dell Inc., but nevertheless had been the subject of some complaints made to BAN.

E-Trash Transparency Online Map

After initial tracker deployments had begun, the Massachusetts Institute of Technology’s Senseable City Lab (MIT-SCL) was brought on as a collaborative partner in a continuation of the successful Monitour projects which BAN and MIT-SCL had quietly conducted in previous years (see Appendix 1).

MIT-SCL’s primary role for the e-Trash Transparency Project was to provide visualization for all the tracking data by developing a publicly accessible online map.

The e-Trash Transparency website <http://senseable.mit.edu/monitour/> is interactive in nature, allowing users to both follow curated storylines and explore individual tracker information at their own pace.

For this initial release of the website, which is presenting the data relevant to the first report, the precision level for certain GPS data not subject of the information presented herein, was reduced to confine initial data to the focus of this report. As BAN further releases subsequent reports, we will update the map with additional information along the way.

By the numbers

While 200 trackers are a significant number, and this study is really the first of this scale for electronic waste, it is still a small sample size in view of the vast amount of electronic waste equipment generated in the United States today. It is important, therefore, to resist arriving at sweeping conclusions on the basis of the limited data set (see Appendix 3— Methodology).

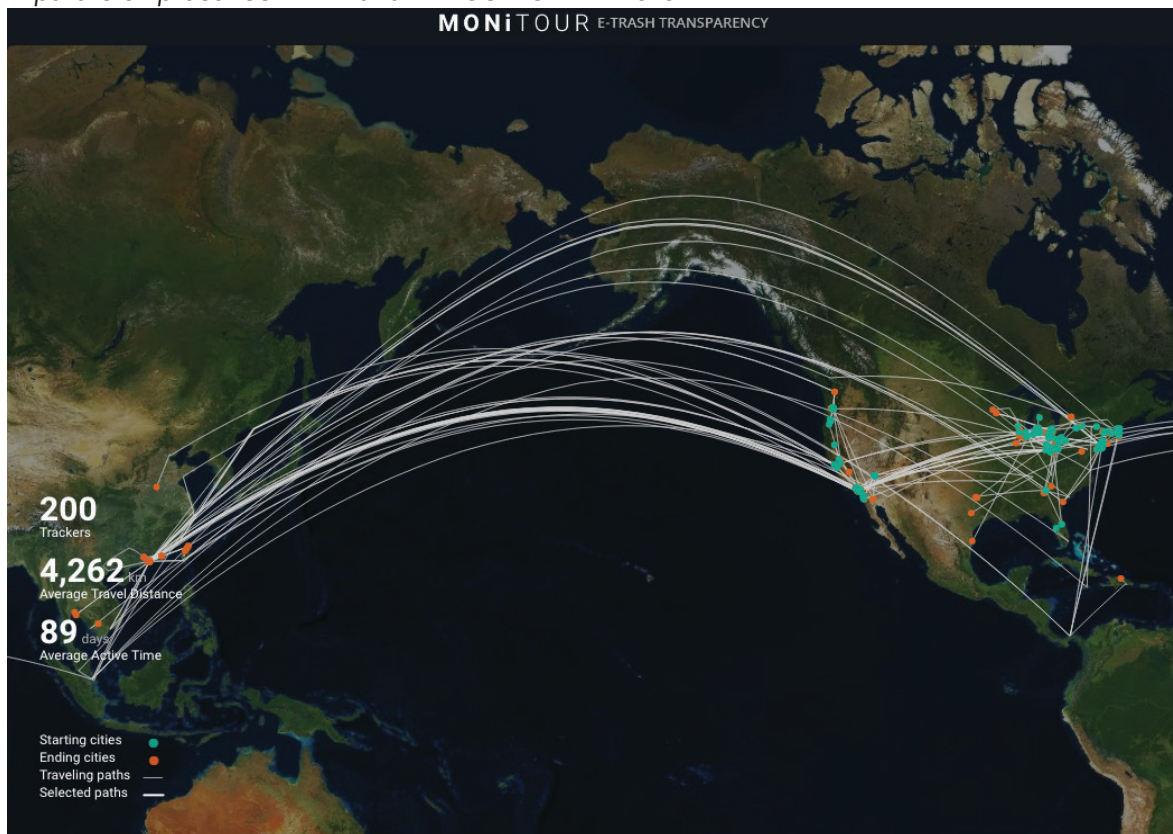
Nevertheless, this data does report actual verified e-waste movement and as such begins to tell important stories, and signals probable trends. This uniquely authentic data, moreover, underscores the need for more such studies that can follow-up and achieve greater understanding of the initial findings.

In all, BAN delivered 149 (74.5%) of the 200 tracker-enabled e-waste equipment to electronics recyclers, 49 (24.5%) to charity thrift stores (mostly Goodwill), and 2 (1%) to retailers in the continental United States.

Of those 200 deployed trackers, as of the release of this report, 65 (32.5%) of these tracker-enabled devices were exported. And by our best estimation and understanding of waste trade law, 62 (31% of total trackers) of those 65 devices exported were likely to be illegal shipments – usually due to the laws in the importing country or Regional government.

Due to this likely illegal activity revealed, BAN will turn over the data regarding these exports to government enforcement

Figure 1. Screenshot of interactive online e-Trash Transparency map, developed through a partnership between BAN and MIT-SCL. © BAN 2016.



agencies, including US EPA's Office of Enforcement and Compliance Assurance, Interpol, and relevant Asian government agencies.

If we only look at the tracker-enabled devices delivered to recyclers and not to those we delivered to charities like Goodwill or to retailers, the percentage of export is far higher – 39%.

And, in fact, the percentage of actual export is likely to be higher than the 32.5% of all trackers or the 39% coming from recyclers, as our figures are based only on actual GPS readings generated overseas.

Some of the equipment is likely to have been stored past the battery life of its trackers before being exported. And some may well have been exported but for one reason or another may not have been able to report to us from abroad (e.g. due to equipment malfunction, rough handling, or lack of available signal prior to their battery being depleted).

Further, as of the publish date of this report, 31 of the 200 trackers in the United States still have not completed their lifespan and may still signal to us from offshore in the near future.

Table 1. Summary of final tracker destinations

Countries Receiving Trackers (end point)	Printer	CRT	LCD	Total Devices	Likely Illegal
Hong Kong	13	1	23	37	37
China (mainland)	3	2	3	8	8
Taiwan	0	1	4	5	5
Pakistan	0	4	0	4	4
Mexico	0	3	0	3	0
Canada	1	1	0	2	2
United Arab Emirates	0	0	1	1	1
Thailand	0	0	2	2	2
Kenya	0	0	1	1	1
Cambodia	0	0	1	1	1
Dominican Republic	0	0	1	1	1
TOTAL	17	12	36	65	62

Scale and significance

In the United States, according to the EPA, 3.14 million tons of e-waste are generated each year. Of that, 40% is thought to be “recycled” (not sent to landfill or to incineration).¹ Doing the math, we arrive at a

figure of 1,256,000 tons annually that is handed over to recyclers.

While our choices of printers, monitors and CRTs may be most likely e-waste to be exported, they are also the heaviest items in the e-waste stream. For the sake of understanding the effects of mass scaling, assuming our percentages are roughly

¹ “Advancing Sustainable Materials Management. Facts and Figures 2013,” published in June 2015. <http://www.epa.gov/smm/advancing-sustainable-materials-management-facts-and-figures>

representative of total export of e-waste¹ weight and conservatively estimate that just 25% is moving offshore instead of our actual finding of 32.5%, that would mean that about 314,000 tons are exported annually. If we assume a typical 40-foot intermodal container holds on average 20 tons of e-waste that would equate to 15,700 containers per annum or about 43 containers per day being exported.

1 This estimate is based on an industry insider estimate that a 40' high cube container of LCDs weighs between 30-40,000 lbs. These are not as heavy as CRTs and printers so we will use the figure of 40,000, or 20 tons.

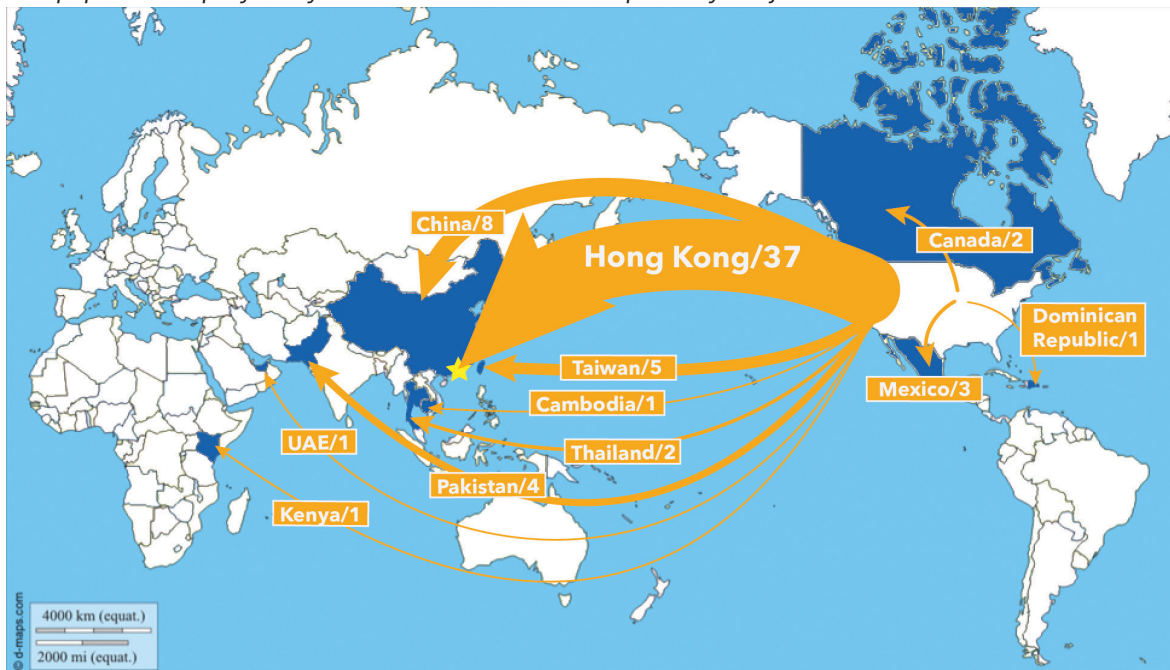
And with respect to the recycling industry (not counting the charities and retailers), if we again conservatively estimate that 30% is moving offshore instead of our actual finding of 39%, that amount would equate to 376,800 tons of e-waste and that would equate to about 18,840 containers per annum or about 52 containers per day being exported from the US. Again, these estimates are provided to illustrate the significance of our findings in relation to mass quantities of e-waste generated each year in the United States.

Where they went

Most of the exported devices in BAN's tracking project ended up in one of 'three Chinas' – the Special Administrative Region (SAR) of Hong Kong, mainland China, or Taiwan. Because of the predominance of these final destinations, the last stage

of the project involved BAN travelling to those locations in December of 2015, armed with GPS location devices and cameras in order to witness first-hand the actual circumstances of the locations where the trackers landed. In each of the

Figure 2. Map showing the relative export paths of the 200 tracker-enabled electronic equipment deployed by BAN in the e-Trash Transparency Project. ©BAN 2016.



'Chinas' BAN assembled a small team of local volunteers to assist in the investigation (see Acknowledgements) of the tracker end-points.

By far, most of the exportation went to Hong Kong (SAR) with a distant second destination being mainland China. These findings are very different than our findings over the past decade, when it was observed that the vast majority of e-waste from North America went to China, and most of that to Guiyu, a township and region in Guangdong Province and the subject of our first report *Exporting Harm* (2002) (see Appendix 1— History of BAN's

E-Waste Campaign). This dramatic geographic shift we believe is indicative of China's recently escalated effort to enforce their long-standing e-waste import ban.

Ironically, it appears that the Hong Kong (SAR), usually thought of as one of the most technologically and economically advanced areas of China, has not enforced the Chinese import ban as diligently as mainland China has done, and appears to have in fact become a new pollution haven. Hong Kong's New Territories region near the mainland border now appears to be a new "ground zero" for e-waste processing.

Project reports

The remarkable multiple findings and narratives of BAN's e-Trash Transparency Project will be explored through the release of individual reports. The first report that follows, is entitled *Disconnect: Goodwill and Dell, Exporting the Public's E-Waste to Developing Countries*. Subsequent reports will take a more focused look at the recyclers involved in other exports and the eventual environmental and legal fate of the exported equipment.

These reports shine a new spotlight on the underbelly of the electronics industry's disposal chain. The bright light can be harsh. Without a doubt, some will find the truth as revealed by electronic tracking to be uncomfortable and difficult to accept. This is true as well for BAN and its e-Stewards program.

Faced with this new information it is incumbent on all of us to avoid impulses to deny the evidence, or become hopeless and

apathetic, but rather we should view this new data as an opportunity to make real change, to diagnose the identified problems and then swiftly and decisively take appropriate corrective action.

The answer to our initial question appears very much to be, that yes, the public has much to fear that recyclers and charities are exporting our e-waste, often illegally. It is vital now, that once and for all we do something about it.

Note: The Massachusetts Institute of Technology's Senseable City Lab is responsible for the development of the initial version of the tracking technology and the interactive website of the project only, and not for the opinions and expressed in this report. The Body Shop Foundation likewise is not responsible for the opinions and statements expressed in this report.

Exports of Hazardous E-Waste to Developing Countries

Why Should We Care?

Impacts On People And The Planet

1. **Damage to Human Health and Environment:** Hazardous e-waste moves across borders to avoid costs that should be paid to safely manage it. It seeks havens, usually in poorer countries or communities where polluters do not have to pay for the pollution resulting from improper disposal or recycling. Rather, people there pay with their health and a degraded environment.
2. **Loss of Valuable Resources:** The primitive technologies used to process the hazardous e-wastes are often extremely inefficient at recovering metals and plastics from e-waste. Thus, valuable materials, which exist on earth in finite supply, are dissipated into the environment in informal dumping operations that render them unrecoverable and lost to future generations.
3. **Rewarding Polluters Rather than Green Design:** By economically rewarding pollution by allowing cost avoidance (cost externalization), we not only perpetuate that pollution but also perpetuate a disincentive to invest in and proliferate true waste prevention solutions, including the design of toxic-free products from the beginning.

4. **E-Waste Pollution Harms the Entire Planet:** What goes around, comes around. Pollution generated in Asia does, in fact, affect all of us, including those living in other continents through long-range air and water pollution transport, tainted foods, etc. Toxic substances in our own computers will find their way via unsustainable global dumping into our own bodies!



Exports of Hazardous E-Waste to Developing Countries

Why Should We Care?

Impacts On Business

1. **Green Jobs and Business Killer:**

Exports deprive responsible in-country recyclers of a significant share of the e-waste market. They are forced to compete with an unprotected informal sector in weaker economies in countries like Ghana, Pakistan and China. The export route robs green business development and sacrifices green jobs in the US where the waste was created, while harming desperate workers and the environment in countries least able to deal with it.



2. **Giving Recycling a Bad Name:** The images and realities of global e-waste dumping gives good recyclers everywhere a bad name. If customers don't trust recyclers to be responsible, less and less will be recycled.
3. **Risks Criminal Prosecution:** This trade is usually illegal and, in fact, criminal; if not in the US, once these shipments are on the high seas heading for foreign shores, under terms of the Basel Convention they are considered illegal traffic and a criminal act. An exporter places themselves or their trading partners at risk of criminal prosecution while jeopardizing all of their customers' reputations.
4. **Brand Damage:** As this report demonstrates, it is not so difficult to discover where the waste comes from, who the middlemen are, and the ultimate global dumping ground. A company's brand and reputation can be severely damaged when it is discovered it is part of exploiting others to avoid paying the price for responsible waste management.

DISCONNECT: Goodwill and Dell, Exporting the Public's E-Waste to Developing Countries

Executive Summary

Contrary to recent reports that the problem of exportation of electronic waste from the United States to developing countries is no longer a serious matter of concern, the BAN e-Trash Transparency Project reveals that hazardous electronic waste still flows to substandard operations in developing countries continues at an alarming rate.

These two companies are the primary subjects of this report— Disconnect: Goodwill and Dell Exporting the Public's E-Waste to Developing Countries. While singling out Dell and Goodwill, it must be understood that the focus is but an example of what we expect might be widespread practice across the country by many other actors in the field of e-waste management.

...these exports present a glaring disconnect from public promise and corporate policy.

Once off of our shores, these toxic e-waste shipments likely violate international law as well as the national laws of the importing countries.

Our study further reveals that even American industry leaders such as Dell Inc. and one of the country's largest and most respected public charities – Goodwill Industries Inc.— have been found to be major accessories to this irresponsible and environmentally damaging export. They have allowed the public's electronic waste to be exported to developing countries, and in likely violation of the importing country's laws despite all assurances that this would not occur.

We don't presume these exports were willful on the part of Goodwill or Dell or any other players, but we do contend that these exports present a glaring disconnect from public promise and corporate policy. Being careless and non-transparent can cause as much harm as willful acts or intentional profiteering at the expense of others. This report examines the problem and makes recommendations on how to solve it once and for all time.

149 of the 200 tracker-enabled printers and monitors were made to recyclers. But 46 devices were deployed at Goodwill stores across the nation. Of the 46 tracker-enabled e-waste devices that were deployed

in Goodwill stores, 7 (15% of the Goodwill trackers) were exported, likely in violation of the laws of the importing countries. 6 of these 7 were Dell Reconnect Partner stores. Thus, of the 28 delivered to Dell Reconnect stores, 21% of these were exported.

Taiwan), revealed potentially harmful environmental and human health concerns.

The concern over these exports is far more serious than the impact of 7 wayward electronic waste products managed by Dell and Goodwill. Extrapolation of the

The concern over these exports is far more serious than the impact of 7 wayward electronic waste products managed by Dell and Goodwill.

In the course of tracing the path of the 7 Goodwill tracker-enabled electronics, BAN observed the equipment passing through 4 electronics recycling companies or brokers— Avnet, Golden Valley Traders, Padnos, and Schupan. These companies were likely either exporters or sent the equipment downstream to other agents or companies that eventually exported it.

Field investigations following the tracker-enabled electronic equipment to their end-points – usually in one of the three Chinas (Hong Kong, mainland China, or

entire amount Dell Reconnect has handled to date, we arrive at a staggering figure of 90 million pounds exported. That would equate to **four 40-foot containers a week for the last 12 years** from the Dell Reconnect program alone.

Of course, it is understood that due to our relatively small sample size, this figure should only be viewed as a serious indicator of concern at this juncture. In fact, the actual total weight of Reconnect exports could be greater or smaller.



Key Findings

1. E-Waste Export from the US Continues:

Export of hazardous electronic waste from the US to substandard, informal recycling operations in Asian countries continues. The study shows an export rate of over 32% of the 200 trackers studied, most of these to Asia. E-waste recyclers alone (excluding the charities and retailers) had a higher export rate of 39%.

2. The E-Waste Trade Observed is Likely Illegal:

The vast majority of the e-waste trade from the US is likely to be illegal under the laws of the transit or importing country.

3. Goodwill Industries Exposed:

The famous American charity organization Goodwill, Inc. has been found to be exporting hazardous e-waste to developing countries in Asia, despite their public promise of responsible recycling.



4. Dell, Inc. Exposed:

The American computer brand Dell, responsible for recycling much of the e-waste collected by Goodwill, has been found to be allowing its recyclers to export hazardous e-waste to developing countries.

5. Four Recyclers Also Implicated:

Avnet of Ohio, Golden Valley Trading in California, as well as Schupan and Padnos (two officially registered recyclers in Michigan's e-waste program), were revealed as locations our trackers signaled from as part of the Goodwill/Dell export disposal chain.

6. Electronic Tracking Provides Waste Transparency:

Geolocation technology is a promising new tool for business, government and civil society to enhance transparency, accountability and compliance.

Report Overview

This, the first report of the e-Trash Transparency Project focuses on the disturbing finding that large institutions including a major American computer manufacturer, Dell, Inc. and perhaps the most famous American charity organization—

Of the tracker-enabled devices deployed at the 46 different Goodwill stores, 7 of these (15% based on our sample) were exported to Asian countries: 4 to Hong Kong (1 printer and 3 LCD monitors), 1 to Mainland China (1 printer), 1 to Taiwan (1 LCD mon-

Of the 28 Goodwill stores that were part of the Dell Reconnect public e-waste takeback program, 6 of these were exported reflecting an export rate of 21%

Goodwill Industries International, Inc., both charged with safely managing the public's electronic waste, have been conduits for irresponsible, environmentally damaging, health threatening, and likely illegal exports of such wastes to developing countries.

We chose to focus a significant segment of our study on these two companies and in particular their joint public takeback partnership known as Dell Reconnect, because we were interested in finding out if this program, as one example of several electronics manufacturer Producer Responsibility schemes, and one with a strong reputation for diligence, was all it was reported to be. By extension this examination could well reflect the greater US e-waste management industry and its behavior.

We therefore delivered 46 of the total project's 200 tracker-enabled electronic devices to Goodwill stores around the US— 28 of them at Goodwill stores that are collectors for Dell's Reconnect program and 18 of them at Goodwill stores not associated with the Reconnect program.

itor), and 1 to Thailand (1 LCD monitor), as of the publish date of this report. All of these exports were likely to be illegal (see Export and The Law).

Of the 18 non-Dell Reconnect stores, only one was recorded as being exported. Of the 28 Goodwill stores that were part of the Dell Reconnect public e-waste takeback program, 6 of these were exported reflecting an export rate of 21% of all trackers delivered to Dell's Reconnect Goodwills.

These numbers may be incomplete, as at the time of this report's release, 6 of the remaining trackers currently in the US are still actively signaling and may eventually go offshore.

These harmful exports have taken place despite explicit Dell and Goodwill policies not to allow them. They have taken place despite assurances to the public that such exports would not be the fate of the e-waste entrusted to them. It is with respect to this glaring contradiction that we have entitled this report "Disconnect:

Goodwill and Dell Exporting the Public's E-Waste".

In Disconnect, we focus on the historic and current policies of Goodwill and Dell, and their joint Reconnect program. We compare those policies with the results of our 46 Goodwill store deployments across the country and, in particular, provide a detailed look at the travels of the 7 devices that were revealed by our tracker technology to have been exported to Asia.

It is our hope in publishing these findings that the disconnect revealed between promise and practice will be addressed

small, charged with managing e-waste responsibly – something we all must endeavor to ensure.

E-waste is most often hazardous waste and when managed as witnessed recently in Hong Kong and Taiwan, can create serious health and environmental concerns. Toxic substances placed into the products, including mercury, carbon black (toner powders), lead, and brominated flame retardants are likely to harm workers and communities and via global transport mechanisms can harm all of us worldwide. As the environmental threat from these e-waste constituents and sub-standard

These harmful exports have taken place despite explicit Dell and Goodwill policies not to allow them.

and remedied by each of the 6 companies concerned— Dell, Goodwill, and the four recyclers that appear to be involved in the export chain: Schupan, Padnos, Golden Valley Trading, and Avnet. Moreover, we hope this report will be seen as an object lesson by far more than these six, but by all enterprises and institutions, large and

recycling operations has already been thoroughly covered in other reports, this report will not devote further space to that subject. But the threat is very real, and particularly so when amplified by the by astronomical scale of today's mass electronics consumerism.



**DON'T DUMP IT,
DONATE IT!**

Dell
Reconnect

The concern here then is far greater than just 7 wayward e-waste devices that we discovered leaving Goodwill in the US for Asia. While these likely contain less than a kilo of toxic substances all together, the impact of the true longer-term scale of exports our study has only sampled,

approximately 90 million pounds would have been exported to Asia during this period. That is the equivalent of 2,571 40-foot intermodal containers of e-waste.² That would equate to about four 40-foot containers a week for the last 12 years from the Dell Reconnect program alone.

That would equate to about four 40-foot containers a week for the last 12 years from the Dell Reconnect program alone.

when multiplied by the volumes of e-waste currently produced is seen to be very significant.

Dell reports that the Reconnect program has collected 427 million pounds of e-waste since its inception in 2004.¹ If we were to assume that the 21% we found was truly a representative figure for Asian “leakage” from the Dell Reconnect program, then that would indicate that

While we understand that the sample size used for the extrapolation above is small (see Appendix 3— Methodology), the numbers when even conservatively scaled are cause for serious concern both from the standpoint of illegal trade and an international crime, but most importantly, from a global health and environmental standpoint as well.

¹ <http://www.dell.com/learn/us/en/uscorp1/corp-comm/us-goodwill-reconnect>

² This estimate is based on an industry insider estimate that a 40' high cube container of LCDs weighs about 35,000 lbs. $79 \text{ million lbs} / 35,000 = 2,257$.

Goodwill's E-Waste Management Policies

Goodwill Industries International Inc. is an American based non-profit organization that provides job training and job placement programs for people facing employment challenges. The Goodwill website states that they operate a "...unique hybrid called a social enterprise, we defy traditional distinctions. Instead of a single bottom line of profit, we hold ourselves accountable to a triple bottom line of people, planet, and performance."³

Goodwill is funded in large part through retail non-profit thrift stores which also serve as the place for much of the job training and placement. Goodwill operates more than 3,000 thrift stores globally⁴ and regularly receives electronic devices as donations to sell. In 2014, Goodwill generated 5.37 billion dollars in revenue.⁵

The international Goodwill brand is applied to its many thrift stores and operations around the world but the management of these Goodwill outlets and facilities is decentralized and run by largely autonomous member organizations. This means that the policies regarding electronic device management may in fact vary from region to region in North America and around the world. As of today there are 165 Goodwill incorporated member organizations in the United States and Canada,⁶ each an independent social enterprise that operates their own regional Goodwill retail stores and programs.

³ <http://sfgoodwill.org/about-us/faq/#a2>

⁴ <http://www.goodwill.org/about-us/>

⁵ <http://www.goodwill.org/about-us/>

⁶ email from Dell's Scott O'Connell, November 18, 2015 to Jim Puckett, BAN



One would think that Goodwill Industries International might have a uniform policy with respect to the export of hazardous electronic waste to developing countries (a global environmental issue) that would bind the 165 member organizations. This would seemingly be the case based on the following statement that appeared on March 9, 2007, in Goodwill Today magazine:

"The Goodwill Member Task Force on Electronic Recycling recognized the importance of business standards in building alliances with other organizations. Therefore, it adopted a Goodwill-wide set of policies based on the Basel Protocol (ratified by 169 countries) that bans export of electronic waste to developing countries."

However just prior to publishing this report BAN contacted Ms. Susanne Fredericks, the Sustainability Specialist for Goodwill

Industries International, and asked her if such a policy currently existed. She replied:

“Goodwill organizations are reminded to work with electronics recyclers who

wastes to developing countries, while R2 Certified Recyclers are not. Indeed the R2 certification does not even mention the Basel Convention nor note its definitions of hazardous waste with respect to export

...it appears that Goodwill does not have their own policy against export of hazardous e-waste to developing countries...

have an industry accredited certification such as e-Stewards or R2.”

When pressed a second time for an answer as to whether a policy existed she replied:

“For the Goodwill organizations that do not participate with Dell we encourage the use of certified recyclers and to further ensure that compliance around the proper handling of electronics is adhered to, a toolkit containing processes, protocols and audit and certification options is in development.”

It is concerning that by this correspondence it appears that Goodwill does not have their own policy against export of hazardous e-waste to developing countries, but rather leaves that responsibility to their certified downstream recyclers.

R2 is one of two electronics recycling certification standards operational in the United States and is owned by the Sustainable Electronics Recycling International (SERI) organization.

The other standard is e-Stewards, which is owned by BAN— the author of this report. e-Stewards Certified Recyclers are required to follow the Basel Convention decision to ban the export of hazardous

matters.¹

Goodwill International Inc. is currently a member of the R2 Leaders Program.² According to the website of SERI, R2 leaders:

“commit to integrating sustainability into their operations, actively work to encourage the responsible management of used electronics, and provide their customers and employees with access to information on responsible recycling practices. Additionally, R2 Leaders consider R2 Certification when choosing an electronics recycling vendor.”

In a 2011 Goodwill International policy document entitled E-Waste and the Environment: The Case for Electronics Recycling Legislation³, Goodwill asserts that their partnership with Dell in the Reconnect program ensures a policy against export of hazardous materials and recommends a federal ban on the export

¹ For more information on the incoherence of the R2 Standard and the Basel Convention see: http://wiki.ban.org/images/b/bc/Five_Fundamental_Flaws.pdf

² <https://sustainableelectronics.org/programs/r2-leaders>

³ <http://www.goodwill.org/wp-content/uploads/2011/01/Ewaste-Paper.pdf>

of electronic waste to countries that are not members of the European Union (**emphasis added**):

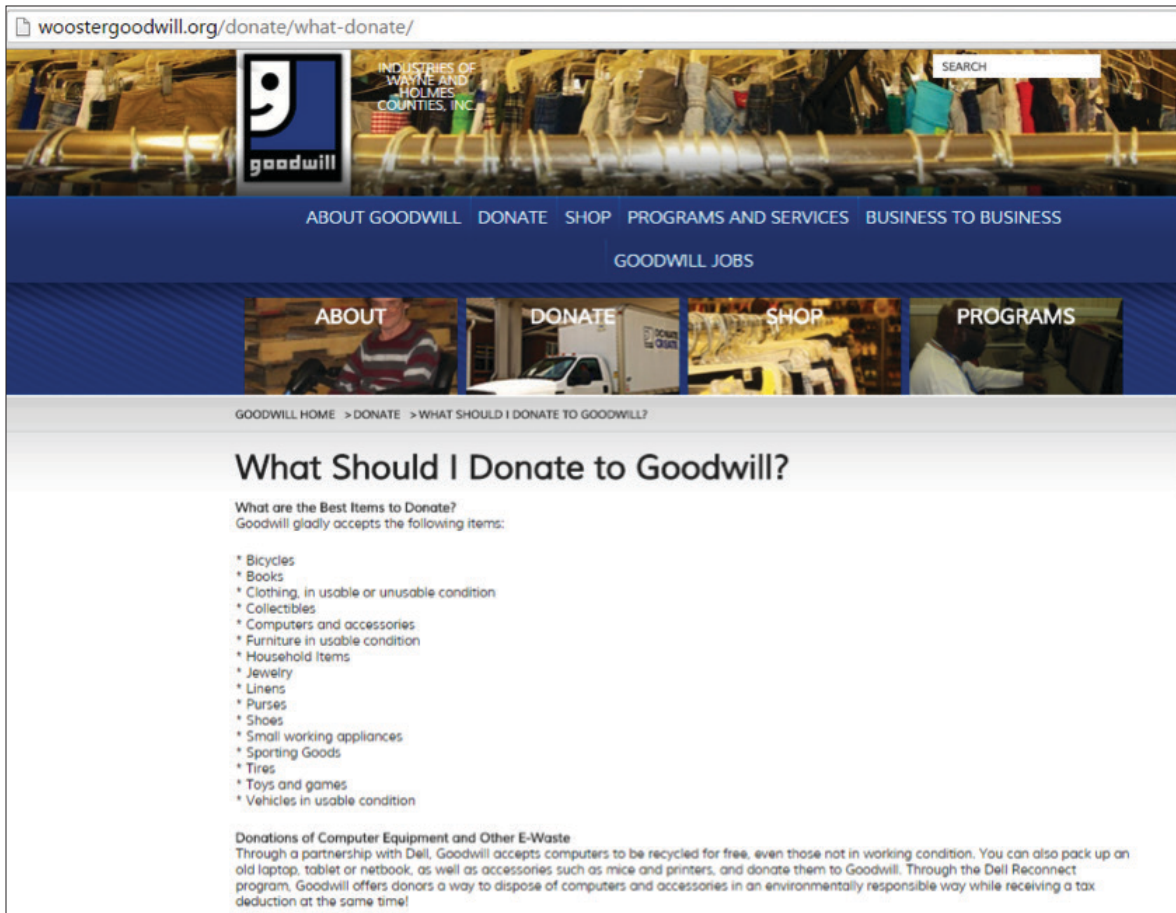
“Goodwill agencies that collect electronic waste have a social responsibility to ensure that the electronic products collected at Goodwill donation centers are processed by recyclers responsibly. **Dell became the first major computer manufacturer to ban the export of non-working electronics to developing countries** as part of its global policy on responsible electronics disposal.

Recommendations:

- *Local: Utilize the Reconnect program to ensure proper downstream auditing of electronic waste recyclers.*
- *State: Implement strict state-certification standards for recyclers and restrict recyclers from transporting electronic devices to another state.*
- **Federal: Ban the export of electronic waste to countries that are not members of the European Union.”**

Of course not all of the Goodwill member organizations are part of Dell’s Reconnect program. Many Goodwill organizations have not partnered with Dell but may be

Figure 3. Screenshot from Goodwill Industries of Wayne and Holmes Counties website, stating its participation in the Dell Reconnect Program, offering free collection and a tax deduction. Retrieved from: <http://woostergoodwill.org/donate/what-donate>





involved in other partnerships or arrangements for electronics recycling and reuse.

Many of these Goodwill organizations claim they will keep your old electronics out of the landfill but say little or nothing about irresponsible export. In our experience, companies, agencies, and governments that have a strict export policy for e-waste

usually say so on their website. It's an important policy attribute that they want to promote. One example from a non-Reconnect region is Goodwill of Southern Nevada, which can be seen below in Figure 4.

In another example from a non-Reconnect Goodwill member organization, Goodwill

Figure 4. Website for Goodwill Industries of Southern Nevada, a non-Reconnect Goodwill, stating its participation as a Microsoft Registered Refurbisher. This mentions keeping things out of landfills but fails to mention a no-export policy. Retrieved from: <http://www.goodwill.vegas/donategoods>



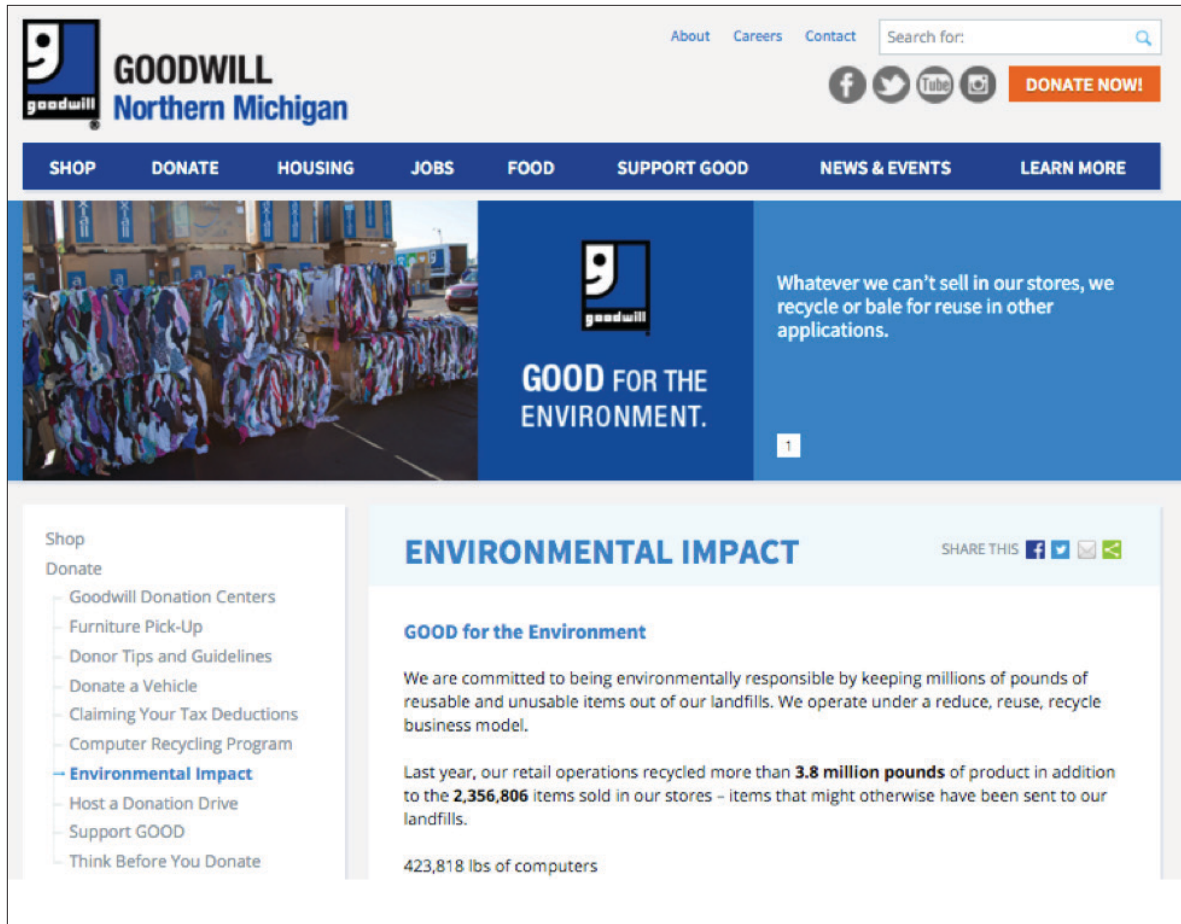


Figure 5. Screenshot from Goodwill Northern Michigan showing amounts of computers 'kept out of landfills'. Retrieved from: <http://www.goodwillnmi.org/donate/environmental-impact>

Industries of Northern Michigan's website (shown in figure 5 above) boasts of having diverted 424,000 pounds of e-waste computers from landfills last year... but we wonder, diverted to where? In our study, we found that the single LCD screen we dropped at their location was exported to Asia (see page 49). This leaves us to wonder how much else of this 424,000 pounds was sent overseas to Asia where the environmental harm will likely be far worse than

it would be had the device been deposited in a lined, leachate controlled solid waste landfill in North America.

Was there a policy in place against irresponsible and illegal e-waste export in these non-Reconnect member stores? It does not appear to be the case.

The Dell Reconnect Program

In the last 20 years, the principle and policy of Extended Producer Responsibility (EPR) or Individual Producer Responsibility (IPR) has gained traction as a way to implement the polluter pays or cost internalization principle for consumer products.

First pioneered in Europe for cars and then for electronics, and now spreading rapidly around the world to other consumer products, EPR or IPR requires manufacturers to take financial and management responsibility for the consumer products they sell at the end of their useful product life.

While in the past there was a concerted multi-stakeholder effort to create national recycling legislation in the US, the effort ran aground.¹ Today in lieu of national take-back legislation akin to what is practiced in the European Union member states, Japan,

Dell Reconnect

Technology recycling with Goodwill®

China, India, and elsewhere, manufacturers find themselves under pressure in the US to become pro-actively involved in managing

¹ <http://www.productstewardship.us/?71>

Figure 6. Goodwill promotional photo for a Reconnect takeback event in Hawaii. (source: <http://www.higoodwill.org/newsroom/goodwill-dell-partner-offer-free-computer-recycling-event-kahului/>)



e-waste either through state legislated programs or through voluntary initiatives (e.g. in states where such laws do not exist).

The Dell Reconnect program is one such voluntary take-back program utilizing a partnership with Goodwill for the collection of end-of-life electronics that fulfills Dell's legal responsibilities in the 23 states with takeback laws and voluntary responsibility in the other 27 states.

The Dell Reconnect Program began in 2004 as a partnership between Dell Inc. and Goodwill Industries International. The program was founded by the former Dell Director of Compliance for Asset Recovery and Recycling, Mike Watson.

According to Scott O'Connell, Dell's Director of Environmental Affairs, there are 165 independent Goodwill organizations

throughout the US and Canada, and 97 of them participate in the Dell Reconnect program.² Most of the United States is covered by the program with the exception of the 6 states in the Northwest part of the country.

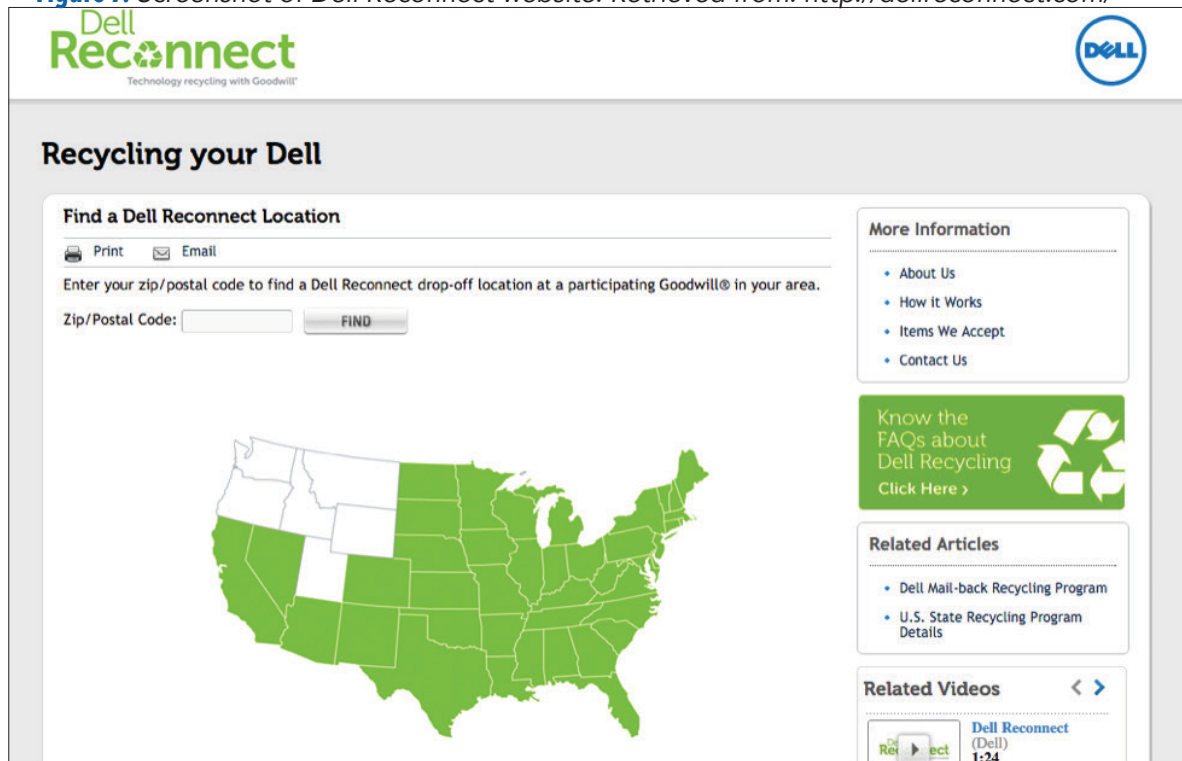
Currently, there are more than 2,000 Goodwill stores in the 44 US states that participate in the Dell Reconnect Program.³

The program offers a convenient location where customers can drop off unwanted electronic equipment, usually for free, regardless of brand or condition, with the assurance that their electronic waste will be responsibly managed. Further, they

² email from Dell's Scott O'Connell, November 18, 2015 to Jim Puckett, BAN

³ <http://www.dell.com/learn/us/en/uscorp1/corp-comm/us-goodwill-reconnect>

Figure 7. Screenshot of Dell Reconnect website. Retrieved from: <http://dellreconnect.com/>



can even often get a tax deduction for the donation to Goodwill for equipment of value.

Dell pays Goodwill for the collection ser-

we will pick that equipment up. They consolidate it at a couple of locations to make it a bit easier. We'll pick up a full truckload of equipment and transfer that to one of our environ-

Because Dell refuses to reveal the identities of their Environmental Partners, not even the Goodwill store employees can tell their customers what becomes of the electronic discards

vice and also allows Goodwill to sell what they wish in their retail outlets. The leftover, non-sellable material is managed exclusively by Dell, who calls on one of their active Environmental Partners (contracted recyclers) to do the actual recycling.

Because Dell refuses to reveal the identities of their Environmental Partners, not even the Goodwill store employees can tell their customers what becomes of the electronic discards they bring to the thrift stores.

BAN investigators interviewed a number of Goodwill logistics managers who all echoed the same experience: they would accumulate a certain weight of electronics, call Dell, and Dell would send a non-descript truck to retrieve it. None of the employees we interviewed had any idea where the material was going. In fact, our sources report that Dell is so worried about their recyclers being detected that they use logistics company trucks to make the pickups from Goodwill, and not the recycler's trucks.

In 2011, the head of Dell's Reconnect Program, Elizabeth Johnson described the program this way (**emphasis added**):

"Goodwill acts as a collector. Consumers can donate at any participating Goodwill across the US and

*mental partners. We thoroughly vet and audit the recyclers that we use to make sure that none of the equipment ends up in a landfill and no e-waste is exported overseas to a developing country to become someone else's problem."*¹

Below are some excerpts from Dell's Reconnect webpage likewise describing how the program works:

"Some systems in working condition are refurbished and resold through Goodwill, creating green jobs to further support Goodwill's mission of helping people with disabilities and disadvantages by providing education, training and career services. In addition, this program allows Goodwill customers to purchase modern technology at an affordable cost.

Whatever parts cannot be reused or refurbished will be broken down securely and recycled responsibly, meeting Dell's extensive and strict Electronic Disposition Policy. We ensure that no environmentally sensitive materials will be sent to landfills

¹ <http://www.zdnet.com/article/dell-goodwill-partnership-makes-computer-recycling-easier/>

and no items will be exported to developing countries.”²

Many of the Goodwill member organizations that are part of the Dell Reconnect program repeat the claim that the e-waste they collect for the Reconnect Program is never exported overseas, meet R2 Standards, or exceed e-Stewards standards (**emphasis added**):

*“The partnership is about as powerful as you can get in regard to recycling,” says Sam Schmitz, president of Goodwill Industries of Northern Illinois and Wisconsin Stateline, noting that **non-working equipment is never sent overseas to end up in a landfill.***

— Goodwill Industries of Northern Illinois and Wisconsin Stateline³

² <http://www.dell.com/learn/us/en/vn/corp-comm/us-goodwill-reconnect?c=us&l=en&s=corp&cs=vn>

³ <http://www.earth911.com/eco-tech/dell-reconnect-computer-recycling-program-turns-10-years-old/> Retrieved 12/11/15

Older computers that will not be refurbished will be recycled. These computers will have their hard disk drives removed and stored in a secure location at our facility until being **shipped to an R2 Certified Recycler where it will be responsibly disposed of in their secure facility.**

— Goodwill Industries of Rhode Island⁴

*Dell’s stringent environmental standards prevent dumping of electronic waste in developing countries. Goodwill is audited at least annually by Dell to ensure computer equipment is handled in the most sustainable way possible. **Dell’s environmental standards exceed the internationally accepted e-Stewards and R2 programs.***

— Goodwill Industries of Southern & Western Colorado⁵

⁴ <http://www.goodwillri.org/donate/electronics> Retrieved 12/11/15

⁵ <http://www.discovermygoodwill.org/shop-donate/donate/free-computer-recycling> Retrieved April 5, 2016

Dell's E-Waste Management Policies



A Highly Awarded Company

In 2007, Dell received the National Recycling Coalition's ninth annual Recycling Works Award for its longstanding efforts to promote individual producer responsibility.

Dell Chairman and CEO Michael Dell said at the time:

"When it comes to product recovery and recycling, our commitment to our customers and our shared Earth is clear and simple: programs that

*help consumers make a difference will always be a cornerstone of Dell's global business. From the time we conceive and design a product to the point when that product is responsibly recycled, we seek to minimize our company's impact on the world around us and empower our customers to join us."*¹

¹ http://www.csrwire.com/press_releases/26087-Dell-Receives-Prominent-Environmental-Leadership-Award

Figure 8. Screenshot of online article documenting Michael Dell accepting the 2014 Vision For America award from Keep America Beautiful. Retrieved from: <http://www.prnewswire.com/news-releases/dell-inc-receives-keep-america-beautiful-vision-for-america-award-for-its-corporate-commitment-to-driving-lasting-impact-in-us-communities-300005469.html>, 12/11/15.

The screenshot shows a PR Newswire article. At the top, the headline reads "Dell Inc. Receives Keep America Beautiful Vision for America Award for its Corporate Commitment to Driving Lasting Impact in U.S. Communities". Below the headline are social media sharing icons for Facebook, +1, Twitter, LinkedIn, and Print. The main image shows Michael Dell, Lucero Castaneda, and Wendy Rodriguez holding an award. To the right of the image is the "KEEP AMERICA BEAUTIFUL" logo. Below the image is a caption: "Michael Dell with Lucero Castaneda and Wendy Rodriguez, members of Keep Austin Beautiful Green Teens, during Keep America Beautiful's Vision for America Award Luncheon. (Photo by Kate Eisenmann, Kate Eisenmann Photography)".

STAMFORD, Conn., Dec. 5, 2014 /PRNewswire-USNewswire/ -- Keep America Beautiful (KAB), the nation's leading nonprofit that builds and sustains vibrant communities, honored Michael Dell and Dell Inc. with the 2014 Vision for America Award on Thursday, Dec. 4, in New York City.

"While Dell has been a trailblazing technology company, it has also led in the realm of social and environmental sustainability, drawing a solid line from the company's sustainability initiatives to its business objectives," said Jennifer Jehn, president and CEO, Keep America Beautiful. "Keep America Beautiful applauds Dell for applying its heritage of entrepreneurship and innovation to its holistic approach to corporate citizenship."

Michael Dell, founder, chairman and CEO of Dell, attended the annual awards luncheon to personally accept the Vision for America Award.

"Thank you for this great honor," said Michael Dell. "I'm very pleased to accept it on behalf of the 100,000 Dell team members around the globe working hard every day to deliver for our customers, our planet and our communities."

Dell's "Powering the Possible" commitment – to put technology and expertise to work where it can do the most good in the world –

More by this Source

Keep America Beautiful Honors Caterpillar Inc. with 2015 Vision for America Award for Corporate Commitment to Sustainability
Nov 05, 2015, 10:44 ET
[View all news by Keep America Beautiful](#)

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Dell and Michael Dell have received other awards for their efforts in protecting the environment. In 2010 Dell was listed as #1 on Newsweek's "green business" list.² In 2014 Michael Dell received the Vision for America award from Keep America Beautiful, a non-profit environmental group dedicated to environmental preservation in communities.³ The Dell Reconnect Program was cited as a key feature of Dell's environmental practices for this award.

In September of 2015, at the Green Electronics Council's Emerging Green Conference, described as "the premiere international gathering of technology

2 <http://content.usatoday.com/communities/greenhouse/post/2010/10/newsweek-ranks-dell-greenest-us-company/1#.Vs-R2fkrKUk>

3 <http://www.prnewswire.com/news-releases/dell-inc-receives-keep-america-beautiful-vision-for-america-award-for-its-corporate-commitment-to-driving-lasting-impact-in-us-communities-300005469.html> Retrieved 12/11/15

leaders in 2015 to discuss the advances, challenges and future of sustainable electronics," Dell received the Catalyst Award.⁴ Dell was recognized for its leadership in advancing the circular economy of electronics. The circular economy is a concept that ensures enhanced recycling and use of recycled materials in all phases of production.

Most recently Dell won a Gold Tier award from the US Environmental Protection Agency in their Sustainable Materials Management (SMM) challenge in the Non-Product Category. Dell was recognized for its development of a closed loop program that uses plastics recovered from the Dell Reconnect recycling partnership with Goodwill in the US to make new computers through the company's manufacturing partner, Wistron.

4 <http://greenelectronicscouncil.org/dell-wins-green-electronics-council-catalyst-award-2015/> Retrieved 12/11/15

Figure 9. Screenshot of online article on Dell's Scott O'Connell accepting the 2015 Catalyst Award from the Green Electronics Council. Retrieved from: <http://greenelectronicscouncil.org/dell-wins-green-electronics-council-catalyst-award-2015>



In 2015, Dell renewed their commitment¹ to “solving the e-waste issue at the source” by launching a closed-loop recycling program which aims to re-use post-consumer recycled plastics and metals from

¹ <http://www.dell.com/learn/us/en/vn/corp-comm/e-waste>
Retrieved 12/15/15.

their Environmental Partners in their new products. In addition, they have signed a 5-year agreement with the United Nations Industrial Development Organization (UNIDO) “to cooperate on identifying and implementing a sustainable e-waste management model for developing countries in Africa, Asia and Latin America.”

Dell’s Disposition Policy and Performance Standard

In 2009, Dell worked with the Basel Action Network (BAN) and the Electronics TakeBack Coalition (ETBC) to craft a responsible export policy. Dell was lauded at that time in a press release for being the first American manufacturer with a policy that was Basel Convention and Basel Ban Amendment compliant.² That policy was indeed a landmark achievement. It stated that neither Dell nor its Environmental Partners would allow the export of non-working used electronics to developing countries. See Figure 10 for a

² <http://www.usnews.com/science/articles/2009/05/12/dell-bans-e-waste-export-to-developing-countries>

screenshot of Dell’s web page describing the company’s e-waste export policy.³

According to their website, Dell has:

“expanded and surpassed the [Basel] Convention’s guidelines to define e-waste as all nonworking parts or devices, regardless of materials, and require that all equipment be tested and certified before being exported.”

³ <http://www.dell.com/learn/us/en/vn/corp-comm/e-waste>, retrieved 12/15/15.

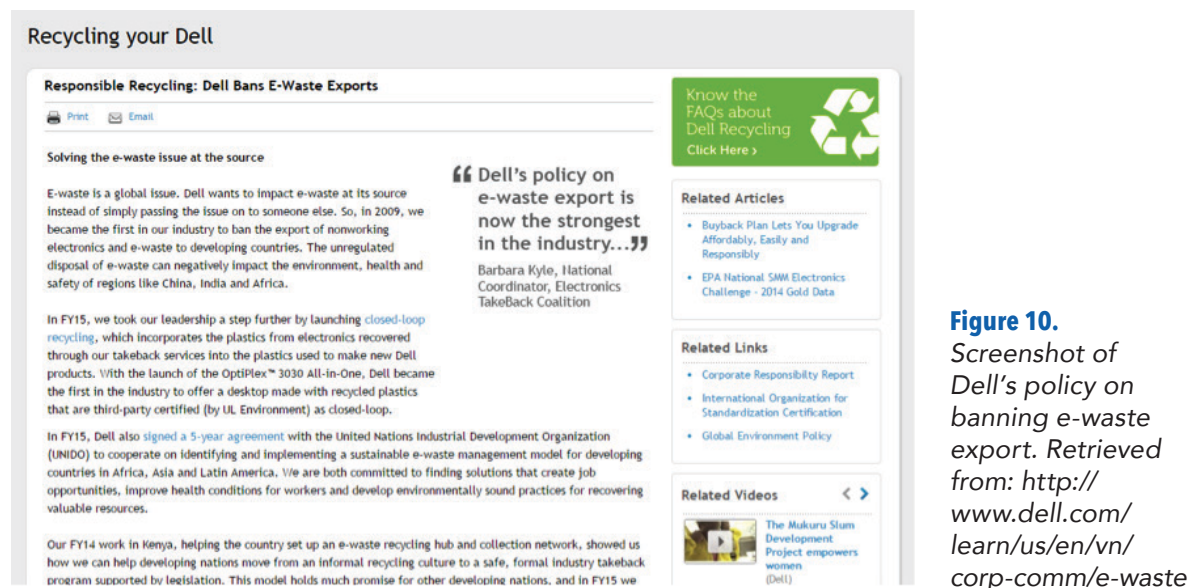


Figure 10. Screenshot of Dell’s policy on banning e-waste export. Retrieved from: <http://www.dell.com/learn/us/en/vn/corp-comm/e-waste>

The policy also states:

- *All exports and imports of electronic waste handled by Dell and its authorized environmental partners will comply with existing international waste trade agreements and legal requirements*
- *Dell does not permit electronic waste to be exported from developed (members countries in the Organization for Economic*

The actual policy today still stands and can be found as the “Dell Electronics Disposition Policy”⁴ on their website and linked from their Reconnect and main corporate web pages.

In addition to the Dell Disposition Policy, Dell has produced its own Environmental Partner Performance Standard, which is very well constructed and contains excellent export precautions and requirements consistent with the Disposition Policy. This is also posted on the Dell website.⁵ These

Dell worked with the Basel Action Network (BAN) and the Electronics TakeBack Coalition (ETBC) to craft a responsible export policy.

Co-operation and Development [OECD] or the European Union [EU]) to developing (non-OECD/EU) countries, either directly or through intermediaries

- *No prison or child labor will be used in the disposal of electronic waste*
- *Every reasonable effort will be made to control all electronic wastes and prevent it from entering landfills or incinerators*

detailed vendor requirements translate Dell’s overall policy into specifics for its vendors. Making these public is an important aspect of transparency, and Dell is one of the few manufacturers who do this.

⁴ <http://i.dell.com/sites/content/corporate/environment/en/Documents/electronic-disposition-policy.pdf>

⁵ <http://i.dell.com/sites/doccontent/corporate/environment/en/Documents/environmental-partner-performance-standard.pdf>

Due Diligence

Having a good policy and standard is one thing, but does Dell diligently ensure compliance to these documents? They say they do. On numerous occasions Dell has touted their rigorous due diligence and compliance verification programs. Dell has told BAN and groups like the

Basel Convention Partnership for Action on Computing Equipment (PACE) that their program including full annual audits, and monthly unannounced inspections conducted by an internationally respected audit firm.

Dell's Director of Environmental Affairs Scott O'Connell recently told BAN: "We work with a limited number of EPs (Environmental Partners) and we utilize third party auditors to conduct full audits of all EPs prior to sending them the first piece of equipment.

We perform full audits annually for all EPs supplemented by monthly onsite spot-check audits to monitor their ongoing

compliance with our requirements. We have a corrective action plan management system to address any areas of concern, and we make changes to our EP network as necessary to meet the needs of our business. We have found that investing in this level of rigor and due diligence is necessary to protect our global brand."¹

¹ email to BAN in response to questions regarding Dell Reconnect, Received February 18, 2016.

...organizations watchdogging Dell and the electronics industry have some cause for concern.

Concerns about Dell and the Reconnect Program

Producer Responsibility?

Despite Dell's creation and touting of these progressive social and environmental policies, the organizations watchdogging Dell and the electronics industry have some cause for concern.

Soon after the advent of the Reconnect program BAN received complaints from electronics recyclers who worried that, while Goodwill created an effective collection network, their free-of-charge takeback program sent the wrong message to consumers. By requiring no fees, recycling might be seen as something that consumers should never have to pay for, even though for many fractions of the waste stream it is a costly service. In a country like the US, with only spotty application of

the prevalence of such take-back schemes is much more inconsistent. They are found in certain states that have legislated them or are voluntary programs applicable to only certain areas and for certain wastes. Such an unbalanced scenario creates market distortion.

While a company like Dell can hardly be blamed for this situation, they should at least be advocating for stronger EPR programs on a full scope of electronic equipment. However, according to Robin Schneider, Executive Director of Texas Campaign for the Environment (an organization that has watchdogged Dell in Austin, Texas for years), Dell has in fact lobbied for weak takeback legislation against the

...what is needed now is consistent and adequate pricing pegged to the commodity market to compensate recyclers fairly at all times.

voluntary or mandated producer responsibility, free recycling was perceived as unfair competition to recyclers that were not part of a subsidized EPR program.

Were it the law of the entire country (as is the case in all countries of the European Union) and each recycler was part of a mandated take-back scheme, there would be a level playing field. However, in the US

advice of both her organization and the Electronics TakeBack Coalition. The environmental groups ended up reluctantly supporting the legislation but it could have been a lot stronger had Dell played a leadership role.

Is the Price Right?

Another complaint we have heard often is that recyclers that do get chosen to become Dell “Environmental Partners”, while initially being excited by the contract, do not in the end get enough money from Dell to properly manage the huge volumes of low-value e-waste arising from public takeback programs like Reconnect. BAN

must already be in good financial health and ready to meet our contractual requirements before we proceed with onboarding them as an EP. Sending large volumes to a limited number of partners enables us to create cost efficiencies for both Dell and our EPs.”

Dell in North America has steadfastly refused to reveal who their Environmental Partners actually are.

has heard from several recyclers that stated that the “low-ball” pricing required by Dell has contributed to previously responsible companies becoming irresponsible (e.g. involved in stockpiling waste rather than processing it) and in some instances going bankrupt. It was reported that Dell’s response to the difficulty of their partners would be to simply move on to another unwitting company, anxious to get a contract with a large player like Dell promising large volumes. In response to this concern Dell’s Scott O’Connell stated: “Recyclers interested in working with Dell

In the absence of comprehensive and national EPR legislation, what is needed now is consistent and adequate pricing pegged to the commodity market to compensate recyclers fairly at all times. Further, those involved in creating voluntary programs and those participating in state-mandated programs need to go out of their way to be fully transparent. The public and government should know who is doing the recycling in these programs, what prices are being paid, what standards they are adhering to, and who is holding them accountable.

Transparency Lacking

Despite multiple occasions in many meetings where BAN and other Electronics TakeBack Coalition member organizations have asked, Dell in North America has steadfastly refused to reveal who their Environmental Partners actually are.

website¹, for example, one can see that Dell is listed as recycling with Avnet and IMS Electronics Recycling companies. Recently Dell disclosed in a GreenBiz

Often times this hidden information becomes apparent. On a State of Illinois

¹ http://epadata.epa.state.il.us/land/eWaste/mfr_registered_recyclers.asp

article published in October of 2015,² that the Wistrom company, involved in their “Closed Loop” program in Texas, is one of their Environmental Partners. In an e-mail exchange following the appearance of that

In our view, it is concerning that Dell would change vendors so often as to be unable to report them to the public. This is consistent with the complaint heard in the industry that Dell exhausts vendors by not provid-

Is Dell ashamed of its record of past vendors, many of which may have gone bankrupt or were immersed in scandal?

article, Dell’s Scott O’Connell told BAN that:

“we do not publish our list of partners, as it is subject to change to optimize quality and cost.”

This answer seems odd and unsatisfactory. In Europe, Dell has no difficulty revealing their recyclers. While Dell is not alone in

ing adequate payment for services. Is Dell ashamed of its record of past vendors, many of which may have gone bankrupt or were immersed in scandal? Further, failure to reveal one’s environmental partners prevents any public scrutiny of vendors. Yet it is the public’s waste that is ultimately getting processed by Dell or Goodwill in their programs and services. And just as we do with our household waste or sewage,

They seem to be saying, “just trust us.”

failing to be open and transparent about where they send their waste, other manufacturers such as Samsung³ and LG report publicly⁴ on whom they use for their recycling services. These similar manufacturers and brands do not see the need to keep their hazardous waste management services a secret.

the public has the right to know where our electronic waste is going. But this right has been steadfastly denied.

In conclusion, we believe that Dell is likely doing more to collect e-waste for responsible recycling in the US than most other manufacturers. However, while Dell appears committed to ensuring its downstream recyclers act responsibly, they refuse to provide the public or their customers with basic information that would allow a check on those claims. They seem to be saying, “just trust us.”

² <http://www.greenbiz.com/article/dell-cuts-e-waste-recycled-carbon-fiber>

³ http://www.samsung.com/us/aboutsamsung/citizenship/usactivities/environmentalinitiatives/recyclingdirect/usactivities_environment_samsungrecyclingdirect_partners.html

⁴ scroll to bottom of this page: <http://www.lgrecycling-program.com/>

We are not saying that we don't trust Dell's intent, but we know that the economic pressure is strong for recyclers to send e-waste down the "low-road", especially now with falling commodity prices.

Complaints have been made that Dell's pricing seems to be contributing to that economic pressure. On that we cannot be certain, but what is clear based on our tracker data is that Dell's highly touted standard and oversight system has not

been adequate to prevent bad behavior such as unethical and illegal export.

This could be a result of overly aggressive pricing. It may be unrealistic to think that an audit system will always find irresponsible behavior. It may be far better to not tempt this behavior in the first place by honoring one's downstream recyclers with fair pricing and making efforts to keep such partners for the long term.

Whistleblowers: "Goodwill is Exporting E-Waste"

Finally, and related to the need for greater transparency, is the concern regarding materials being exported contrary to stated policy. As early as 2005 BAN began receiving what became fairly regular whistleblower reports from employees and others that complained that Goodwill stores were sending hazardous e-wastes to developing countries, either directly, or through vendors.

In 2011 we met with Dell's Reconnect program manager Mike Watson at the BAN offices in Seattle where we raised the same export concern. We told him that we were seriously concerned by all the stories of wrongdoing and that we might begin an investigation. He urged us at the time to not undertake an exposé on Goodwill's operations until he got things more organized. He urged us to wait for 6 months while he fixed a few outlier issues within

Dell's highly touted standard and oversight system has not been adequate to prevent bad behavior.

At the E-Scrap Conference in 2010, BAN met Goodwill's Business Innovation & Development Specialist Susanne Fredericks where we related our whistleblower reports and implored Goodwill to set a national policy for all of their outlets to prevent hazardous e-waste exports to developing countries from all of their member organizations. She let us know that she would take up the matter.

the Goodwill network. When we asked how he could be sure that the Goodwill Stores in the Reconnect Network or Dell Environmental Partners would not export in the future, directly or via brokers, he assured us that Dell's own audits and standards were second to none. At the time, BAN agreed to wait. Nevertheless, the whistleblower reports continued.

It was with the above concerns in mind that BAN decided, as part of the e-Trash Transparency Project, to check the actual fate of electronic waste handed over by the public to Goodwill, including that waste which was eventually managed by the Dell Reconnect program. This would serve as a pilot examination into one very well-known producer's responsibility program.

In actual fact, BAN's trackers uncovered the fate of Goodwill and Dell's hidden vendors in their disposal chain and most disturbing, we discovered their involvement in sending some of the e-waste collected as part of the Goodwill Reconnect partnership offshore.

Overview of All Trackers Deployed at Goodwill Locations

BAN has deployed tracker-enabled electronic devices at 46 separate Goodwill stores across the country. All of the devices were rendered non-functional and economically non-repairable prior to deployment. This was done to provide clarity that exporters could not realistically claim the equipment was for re-use rather than recycling.

The trackers were installed in the equipment in such a way as to be easily discoverable by anyone that would hand dismantle the equipment. The tracker itself has a large tag on it which reads, "if found please contact BAN" along with a designated e-mail address. Further, the tracking units are not at all likely to withstand a baler or shredder. Thus when trackers move offshore we can assume that they are

moving as part of wholly intact used electronic equipment.

Table 2 summarizes the quantity of devices deployed at Goodwill stores by state, the number of stores participating in the Dell Reconnect Program, the number of devices exported to date, and the activity status of the trackers at the time of publishing of this report.

Of the 46 total devices dropped at Goodwill stores, 7 of the devices (15%) were exported, most likely resulting in illegal trade, to Asian countries. The exported e-waste went to the following national jurisdictions: Hong Kong, Mainland China, Taiwan, and Thailand.

As noted earlier, non-Reconnect Goodwill operations are encouraged to use Certified

Table 2. Summary of devices deployed at Goodwill locations across the United States.

State	Total Number Deployed	Dell Reconnect locations	Exported to date / non-Reconnect	Exported to date / Reconnect	Number still Active
California	10	4	0	0	0
Illinois	3	3	0	0	0
Massachusetts	2	2	0	1	1
Michigan	8	3	1	1	0
Nevada	3	2	0	1	1
New Jersey	1	0	0	0	0
New York	3	2	0	0	2
Ohio	13	12	0	3	1
Oregon	3	0	0	0	1
TOTAL	46	28	1	6	6

Recyclers (e-Stewards or R2). By examining the first location to which a Goodwill store sends its e-waste, we can determine how closely this policy is being followed. We

equivalent of 2,562 forty-foot containers of e-waste!¹ – enough to account for about four 40-foot intermodal containers a week for the last 12 years.

Clearly not all of the Goodwill stores are following their own policy for e-waste recycling.

have GPS confirmation of first recycler locations for 13 out of the 46 devices, which break down as follows:

10 - Certified recyclers (5 non-Reconnect, 5 Reconnect)

3 - Non-certified recyclers (2 non-Reconnect, 1 Reconnect)

Clearly not all of the Goodwill stores are following their own policy for e-waste recycling.

When looking specifically at the Dell Reconnect program, we found that 6 out of 28 (21%) trackers were exported. While

Of course the above percentages are rough estimates, as the sample size (46) is relatively small compared to the actual number of devices processed by Goodwill. The real number exported by the Reconnect program over time could be greater or smaller. However, even though these are extrapolations, they still raise serious and legitimate concerns.

Dell touts their diligent auditing process, and strongly proclaims to have a zero export policy. How then is it possible that 21% of tracker-enabled devices passing through Goodwill's hands and then onto Dell Environmental Partners, found their way to Asia? The findings also beg another

How then is it possible that 21% of tracker-enabled devices passing through ... Dell Environmental Partners, found their way to Asia?

21% may not sound like a large amount, if we apply this same percentage to the total amount of electronics processed by Dell Reconnect over the years, the volumes that might have gone offshore is significant. Dell reports having accepted 427 million pounds of e-waste into the Reconnect program since 2004, so if 21% of that amount has been exported, it totals about 90 million pounds. That is roughly the

question regarding just how much export is occurring from other company recycling programs? In other words, if Dell is truly the one of best, and they are failing to catch significant "leakage", what does this say about other programs?

¹ This estimate is based on an industry insider estimate that a 40' high cube container of LCDs weighs about 35,000 lbs. $79 \text{ million lbs} / 35,000 = 2,257$.



While we are certain that at least 7 of the 46 Goodwill deployed devices got exported because they gave us readings in overseas territories, the fate of the remaining 39 remains unclear. We expect that some of these may have also been exported, with their last viable signals made in the US or on the high seas. Devices no longer reporting may have been destroyed by a shredder at a processing facility, or stored in a location (such as a warehouse or landfill in the US or abroad) where a signal could not be received and

where the battery could have died. Very old devices that have not communicated for 200 days, BAN has terminated (shut off SIM service) and declared inactive. At the time of publishing this report 5 of the devices dropped at Goodwill are still active and may yet report back. Of course if this happens the percentage of reportable exports in our study will increase.

Fate of Exported Goodwill Devices

This section describes in detail the journeys of the 7 devices that were exported overseas after being deployed at various

Goodwill locations. Table 3 below summarizes the key information for these six devices.

Table 3. Devices deployed at Goodwill that were exported overseas. The last column, Site Visit, refers to locations visited by the device that were also visited by the BAN investigative team.

#	Goodwill Region	Store Location	Device Type / Tracker ID	Dell Reconnect	Intermediate Holders or Recyclers	Last Reported Location	Sites Visited
1	Goodwill of Mid-Michigan	Oxford, MI	LCD MI163325	Yes	Golden Valley Trading, Chino, CA	Miaoli County, Taiwan	New Territories, Hong Kong Miaoli County, Taiwan
2	Goodwill of Northern Michigan	Cadillac, MI	LCD MI163531	No	Padnos, Wyoming MI. Schupan & Sons, Kalamazoo, MI.	New Territories, Hong Kong	None
3	Goodwill of Southern Nevada Inc.	Las Vegas, NV	Printer NV356143	Yes	Golden Valley Trading, Chino, CA.	New Territories, Hong Kong	New Territories, Hong Kong
4	Goodwill Miami Valley	Wapakoneta, OH	LCD OH161584	Yes	Golden Valley Trading, Chino, CA	New Territories, Hong Kong	None
5	Goodwill of Erie, Huron, Ottawa and Sandusky Counties Inc.	Willard, OH	LCD OH165882	Yes	None	Bangkok, Thailand	New Territories, Hong Kong
6	Goodwill of Wayne and Holmes Counties	Wooster, OH	Printer OH166039	Yes	Avnet Services (Groveport, OH)	Guiyu, China	None
7	Goodwill Industries of The Berkshires, Inc.	Pittsfield, MA	LCD MA356325	Yes	None Confirmed	New Territories, Hong Kong	New Territories, Hong Kong

1. Oxford, MI → Hong Kong → Taiwan

Goodwill Region: Goodwill of Mid-Michigan

Store Location: Oxford, MI

Device Type / Tracker ID: LCD #MI163325

Dell Reconnect: Yes

Intermediate Holders or Recyclers:

Golden Valley Trading, Chino, California

Last Reported Location:

Miaoli County, Taiwan

Sites Visited by BAN:

New Territories, Hong Kong

Miaoli County, Taiwan

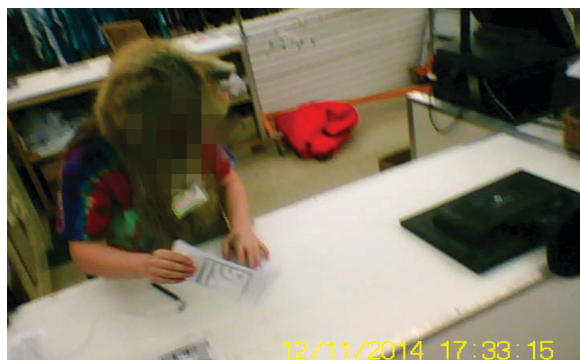


Figure 11. Deployment of LCD MI63325 in Oxford, Michigan, Goodwill. Clerk gives BAN researcher a receipt.



Figure 12. Golden Valley Trading Inc. in Chino, California. Picture from the company website, <http://goldenvalleytradinginc.com>. February 2015.

Legality:

Any import of waste LCDs into the territory of Hong Kong is prohibited. The import of any kind of monitor or display from the United States or from Hong Kong is likely to be illegal under the laws of Taiwan (see Appendix 2: Export and the Law).

On 12/11/14, a tracker-enabled Gateway brand LCD was deployed at a Goodwill store located at 190 S Washington St in Oxford, Michigan. This store is part of the Goodwill Industries of Mid-Michigan region, which is part of the Dell Reconnect program.

Figure 11 shows a photo of the device being deployed. The LCD traveled to a Goodwill facility in Flint, Michigan at 501 S Averill Ave on 01/21/15. From there, the LCD appeared to have traveled on a west-bound train to California.

After arriving in the Los Angeles area on 03/18/15, the LCD made a stop near the Mexican border on 03/26/15, then traveled back to the Los Angeles area on 04/08/15 to Golden Valley Trading, located at 13850 Central Ave, Suite 400 in Chino, California.

It appears that Golden Valley Trading was the exporter as the next stop was Hong Kong where it arrived on 05/11/15 and moved to a junkyard in the New Territories area on 05/15/15.

BAN visited this junkyard site on 12/05/15, and an account of this investigation is provided in the box below. The device was then shipped to Taiwan and entered Taiwan through the Port of Keelung on 06/09/15.

From the port area it was sent to a farm property in Miaoli County on 06/11/15. A description of BAN's visit to this site is provided in the box on page 47. The last signal sent from this device was on 07/16/15.

Information on this case has been turned over to the Taiwanese government for enforcement action. The Taiwanese Environmental Protection Agency has made it clear that the import of this device into Taiwan was almost assuredly illegal.

Figure 13 shows the full trajectory of the LCD and Table 4 lists the destinations visited by it.

Table 4. Goodwill Industries of Mid-Michigan LCD (tracker ID MI163325), list of travel destinations.

Date of Appearance	Signal Type	General Location
12/11/14	GPS	Oxford, MI
01/21/15	GPS	Goodwill, Flint, MI
01/22/15	Cell ID	Warren, MI
01/23/15	Cell ID	Groveport, OH (near Avnet Services)
03/13/15	Cell ID	Indianapolis, IN (train corridor)
03/14/15	Cell ID	Streator, IL (train corridor)
03/18/15	Cell ID	Hacienda Heights (near Los Angeles), CA
03/22/15	Cell ID	Montebello/Pico Rivera (near Los Angeles), CA
03/26/15	Cell ID	Mexican border near Tijuana, CA
04/07/15	Cell ID	City of Industry (near Los Angeles), CA
04/08/15	GPS	Golden Valley Trading, Chino, CA
05/11/15	Cell ID	Port of Hong Kong
05/15/15	GPS	Abandoned facility Kwu Tung Rd, New Territories, Hong Kong (visited location)
06/05/15	Cell ID	Port of Hong Kong
06/09/15	Cell ID	Port of Keelung City, Taiwan
06/11/15	GPS	Farm property in Miaoli County, Taiwan (visited location)



Figure 13. Goodwill Industries of Mid-Michigan LCD (tracker ID MI163325), full trajectory from Oxford, Michigan to Miaoli County, Taiwan.

Site Visit: Abandoned Facility / New Territories, Hong Kong

On December 5, 2015, Mr. Jim Puckett together with Ms. Dongxia Su and Mr. Sanjiv Pandita surveyed the location in Hong Kong visited by this LCD. The coordinates for this site are: 22.45129 / 113.96737, located on the side of Kwu Tung Road in New Territories.

Upon arrival, the team found a factory that was cleaned out and unoccupied, and took a picture of the gate (see Figure 14). The team spoke to a neighboring business and learned that the Environmental Protection Department of Hong Kong had shut down this facility. BAN obtained film and stills of the site.



Figure 14. Gate of abandoned facility on Kwu Tung Road in New Territories, Hong Kong site where the LCD was managed before it was exported to Taiwan. © BAN December 2015.

Site Visit: Farm Property in Miaoli County, Taiwan

On December 11, 2015, Jim Puckett, together with Taiwan Watch staff and volunteers, visited a farm property in Miaoli County where our tracker had made an appearance. The precise location will not be revealed in this report because the site is currently under investigation by the Taiwanese government with the aim of enforcing Taiwan import and e-waste management laws.

This farm property was located off of a side road on the outskirts of a town, near a major highway, a cemetery, and a landfill. The property contained an irrigation pond, a residential building, and outbuilding.

BAN arrived to observe the pond completely surrounded by gaylord boxes and super sacks filled with LCD screens (see Figure 15 and Figure 16). The operator of the collection site seemed to be unaware of the fact that importing waste LCDs into Taiwan was illegal, as he spoke openly about the fact that they were imported.

A survey indicated that almost all of the equipment appeared to have been imported from North America. Many asset tags on the equipment and labels on the gaylord boxes revealed the origins of the e-waste, including the names of the former US equipment users (see Figure 17 through Figure 19). This material was clearly being managed as waste and was not intended for reuse, as it was stored outside in the rain. Furthermore, stands were removed, cords were cut, and packaging was not individualized or protective. There was one worker who appeared who was taking apart some of the equipment in a shed. The operator/proprietor who we interviewed explained that the worker was pulling parts for some limited refurbishment needs elsewhere. BAN obtained film and stills of the site.



Figure 15. (Above) Farm property in Miaoli County, Taiwan where imported LCDs in gaylord boxes surround an irrigation holding pond. This is where the tracker from the Goodwill store in Oxford, Michigan (Dell Reconnect Partner) ended up. © BAN December 2015.



Figure 16. (Left) LCDs in Gaylord boxes surround an irrigation holding pond. This is where the tracker from the Goodwill store in Oxford, Michigan (Dell Reconnect Partner) ended up. © BAN December 2015.

Figure 17. One of several flat screen LCD monitors found in Miaoli County, Taiwan stacked in a farm yard. The monitor is from Beacon Health Strategies, based in Boston, Massachusetts but with offices in many locations in the US © BAN December 2015.

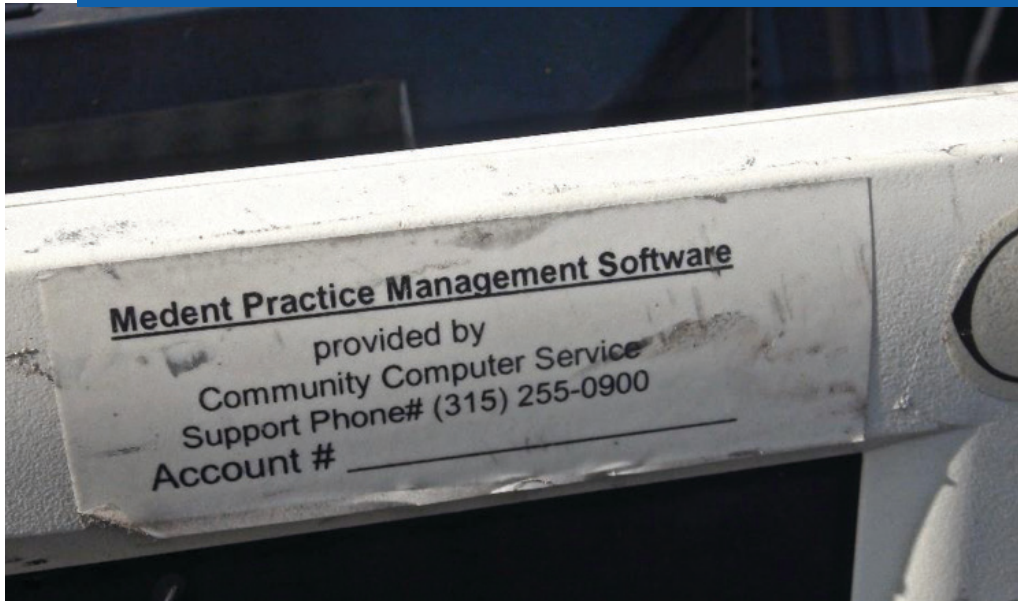


Figure 18. An asset tag from an upstate New York office of Community Computer Services. This is one of the first US-imported LCD monitors uncovered in Miaoli County, Taiwan. © BAN December 2015.

Figure 19. One of dozens of flat screen LCD monitors with Southern Illinois University asset tags found at the farm property in Miaoli County, Taiwan. © BAN December 2015.



2. Cadillac, Michigan → Hong Kong

Goodwill Region:

Goodwill of Northern Michigan

Store Location: Cadillac, MI

Device Type / Tracker ID: LCD #MI163531

Dell Reconnect: No

Intermediate Holders or Recyclers:

Padnos (Wyoming, MI)

Schupan & Sons (Kalamazoo, MI)

Last Reported Location:

New Territories, Hong Kong

Sites Visited by BAN: None

Legality:

Any import of waste LCDs into the territory of Hong Kong is prohibited (see Appendix 2: Export and the Law).

On 11/04/14, a tracker-enabled LCD was deployed at a Goodwill store located at 2025 N Mitchell St in Cadillac, Michigan. See Figure 20 for a photograph of the deployment.

This store belongs to the Goodwill Industries of Northern Michigan region, which is not a part of the Dell Reconnect program. The LCD next moved to the Goodwill store in Traverse City, Michigan at 2279 W South Airport Road on 11/26/14. On 12/17/14, the LCD then moved to

Padnos Recycling, a very large Michigan general recycling company, at 500 44th St SW in Wyoming, Michigan.

On 03/28/15, the device arrived at Schupan & Sons' trailer yard at 1949 Wynn Road in Kalamazoo, Michigan, across the street from a large Schupan & Sons facility.

The LCD next appeared to have been placed on a westbound train near Morris,

Figure 20. Drop-off of LCD MI163531, Cadillac Goodwill, 11/4/14. © BAN. 2014.





Figure 21. Padnos trucks inside very large Padnos recycling facility in Wyoming, MI, the location where the tracker sent its signal. Google Street View. February 2016.

Illinois, before making its next appearance in the New Territories area of Hong Kong on 09/16/15.

The tracker continued to send signals from the border area between Hong Kong and

China until its last signal on 12/03/15. The exact location could not be determined because the tracker could only receive cell tower signals, but it appears that this LCD was most likely dismantled in one of the hundreds of junkyards in New Territories.

Figure 22. Schupan Industrial Recycling trailer yard where the tracker produced a signal before travelling to Hong Kong. Google Street View. February 2016.



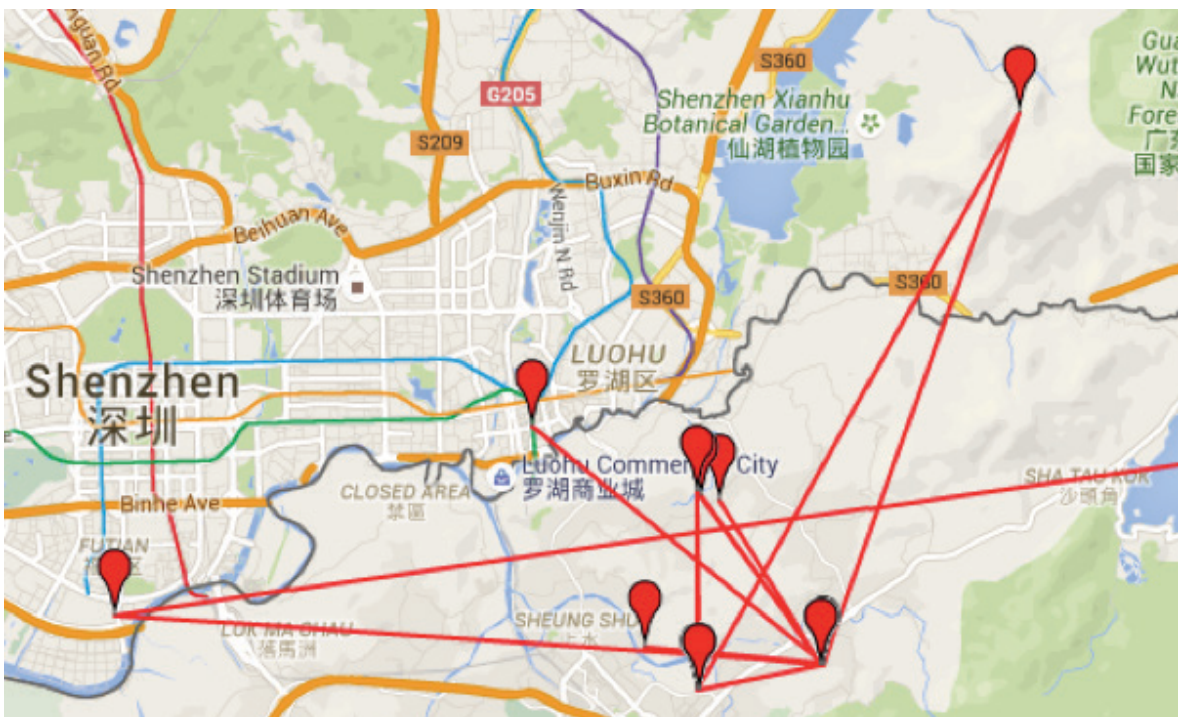


Figure 23. Goodwill Industries of Northern Michigan LCD (tracker ID MI163531), full trajectory from Cadillac, Michigan to New Territories, Hong Kong.

Table 5. Goodwill Industries of Northern Michigan LCD (tracker ID MI163531), list of travel destinations.

Date of Appearance	Signal Type	General Location
11/04/14	Cell ID	Cadillac, MI
11/26/14	GPS	Goodwill at Traverse City, MI
12/17/14	GPS	Padnos, Wyoming MI
03/28/15	GPS	Schupan & Sons, Kalamazoo, MI
07/10/15	Cell ID	Morris, IL (train corridor)
09/16/15	Cell ID	Border area of China/Hong Kong, in China
10/29/15	Cell ID	Border area of China/Hong Kong, in northern New Territories

Figure 24. Goodwill Industries of Northern Michigan LCD (tracker ID MI163531), cell ID trajectory in Hong Kong / China.



3. Las Vegas, Nevada → Hong Kong

Goodwill Region:

Goodwill of Southern Nevada Inc.

Store Location: Las Vegas, NV

Device Type / Tracker ID: Printer #NV356143

Dell Reconnect: Yes

Intermediate Holders or Recyclers:

Golden Valley Trading, Chino, CA
New Territories, Hong Kong

Last Reported Location:

New Territories, Hong Kong

Sites Visited by BAN:

New Territories, Hong Kong

On 04/10/15, a tracker-enabled HP printer was deployed at a Goodwill Store located at 3345 E Tropicana Ave in Las Vegas, Nevada. This store is part of the Goodwill Industries of Southern Nevada region, which is a Dell Reconnect partner.

The printer went to Poway, California on 05/17/15 before arriving at Golden Valley

Legality:

Any import of e-waste printers into the territory of Hong Kong would need to proceed to a permitted recycling facility. The location found in New Territories where the printer went is not likely to be a permitted recycling facility. Therefore, the importation of this printer in Hong Kong is likely to have been illegal (see Appendix 2: Export and the Law).

Trading in Chino, California on 06/04/15. It passed through the Port of Long Beach four days later and arrived in Hong Kong on 07/21/15.

Within a few days, the printer arrived at an abandoned facility on Deep Bay Road in New Territories. This site was visited by BAN. An account of this visit is provided in the box opposite.

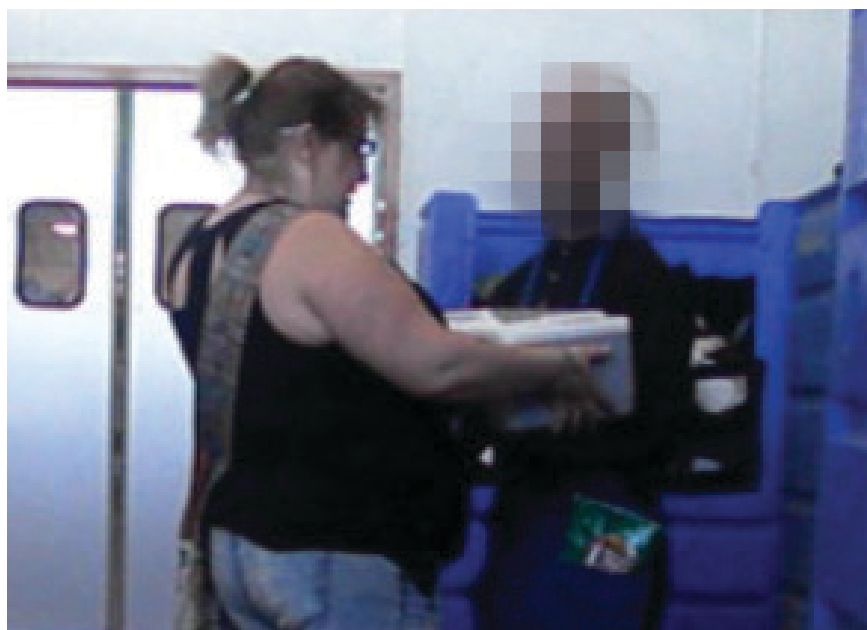


Figure 25 shows a photo of the printer being deployed. Figure 32 shows the full trajectory of the printer. Table 6 lists the destinations visited by this device.

Figure 25. Printer NV356143 being deployed in Las Vegas, Goodwill store. ©BAN. 2015.

Site Visit: Facility on Deep Bay Road, New Territories, Hong Kong

On December 5, 2015, Jim Puckett, together with investigators Ms. Donxia Su and Mr. Sanjiv Pandita, visited the site visited by the tracker-enabled printer from Las Vegas, Nevada Goodwill store ended up. Its GPS coordinates were: 22.45129 / 113.96737. The site appeared to be a typical New Territories electronic junkyard facility.

At the time of visit, there was no activity taking place. Nobody responded to knocking at the door or gate and the site appeared to be mostly abandoned.

Surveying the perimeter of the site revealed significant dumping of e-waste materials in the vines and brush of nearby empty lots. This included large LCD screens, power tool batteries, electronic cameras, DVDs, CRTs, and most disturbing were the large amounts of scattered mercury-containing Cold Cathode Fluorescent Lamp (CCFL) tubes removed from LCD breakdown operations found broken and ground into the soil. BAN obtained film and stills of the site.



Figure 26. BAN's Jim Puckett examining dumped CRT televisions and monitors at the Deep Bay Road site in New Territories, Hong Kong. ©BAN. December 2015

Figure 27. Close-up of ground outside of the Deep Bay Road site in New Territories, Hong Kong. Dumped mercury-containing cold cathode fluorescent lamps (CCFLs). ©BAN December 2015.





Figures 28-31, clockwise from upper left: Site at Deep Bay Road visited by tracker ID NV356143.

28: Scattered DVDs

29: Discarded bags of LCDs etc. in underbrush and vines,

30: unrecycled battery from power tool,

31: unrecycled cameras. © BAN. December 2015.





Figure 32. Goodwill Industries of Southern Nevada, Inc. printer (tracker ID NV356143), full trajectory from Las Vegas, Nevada to New Territories, Hong Kong.

Table 6. Goodwill Industries of Southern Nevada, Inc. printer (tracker ID NV356143), list of travel destinations.

Date of Appearance	Signal Type	General Location
04/10/15	Cell ID	Las Vegas/Paradise/Henderson, NV
05/17/15	Cell ID	Poway (north of San Diego), CA
06/04/15	Cell ID, GPS	Golden Valley Trading, Chino, CA
06/08/15	Cell ID	Port of Long Beach, CA
07/21/15	Cell ID	Port of Hong Kong
07/26/15	Cell ID	New Territories, Hong Kong
07/29/15	Cell ID, GPS	New Territories, Hong Kong, Deep Bay Road (visited)

Figure 33. Close-up of ground outside of Deep Bay Road site in Hong Kong, including dumped mercury containing cold cathode fluorescent lamps (CCFLs). © BAN. December 2015.



4. Wapakoneta, Ohio → Hong Kong

Goodwill Region:

Goodwill Miami Valley

Store Location: Wapakoneta, OH

Device Type / Tracker ID: LCD #OH161584

Dell Reconnect: Yes

Intermediate Holders or Recyclers:

Golden Valley Trading, Chino, CA

Last Reported Location:

New Territories, Hong Kong

On 12/10/14, a tracker-enabled Dell LCD was deployed at a Goodwill store located at 1240 Bellefontaine St in Wapakoneta, Ohio (see Figure 34). This store belongs to the Goodwill Easter Seals Miami Valley region of Ohio, which is a partner of the Dell Reconnect program.

The LCD stayed in the Groveport, Ohio area for approximately four months before

Legality:

Import of waste LCDs into the territory of Hong Kong from the United States is prohibited (see Appendix 2: Export and the Law).

Sites Visited by BAN: None

being shipped via train to California, arriving in Los Angeles on 04/26/15.

The LCD made a stop near the Mexican border on 05/06/15, then moved to Golden Valley Trading in Chino, California on 05/19/15.

Once again Golden Valley Trading appeared to be the exporter as the LCD

Figure 34. Drop off of Wapakoneta Goodwill LCD. ©BAN. December 2014.

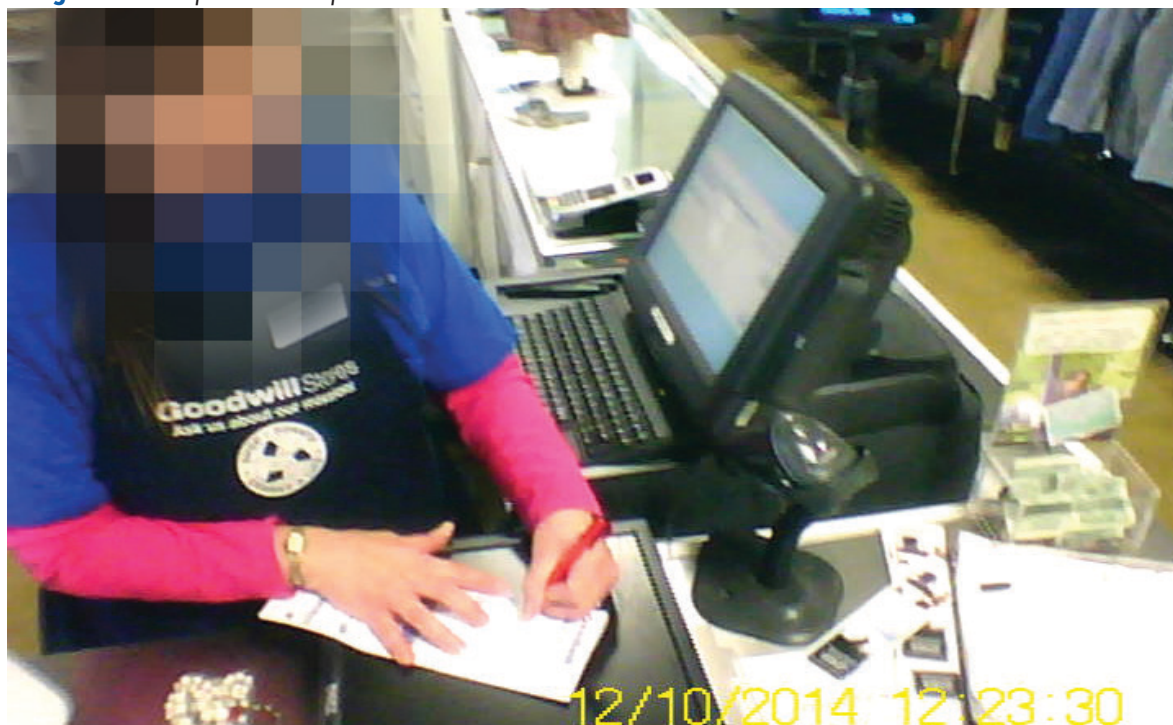




Figure 35. Goodwill Easter Seals Miami Valley LCD (tracker ID OH161584), full trajectory from Wapakoneta, Ohio to New Territories, Hong Kong.

soon moved next through the Port of Long Beach on 06/11/15, and arrived in the Port of Hong Kong on 07/14/15.

Later that month the LCD moved to New Territories near the Chinese/Hong Kong border. The tracker's last signal was on 10/06/15 from a new location in the Yuen

Long area at what appears to be a gaming store called "i-One".¹

Because the device was rendered economically un-repairable prior to deployment, it is not clear why the device ended up in a gaming store. It is possible that the tracker

¹ <http://www.i-one.com.hk/>

Figure 36. Goodwill Easter Seals Miami Valley LCD (tracker ID OH161584), street view of presumed last location (i-One store) in Yuen Long, New Territories, Hong Kong.



Figure 37. Goodwill Easter Seals Miami Valley LCD (tracker ID OH161584), trajectory in Hong Kong / New Territories.

itself was discovered during the dismantling operations in New Territories, and was removed and brought to the store by an individual.

Figure 35 shows the full trajectory of the Dell LCD. Figure 37 shows the device's trajectory in New Territories / Hong Kong, and Figure 36 shows the street view of the cluster of GPS signals at the i-One store in Yuen Long, New Territories. Table 3 lists the destinations visited by this device.



Table 7. Goodwill Easter Seals Miami Valley LCD (tracker ID OH161584), list of travel destinations.

Date of Appearance	Signal Type	General Location
12/10/14	GPS, cell ID	Wapakoneta, OH
12/16/14	GPS	Sidney, OH
12/16/14	GPS, cell ID	Dayton, OH
12/31/14	Cell ID	Groveport, OH (likely Avnet, Inc.)
04/21/15	Cell ID	Indianapolis, IN
04/22/15	Cell ID	Chicago, IL
04/23/15	Cell ID	Columbus, NB
04/25/15	Cell ID	Las Vegas
04/26/15	Cell ID	Los Angeles, CA
05/06/15	Cell ID	US/Mexico Border near Tijuana
05/19/15	GPS, cell ID	Golden Valley Trading, Chino, CA
06/11/15	Cell ID	Port of Long Beach, CA
07/14/15	Cell ID	Port of Hong Kong
07/19/15	Cell ID	Northern New Territories, Hong Kong
07/30/15	GPS, cell ID	Sha Kong Wai, New Territories, Hong Kong
10/06/15	GPS, cell ID	Yuen Long, New Territories, Hong Kong

5. Willard, Ohio → Hong Kong → Thailand

Goodwill Region:

Goodwill of Erie, Huron, Ottawa and Sandusky Counties Inc.

Store Location: Willard, OH

Device Type / Tracker ID: LCD #OH165882

Dell Reconnect: Yes

Intermediate Holders or Recyclers:

None

Last Reported Location:

Bangkok, Thailand

Legality:

Any import of waste LCDs into the territory of Hong Kong is likely to be illegal. The import of any kind of e-waste from the United States is prohibited under the laws of Thailand (see Appendix 2: Export and the Law).

Sites Visited by BAN:

New Territories, Hong Kong

On 01/06/15, a tracker-enabled Samsung LCD was deployed at a Goodwill store at 108 Blossom Centre Boulevard in Willard, Ohio (see Figure 38).

This store belonged to the Goodwill Industries of Erie, Huron, Ottawa and

Sandusky Counties region, which is partnered with the Dell Reconnect program.

A few months later, the LCD traveled west across the United States, made a stop near the Mexican border on 05/06/15,

Figure 38. Image of drop-off at Willard, Ohio Goodwill store. ©BAN. January 6, 2015.



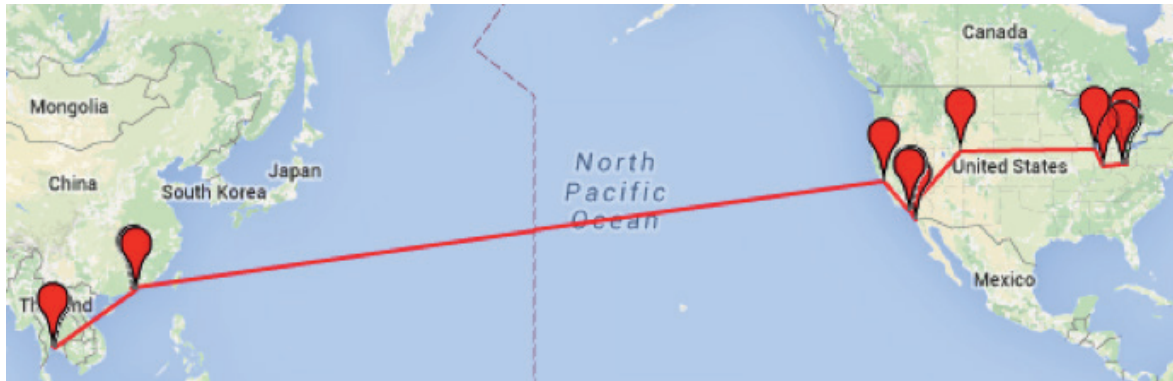


Figure 39. Goodwill Industries of Erie, Huron, Ottawa and Sandusky Counties Inc. LCD (tracker ID OH165882), full trajectory from Willard, Ohio to Bangkok, Thailand.

passed through the Port of Long Beach on 06/09/15, and was last seen in the US in San Francisco on 06/25/15.

The LCD arrived in the Hong Kong area on 07/15/15, then went to a New Territories junk yard in the Yuen Long area on 07/24/15. This location was visited by BAN (see box opposite).

The LCD was finally exported from Hong Kong to Thailand, arriving there on 08/16/15. The tracker's most recent signal was received by cell ID on 02/24/16 near the Ancient City landmark in Bangkok, Thailand.

Figure 39 shows the full trajectory of the LCD, and Table 8 lists the destinations visited by this device.

Table 8. Goodwill Industries of Erie, Huron, Ottawa and Sandusky Counties Inc. LCD (tracker ID OH165882), list of travel destinations.

Date of Appearance	Signal Type	General Location
01/06/15	Cell ID	Willard, OH
01/22/15	Cell ID	Columbus, OH (likely Avnet, Inc.)
03/10/15	Cell ID	Indianapolis, IN
04/22/15	Cell ID	Chicago, IL
04/24/15	Cell ID	Rock Springs, WY
04/27/15	Cell ID	Los Angeles, CA
05/06/15	Cell ID	US/Mexico border, near Tijuana
05/18/15	Cell ID	Chino, CA (likely Golden Valley Trading)
06/09/15	Cell ID	Port of Long Beach, CA
06/25/15	Cell ID	San Francisco, CA
07/15/15	Cell ID	Near Xin Ken Zhen, China
07/18/15	Cell ID	Hong Kong / New Territories
08/06/15	GPS, Cell ID	Facility in Yuen Long, New Territories, Hong Kong (visited)
08/18/15	Cell ID	Pattaya, Thailand
09/02/15	Cell ID	Bangkok, Thailand

Site Visit: Facility in Yuen Long, New Territories, Hong Kong

On December 5, 2015, Mr. Jim Puckett, together with investigators Ms. Donxia Su and Mr. Sanjiv Pandita, visited the site indicated by the tracker at the following GPS location: 22.45776/114.01870.

There, a large LCD disassembly operation was observed with hundreds of gaylord boxes, each full of jumbled LCD screens from the US, several work stations employing about 8 people on the day of visit (Saturday), all rapidly breaking down LCDs and throwing constituent parts in piles.

Many of the gaylord boxes were labeled as "Universal Waste" with some also bearing warnings stating "Federal Law Prohibits Improper Disposal." The laborers opened the LCD in a combination of using electric screw drivers and banging the screens on the workbench. The purpose of the operation here was two-fold. Some of the panel sections were removed intact, for re-use.

The vast majority of LCDs however were being scrapped. The latter involved crudely separating the different commodity fractions of the waste, including aluminum, steel, and various plastics in the panel, all while taking no pains to prevent breakage of the mercury-bearing CCFL tubes, nor to minimize exposure to themselves, or contamination of the environment.



Figure 40. BAN investigative team member Mr. Sanjiv Pandita (left) and recycling yard operator (right) at the New Territories, Hong Kong site where the LCD deployed at the Goodwill in Willard, Ohio was handled prior to being exported to Thailand. Note Universal Waste label (see closeup in figures 43 & 46) on gaylord box. ©BAN. 2015.



Personal protective equipment such as masks or respirators was not employed by the workers. The broken CCFL tubes were scattered on the cement or asphalt of the yard. BAN obtained video and still photographic documentation of the site.

Figure 41. Last location reported from the Willard Goodwill LCD device, still sending its signal from southern coastal area of Bangkok, Thailand. Google Earth.



Figure 42. (above) CCFL tubes, which contain toxic mercury phosphors. ©BAN. December 2015.



Figure 43. (left) US Universal Waste label on gaylord box full of flat screen monitors. ©BAN. December 2015.

Figure 44. Laborer taking a break from smashing and breaking apart American LCD flatscreen monitors containing mercury CCFL tubes. ©BAN. December 2015.





Figure 45. (above) Typical view of some of the many hundreds of observed gaylord boxes full of LCD screens from the US. Most of these labeled as Universal Waste. ©BAN. December 2015.

Figure 46. (left) US Universal Waste label on Gaylord box full of flat screen monitors. ©BAN. December 2015.

Figure 47. (below) Ms. Dongxia Su (left) of the BAN investigative team on location in New Territories, Hong Kong where the LCD deployed at the Goodwill store in Willard, Ohio was handled prior to being exported to Thailand. ©BAN. December 2015.



6. Wooster, Ohio → Guiyu, China

Goodwill Region:

Goodwill of Wayne and Holmes Counties

Store Location: Wooster, OH

Device Type / Tracker ID: Printer #OH166039

Dell Reconnect: Yes

Intermediate Holders or Recyclers:

Avnet Services (Groveport, OH)

Last Reported Location: Guiyu, China

On 01/06/15, a tracker-enabled HP All-in-One printer was deployed at a Goodwill store located at 149 W Milltown Rd in Wooster, Ohio. This store belongs to the Goodwill Industries of Wayne and Holmes Counties region, which is a partner of the Dell Reconnect program.

On 02/24/15, the printer traveled to Avnet Services, a large electronics recycling facility, in Groveport, Ohio. From there, the printer headed west, presumably by rail, and arrived in Southern California on 03/28/18.

The printer exited the United States through the Port of Long Beach and arrived in Hong Kong on 04/20/15. The printer then moved into Mainland China around 04/26/15 and arrived in the infamous Guiyu area on 06/05/15.



Legality:

Any import of e-waste into Mainland China from the United States is prohibited by Chinese law (see Appendix 2: Export and the Law).

Sites Visited by BAN: None

Bear in mind that Guiyu at that time was still receiving imported e-waste from the US. Shortly thereafter the federal, state and local government have closed Guiyu to all imports.

But in June of 2015, Guiyu was still hosting hundreds and hundreds of small informal sector electronics recycling operations, cooking circuit boards, using acid baths to soak chips pulled from the boards, and breaking CRT and LCD monitors. See BAN's 2002 report *Exporting Harm* or visit our website photo gallery to see photos of these types of harmful operations.

Today, thanks to decisive action by local, state and national governments, those operations have been moved into a large industrial park and efforts are made to screen material to prevent processing of imported e-waste (see BAN photo gallery, *Guiyu December 2015 Album*¹ for pictures of the transformation).

¹ <https://www.flickr.com/photos/basel-action-network/albums/72157668006304386>

Figure 48. Part of Avnet's massive warehouse and facility in Groveport, Ohio, just outside of Columbus, Ohio. Location of tracker signal from printer deployed in Wooster, Ohio Goodwill. Google Street View. Retrieved February 17, 2016.

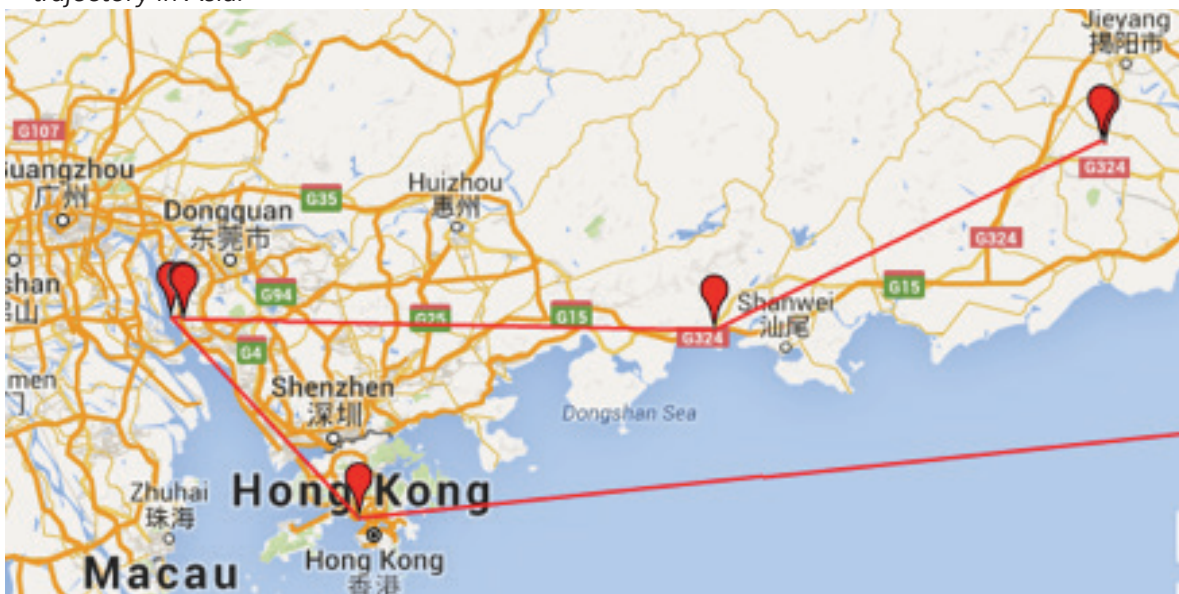


Figure 49. Goodwill Industries of Wayne and Holmes Counties printer (tracker ID OH166039), full trajectory from Wooster, Ohio to Guiyu, China.

Table 9. Goodwill Industries of Wayne and Holmes Counties printer (tracker ID OH166039), list of travel destinations.

Date of Appearance	Signal Type	General Location
01/6/15	GPS, cell ID	Wooster, OH
02/24/15	GPS, cell ID	Avnet Services, Groveport, OH
03/18/15	Cell ID	Chicago, IL
03/23/15	Cell ID	Las Vegas, NV
03/28/15	Cell ID	Port of Long Beach, CA
04/20/15	Cell ID	Port of Hong Kong
04/26/15	Cell ID	Sha Tian Zhen (between Guangzhou and Hong Kong), China
05/06/15	Cell ID	Guiyu, China

Figure 50. Goodwill Industries of Wayne and Holmes Counties printer (tracker ID OH166039), trajectory in Asia.



7. Pittsfield, MA → Hong Kong

Goodwill Region:

Goodwill Industries of The Berkshires, Inc.

Store Location: Pittsfield, MA

Device Type / Tracker ID: LCD #MA356325

Dell Reconnect: Yes

Intermediate Holders or Recyclers:

None confirmed

Last Reported Location:

New Territories, Hong Kong

On 8/27/15, a tracker-enabled Viewsonic brand LCD was deployed at the Goodwill store located at 8457 Dalton Ave in Pittsfield, Massachusetts. This store is part of the Goodwill Industries of The Berkshires Inc., which is part of the Dell Reconnect program.

Nearly two months after being dropped off, the LCD traveled to an unknown location in Groveport, Ohio where it appeared to remain for about a month. Due to the tracker being unable to give precise GPS readings the exact location of the tracker cannot be determined, however the cell tower readings are similar to the readings

Legality:

Any import of waste LCDs into the territory of Hong Kong is prohibited. (see Appendix 2: Export and the Law)

Sites Visited by BAN:

New Territories, Hong Kong

given when previous devices have arrived at Avnet Services.

One month later the device traveled approximately 7 miles north to the South Columbus area where it remained in an unknown location for nearly four months until it arrived in Commerce, California, its last known location in the United States.

On 4/17/16 the device arrived at the Port of Hong Kong, and then moved north into New Territories on 4/21/16. Finally, it gave its first GPS reading at a facility near Lam Tai W Rd on 4/24/16. The tracker was still actively signaling at the time of this report's

Table 10. Goodwill Industries of the Berkshires LCD (tracker ID MA356325), list of travel destinations.

Date of Appearance	Signal Type	General Location
08/27/15	GPS	Pittsfield, MA (initial drop off)
10/17/15	Cell ID	Groveport, OH (near Avnet Services)
11/17/15	Cell ID	South Columbus, OH
03/18/16	Cell ID	Winslow, AZ (in transit)
03/19/16	Cell ID	Commerce, CA (last US location)
04/13/16	Cell ID	Port of Hong Kong
04/18/16	Cell ID	Pillar Point Area, Hong Kong
04/21/16	Cell ID	Yuen Long, Hong Kong
04/25/16	GPS	Lam Tai W Rd, Tuen Mun, Hong Kong



Figure 51. Goodwill Industries of The Berkshires LCD (tracker ID MA356325), full trajectory from Pittsfield, Massachusetts to New Territories, Hong Kong.

publication. This facility had been visited earlier by BAN.

Figure 51 shows the full trajectory of the LCD and Table 3 lists the destinations visited by it.

Site Visit: Lam Tai W Rd, Tuen Mun, New Territories, Hong Kong

BAN's Jim Puckett, and Dongxia Su visited this location 4 months prior to the Goodwill tracker reaching it. He visited on 12/6/15 after two non-Goodwill trackers visited the same location – one in August 2015 and the other in September 2015. Location: 22.429286, 114.016976.

The site consisted of a very large tarmac area and covered storage area at the far end. When visited we did not see large amounts of personal consumer equipment but rather what appeared to be industrial or commercial electronics including specialized circuit boards. The yard was not operational as it was

visited on a Sunday. It appeared it could be a staging area rather than a dismantling site.



Figure 52. E-waste junkyard or staging area where the Pittsfield, MA Goodwill tracker enable device was sent. ©BAN December 2015.

Recyclers Implicated in Goodwill/Dell Chain of Export

As described in the methodology section (see Appendix 3: Methodology), cell ID signals are helpful in determining the general location of a tracker-enabled device at a particular time, providing information that can be used to build a geographic history of the device's journey.

However, in order to identify specific establishments that were visited by tracker enabled devices, only GPS information can be relied upon to confidently identify establishments.

Using just this GPS information, the following four companies have been identified as having hosted tracker-enabled devices that were later exported overseas: Avnet Services, Golden Valley Trading (GVT), Padnos, and Schupan & Sons.

This is data. We do not claim that these companies broke any laws, violated any standards, or were willfully involved in exportation of e-waste to developing countries.

Handing over e-waste to others for them to export does violate most standards and most companies' policies of due diligence and thus this data is cause for concern. For that reason, we review these companies' policies below. It is likely that at the very least these data points indicate a violation of corporate policies and the wishes of their customers. These four companies are summarized in Table 6 and further described in the following section.

Table 11. Summary of companies through which trackers appeared to have passed according to GPS data.

Company	Certifications	State Registered	Dell Environmental Partner
Golden Valley Trading Inc.	none	California – not registered	Unknown
Avnet Services	R2	No program in Ohio	Listed as such in Illinois
Padnos Inc.	none	Michigan ¹	Unknown
Schupan & Sons Inc.	R2/RIOS	Michigan ¹	Unknown

1. http://www.michigan.gov/documents/deq/DEQ-OWMRP-SWLAS-List_CURRENT_YR_Registered_Recyclers__505901_7.pdf

Golden Valley Trading Inc.

The only information available on the Golden Valley Trading website,¹ aside from the address and phone numbers, is the following text:

"GVT Inc. is a E-waste, Electronic Excess, Electronic Surplus liquidator and handler, a firm with a zero electronic waste landfill policy. We purchase your E-waste out right in strong pricing and turn your trash into final commodity such as gold, silver, copper, palladium, metal, aluminum, plastic. We harvest any reusable parts out of your E-waste and sell it to manufactures that can reuse them in their production line. We had established a well relationship with a lot of oversea manufactures from 10 years in business."

GVT appears three times to date as being involved in the Goodwill cases described in this report. It would appear that GVT could well be a major channel for export for the shipment of American electronic waste to Asia. How is it possible that companies and brands as sophisticated as Dell and Goodwill could allow the hazardous waste, entrusted to them by the public, to wind up in an uncertified e-waste brokerage warehouse like Golden Valley Trading?

Golden Valley Trading (GVT) is not listed as an R2 or e-Stewards certified company.

¹ <http://www.goldenvalleytradinginc.com>





Phoenix-based Avnet Inc.¹ is a company primarily involved in the distribution of electronics parts. It is listed on the New York Stock Exchange (AVT). In 2012, the company announced the launch of Avnet Integrated Resources to deliver end-to-end aftermarket services for electronics original equipment manufacturers (OEMs), service providers, and corporations. Today, Avnet Integrated Resources appears to be called Avnet Services.²

Descriptions from their website regarding end-of-life services for electronic equipment are provided below (**emphasis added**):

Avnet Services offers customers the ability to integrate end-to-end solutions that include:

- *On-site technical field services;*
- *Board level repair and refurbishment of electronic products;*
- *Extended warranty, spares management and repair parts programs;*
- *Responsible disposition of electronic products to maximize asset value at the end of service life; and*

- *R2- (Responsible Recycling Practices-) certified recycling for recovery of base material value.*

Their e-cycling benefits are described as:

Recycling solutions are vertically integrated, closed loop and 100% green compliant

Minimize risk with certified, transparent and secure destruction

As an R2 Registered company, Avnet Services is 100% committed to preventing the unauthorized dumping of electronic waste in developing countries by making this a company-wide policy and requiring that all of our certified partners pledge to this commitment as well.

Along with their commitment to our e-waste export policy, every certified recycling partner of Avnet Services is vetted through a strenuous process and held to the highest industry standards. Continual monitoring and audits ensures that our partners are acting not only in your best interest but also in the best interest of the environment.

When your material arrives at an Avnet Services facility it is unloaded, weighed, labeled and verified against the accompanying bill of lading. Our warehouse management system captures this data and alerts our client

¹ <http://www.avnet.com/en-us/Pages/default.aspx>

² <http://www.avnetintegrated.com/>

services team that your material has arrived. Utilizing a unique job ID for each receipt, **we track your material at each stage of eCycling.** From receipt, to sort, to disassembly, to final processing, this level of tracking ensures the highest level of accuracy for reporting and payment.

According to the website of the State of Illinois,³ Avnet appears to in fact be one of the mysterious environmental partners that Dell is unwilling to reveal.

However, the tracker that we observed moving to the Ohio Avnet facility (see Number 6 above) came from a Dell Reconnect Goodwill store. When we called Avnet and asked them if they were indeed affiliated with the Dell Reconnect program, Heidi Elliot, Senior Director for Marketing Communications, told BAN,

"I have asked a few people across different parts of our business and can't find anyone involved with the Goodwill/Dell Reconnect program. I did a bit of research on the program myself; what a great community recycling effort. Unfortunately, we have nothing additional to bring to the story. Avnet did win the Dell Partner of

*the Year award – that was in recognition of our embedded team's integration services/sales growth related to Dell products."*⁴

Ms. Elliot was referring to the November 2015 recognition Dell gave Avnet when it named it its Channel Partner of the year.⁵

However, if indeed Avnet is not an Environmental Partner for Dell how did it end up receiving a Dell Reconnect used printer when e-scrap in the Reconnect program is only supposed to go directly to Dell's Environmental Partners? And if Avnet is an Environmental Partner of Dell, how is it possible that Directors at Avnet do not know that? And of course, the real question of concern, is, in addition to Avnet's own assurances, with all of Dell's standards, audits and rigor, how is it possible that the printer they handled ended up in Guiyu, China?

4 Phone call with BAN researcher Eric Hopson. Feb 22, 2016 at 6:28 PM

5 <http://www.businesswire.com/news/home/20151124005158/en/Avnet-Named-Dell-OEM-Solutions%E2%80%99-Americas-OEM>

3 http://epadata.epa.state.il.us/land/eWaste/mfr_registered_recyclers.asp

Padnos Inc.

Padnos Inc.¹ is a family-owned, general scrap and recycling firm. It was founded in 1905 and is headquartered in Holland, Michigan. The company recycles “paper, plastics, metals, and more,” and takes pride in promoting social responsibility and environmental protection, as described on their website:

We value safety, quality and the environment. We believe our work makes the world a better place to live. We are proud of what we do and how we do it. We aspire to excel as leaders in the recycling industry through our quality and environmental systems. We are committed to the safety of all our employees.

Their page on electronics recycling states their commitment to responsible electronics recycling, as shown in the excerpt below (**emphasis added**):

E-scrap, such as old laptops and smartphones, contains toxic heavy metals and chemicals. If burned in incinerators or disposed of in landfills these toxic substances may be released into the air and groundwater, creating unnecessary threats to our health and environment.

Thus, when disposing of your so-called e-waste, you should approach certified electronics recyclers who follow media sanitization standards (SERI R2, NIST 800-88) and keep updated State DEQ permits to collect and process electronic scrap.

¹ <http://www.padnos.com/>



PADNOS[®]

This ensures that your scrap will not be dumped.

Recycling your old electronics at a Certified e-scrap recycler like PADNOS ensures that your old computer will not be disposed of at a landfill and cause damage to our environment or our communities.

Wyoming, MI is the home of our e-scrap recycling facility. We have a new, dedicated, and secure location over 9,000 sq ft with 24-hour video surveillance and restricted key-card access, meeting the highest standard in the electronics industry.

It must be noted that despite Padnos stating that one should only recycle “at a Certified Recycler like Padnos,” Padnos is not actually certified to either R2 or to e-Stewards – the only two available standards for electronics recyclers available in North America. Padnos is officially registered under the Michigan state Takeback program but this is not really a certification.² Padnos appears to be misleading customers in making them believe they are certified when they are not.

Reading the Padnos website one is also left with the impression that they themselves will safely recycle the e-waste equipment rather than send it along whole and unprocessed to Asia.

² http://www.michigan.gov/documents/deq/DEQ-OWMRP-SWLAS-List_CURRENT_YR_Registered_Recyclers__505901_7.pdf

Schupan & Sons Inc.

Schupan & Sons, based in Kalamazoo, Michigan, was founded by Nelson Schupan in 1968. It began as a metal scrap recycling firm. They cite their mission¹ as follows:

Our mission is to always do business with integrity. We practice integrity in everything we do.

- *We do what we say we'll do.*
- *We treat our customers the same way we want to be treated.*
- *If we make a mistake, we admit it and correct it.*
- *We price our products and services fairly.*
- *And we stand by our word.*

For almost 50 years, Schupan and Sons has been involved in recycling industrial scrap, metal scrap, and beverage containers. More recently they have advertised as being a processor for e-waste. Their e-scrap recycling falls under the Industrial Recycling branch of the company. Their e-scrap webpage² entitled "Responsible Electronics Recycling" states the following (**emphasis added**):

A piece of e-scrap is created each time we upgrade a digital device.

Although electronics recycling programs have popped up recently across the country, a lack of federal regulations adds a level of skepticism to the claims of e-cyclers. Shipping containers full of toxic

¹ http://www.schupan.com/about_1

² <http://www.schupan.com/escrap-recycling>

e-scrap leave the US borders every day to pollute the lands, waters and people of developing countries. A lot of research is required to guarantee that a recycler lives up to its claims of environmental responsibility.



Schupan Industrial Recycling has earned a trusted name in the metals recycling business for 45 years. Do not compromise your company's reputation or take a chance of possible exposure to security risks and data breaches. Partner with Schupan e-scrap for electronics recycling, re-sale, or destruction.

We offer:

- R2/RIOS certification that assures you of the safe, secure and legal recycling of your electronics

Like Padnos, Schupan is officially registered under Michigan's TakeBack program.³

And just like Padnos, the Schupan website gives the impression that the company will safely recycle the e-waste equipment and not export it whole to Asia or to partners that will export.

³ http://www.michigan.gov/documents/deq/DEQ-OWMRP-SWLAS-List_CURRENT_YR_Registered_Recyclers__505901_7.pdf

Conclusion

A Betrayal of Trust

When someone gives their old TV or computer to a recycler or to a manufacturer takeback program, they expect it to be recycled safely. They do not intend for their electronic waste to be exported to a developing country to be illegally imported and processed in an operation endangering workers and polluting the environment.

Likewise, when business leaders choose to responsibly recycle their electronic discards, they don't expect their brand to be placed at risk, their data compromised, and their reputation sullied by becoming part of the unsustainable, illegal, and unethical international trade in hazardous waste.

Nevertheless, far too often the public and much of the business community are fooled by green and glowing websites, misleading boasts of diversion from landfills, or weak or poorly enforced certification standards. And our government has not been helpful by publishing studies based on surveys and flawed data that appear to be designed to deny the problem rather than accurately identify and repair it.

BAN's e-Trash Transparency Project aims to update the status of the trade in electronic waste, utilizing for the first time, real data derived from actual waste shipments of electronic scrap placed into the disposal chain and monitored by electronic geolocation tracking devices placed within them.

The results of this project to date have demonstrated that the dirty secret of

e-waste exportation BAN first revealed in 2002 continues at very significant and damaging levels:

- 32.5% of all tracker-enabled hazardous e-waste delivered to either charities or recyclers was subsequently exported from the US to developing countries – a trade that was likely illegal.
- 39% of all tracker-enabled hazardous e-waste delivered directly to recyclers, resulted in export from the U.S to developing countries. – a trade that was likely illegal.

Some of the recyclers through which the exported tracker-enabled equipment passed were R2 Certified companies, some were e-Stewards Certified companies, and some were not certified at all.

BAN, as administrator of the e-Stewards Certification program has, needless to say, begun investigations and enforcement on the e-Stewards violators. Any e-Stewards Certified companies found to be in critical non-conformity with the e-Stewards Standard face suspension. In subsequent reports, following further investigation, we will learn more about the players in this ugly trade, and the fate of the wastes overseas.

In this first report we specifically focus on the fact that even highly reputable companies, such as Dell, Inc. and Goodwill Industries International, also are acting either dishonestly or carelessly. They have

been revealed to be part of the unsustainable chain of disposal involving export to developing countries.

By violating even their own stated policies, these corporations have created a deadly disconnect between stated intent and reality. This disconnect violates the trust of consumers and customers while seriously damaging human health and the environment.

...these corporations have created a deadly disconnect between stated intent and reality. This disconnect violates the trust of consumers and customers while seriously damaging human health and the environment.

- 13% of the tracker-enabled equipment dropped off at Goodwill stores resulted in export from the US – a trade that was likely illegal.
- 18% of the tracker-enabled equipment dropped off at Dell Reconnect Goodwill Partner stores resulted in export from the US – a trade that was likely illegal.

Why the Global E-Waste Export Trade Continues

The primary reasons that US businesses (including manufacturers, enterprise customers, and recyclers) continue to participate in and perpetuate the e-waste export tragedy are as follows:

- **Profits can be made by externalizing costs:** Economic gains can be made at the expense of others and the environment. Hazardous waste mismanagement and pollution is ultimately caused by people finding ways to externalize costs that should, by all rights, be paid by the polluter. They find ways to send toxic waste to persons or the environment that will not ever be able to present a bill for mitigating the damage and harm; this is precisely what drives wastes offshore to developing countries. Without enforced regulations or public demand for accountability to force costs to be internalized into

the price of products and services, the suffering from pollution will not cease.

- **In the United States export is not against the law:** Most countries have ratified an international treaty called the Basel Convention, which strictly controls trade in hazardous e-waste. The United States, however, has not ratified this accord nor implemented its Basel Ban Amendment as has all of Europe, which bars all toxic waste exports to developing countries from developed countries. Thus, in the US, unless the export violates US anti-fraud laws, what is criminal in the rest of the world is entirely legal here. Meanwhile it is illegal under the Basel Convention for more than 140 developing countries to import hazardous waste, like e-waste, from the United States.

- **The US government does not care about e-waste exports:** The US appears unconcerned about its disrespect for the import prohibitions of most other countries. Rather than actually creating national programs to prevent e-waste export and propose legislation to halt it, the Obama Administration has instead conducted two very expensive, yet seriously flawed, studies to characterize flows. These studies seem
- **It's too easy for a recycler to say one thing and do another:** Very few recyclers tell you on their websites that they are shunting your old equipment off to a developing country. Recyclers will not show you a picture of the specific country and recycling operation where it ends up and that it is illegal for that country to import it. They sell it to a broker and away it goes. A legitimate ethical recycler will not simply brag

The Obama Administration could lead by example and forbid the export of federal government e-waste with an executive order...

designed to provide an excuse not to act; they were not based on real data, and greatly underestimated export volumes. The federal government itself is the single largest generator of electronic waste in the world. The Obama Administration could lead by example and forbid the export of federal government e-waste with an executive order, but so far they have refused to do so.

- **The public remains largely unaware of the crisis:** The harmful impacts of toxic e-waste trade happen far away in other countries— out of sight and out of mind. Meanwhile, the public is lulled into a false sense of benevolence by the misleading use of the “green” word “recycling.” They are unaware that there is responsible recycling and then there is horribly irresponsible recycling. They are unaware that promises of diversion from landfill often mean export to Asia. They assume recyclers actually recycle, and do so in this country— sadly this is very often not the case at all.

about diverting waste from landfills, but will provide you with evidence of exactly where all of their hazardous fractions go. Until now, with our use of geolocation devices, it has been too easy to hide that information from public scrutiny. Even certified recyclers can fool their auditors and some certification programs do not forbid export of e-waste to developing countries.

- **The electronics recycling industry has not been required to be transparent:** Even large manufacturers or retailers, often as part of state-run public electronics take-back or collection programs, will not tell you where your e-waste goes. As we have seen in this report, even large respectable corporations like Goodwill, Dell, and Apple refuse to reveal to the public the names of their hazardous waste recycling and disposal partners or operations. Most state-mandated programs also do not reveal to the public this very important information.

Penetrating the Veil

MIT-SCL and BAN's development and use of electronic tracking technology has now penetrated the veil and revealed the actual truth about what happens to the public's e-waste. It is not a pretty picture and yet its viewing will hopefully lead to the reforms finally needed to end this toxic trade once and for all.

With the advent and availability of accurate, compact, and affordable tracking technology, bad actors will no longer be able to so easily hide the truth of their irresponsible activities. Now customers, civil society, and governments can actively track individual pieces of these ubiquitous

hazardous wastes and observe, as they are being shipped across the country, loaded onto ships, and smuggled overseas to substandard and often illegal operations.

To foster this greater transparency, BAN is offering this electronic tracking service to companies wishing to verify that their own shipments of e-waste are successfully arriving in legal and responsible downstream facilities and countries. Due to the success of this initial project, we have already contracted with certain government entities to do additional targeted tracking investigations.

Trash Transparency: The Public's Right to Know

Despite the effectiveness of tracking technology to verify the truth, it must be stated that transparency should be a policy and practice offered as a matter of course by Dell, Goodwill, and others that are called

upon to manage public or corporate waste. This is currently not the norm in the electronics industry, but must be for any corporation claiming to be responsible.

Just as the public has the right to know where its sewage or household waste goes and how it is managed, the public has even more of a right to know where its hazardous e-waste goes.

upon to manage public or corporate waste. One should not have to rely on getting the truth through police techniques and technologies. While these are worthy means of conformity assurance, transparency should be the norm for the entire life-cycle of hazardous wastes and materials.

Just as the public has the right to know where its sewage or household waste goes and how it is managed, the public has even more of a right to know where its

hazardous e-waste goes. This is currently not the norm in the electronics industry, but must be for any corporation claiming to be responsible. In the e-Stewards Certification a requirement currently exists that any customer of the recycler can ask and receive this basic information. That is a good first start including for all manufacturers and state programs. But we would hope that this information would also be readily available for all – on one's website and we applaud those companies like Samsung, LG, Staples, and Best Buy that are already doing this.

Corporate Responsibility – Ethical E-Waste Management

In the E-Trash Transparency Project we chose to focus part of our investigation on Goodwill and the Dell Reconnect program. However, we did this not because we suspect that they are the worst actors, nor do we have evidence that they willfully engaged in irresponsible behavior. We did this to examine what a perceived leader in the industry is doing, allowing us to postulate more vigorously on the shortcomings of the entire electronics and electronics management industries.

We do not doubt that the majority of awards and plaudits Dell has received are legitimate. Unlike most computer manufacturers, Dell has published a carefully elaborated standard for responsible recycling and an export policy which is aligned properly with the Basel Convention. Dell

using multiple techniques, and be resolved to deal with cheaters firmly. Audits, unannounced inspections, and tracking devices have become part of our toolkit in order to ensure program integrity.

It is a poor excuse in our view for a company like Dell or Goodwill to simply blame their partners for hiding the truth from them when these same companies entrusted with taking in the public's e-waste do not even tell the public who they themselves use for their waste management, where the waste goes, or how it is managed.

Rather than being caught out by public interest organizations like BAN, corporate America should proudly declare their downstream recycling partners and

The true test of their good faith, responsibility, and accountability will not ultimately be defined by the findings of this report, but by how they respond to them going forward.

is clearly a leader in this regard. Likewise, many charity organizations have probably done far less education and policy work on this important matter than has Goodwill.

The possibility that Dell and Goodwill may not have willfully caused the irresponsible behavior to occur, however, does not absolve them from it. BAN's own experience in managing the e-Stewards certification scheme for ethical electronics recycling has taught us that there are indeed numerous unscrupulous actors that will act in bad faith and view an audit as something to cheat. In this industry, it is important to constantly scrutinize vendors

methods. In this way the public can do their own research on these companies should they wish and then would be able to see clearly if their waste was managed in compliance with international law and a company's published policies. The companies themselves would be far less likely to "cut corners" if they knew the "world was watching."

The excuse given by Dell— that the list of their Environmental Partners changes too often and therefore needs to remain secret— seems hardly worthy of argument, especially given what we have now found and what is at stake. We all know that

websites can be changed from day to day and, furthermore, changing vendors frequently is surely not sound and sustainable business practice when it comes to managing a hazardous waste stream.

The notion that revealing one's waste management destinations will cause a company to lose some kind of competitive advantage is likewise not a compelling argument, especially when it is understood that we are primarily dealing with hazardous waste, not simple goods. How that waste is managed is a very serious matter of global public and environmental health.

We hope that Dell and Goodwill will follow through on all the promises they've made. The true test of their good faith, responsibility, and accountability will not ultimately be defined by the findings of this report, but by how they respond to them going forward.

And, of course, the entire electronics recycling industry and their customers must shoulder the same responsibility. Bearing in mind that Dell and Goodwill's export percentages were observed to be lower than the average, they are but one example of what we fully understand to be an industry-wide problem.

Demanding and Paying for Responsible and Ethical Recycling

Proper recycling costs more than improper recycling because the costs of environmental and social impacts and risks are internalized or accounted for in the process of responsible recycling. Recognizing and paying the true cost of responsibly recycling electronics, while allowing recyclers to profit, is vital if we are to solve the e-waste crisis.

these recyclers are now revealed as being less than responsible; many have been caught in the act of stockpiling and abandoning e-waste, burying it in holes in the ground, or exporting the wastes to developing countries.

While none of these companies should be forgiven for their malfeasance, we believe

It is the height of hypocrisy to talk a brave talk of demanding responsible recycling without paying for it.

In the absence of federal electronic waste legislation, many voluntary and state-mandated electronics manufacturer e-waste takeback programs (like Dell's Reconnect program) have been initiated. These are designed to provide consumers and small businesses with subsidized or low-cost responsible recycling channels. Yet many of

it is absolutely vital that the manufacturers, retailers, and states expecting responsible recycling are willing to pay for it. They should be ready to accept a recycling price that provides profits above the true cost of responsible recycling (all externalities internalized). It is the height of hypocrisy to

talk a brave talk of demanding responsible recycling without paying for it.

Companies like Dell and Goodwill should boast about the higher rates they pay for proper recycling and how they intend to maintain their partners in long-term relationships as a matter of policy. These relationships should be founded on principles of accountability and transparency, nurtured with the assurances that brand protection via responsible recycling is what matters. It's time to get away from the short-term profiteering mentality of paying a recycling rate that just barely skirts the commodity prices, leaving recyclers to make it work or face the pink slip.

Burning through and discarding environmental partners is a sure sign of corporate dysfunction.

Likewise, state program pricing should be set by the government, advised by relevant stakeholders and based on a true cost analysis, which is indexed flexibly to commodity price fluctuations while allowing a healthy profit.

It is our experience that most recyclers would be happy to be fully transparent and keep e-waste management domestic, legal, and responsible— as long as they are paid adequately to accomplish this task.

Call to Action

Extrapolation from our initial sampling reveals that the potential volumes of e-waste exported to unsustainable operations by the Goodwill/Dell Reconnect program alone are shocking. Yet, Goodwill and Dell's volumes are only a small fraction

This should not be the reality considering the amount of work done by many to date to expose the e-waste export problem and promulgate policy globally to prevent it (see Appendix 1: A Short History of BAN's E-Waste Campaign). As early as 2002,

...underlying all of this bad behavior lies the refusal to recognize and pay the true cost of responsible, ethical, and legal recycling.

of what is generated in the United States at large, and the mishandling of e-waste by the rest of the recycling industry is taking place at much greater rates. The specter then of the real export volumes that may currently flow from the United States to dangerous and polluting operations in developing countries is frightening.

when BAN published "Exporting Harm," a warning bell was rung, and now more than a decade later it appears that rather than continuing to heed that warning, far too many are playing the game of "I did not hear that".

While we all share some responsibility for the continuation of this unethical practice, it is most appropriate to lay the primary

responsibility for this failure on major e-waste generators, the manufacturers of these toxic products, and on the federal government.

Far too concerned with trying to increase their short-term profits or avoid costs, major enterprise companies (including most manufacturers), have not insisted on the highest standards or enforced and

wrong with the picture. The distorted picture not only includes serious harm to human health and the environment but a loss of green jobs and business as well.

It is our hope in publishing this report that the ugly underbelly of our massive electronics-consuming society, having once again been exposed as fraudulent and unsustainable, will provide the impetus

The distorted picture not only includes serious harm to human health and the environment but a loss of green jobs and business as well.

verified the standards they have for responsible recycling. This has been to the detriment of the health of people, the planet, and even their own long-term corporate interests. The same can be said of federal and state governments, which have refused to crack down on the export trade that violates international law, and have failed to create a functional nationwide producer responsibility mechanism. They have all allowed "corners to be cut," have settled for weak certifications as being good enough, and at the same time have refused to be transparent and open about their actual disposal chain. And underlying all of this bad behavior lies the refusal to recognize and pay the true cost of responsible, ethical, and legal recycling.

While electronics manufacturers and their export brokers continue to fare very well economically, responsible and sophisticated US recyclers are increasingly facing bankruptcy or conducting malpractice. When manufacturers control so much of the pricing for recycling services provided by others, there is something dreadfully

once and for all to create real solutions and models that ensure our electronics industry is supported and required to truly embrace accountability and sustainability.

Clearly the days of being able to hide irresponsible waste activities are over. We aim to continue to deploy trackers as long as it is necessary to move our nation's e-waste management model from a losing game of hide-and-seek to a game we all can win -- a responsible circular economy. The day to begin true reform has arrived.

BAN will be publishing more reports based on the findings of the e-Trash Transparency Project in the near future. In subsequent reports we will be taking a hard look at the fate of the other 154 tracker-enabled waste printers and monitors that were delivered directly to recyclers. There is much more to learn from our data and more recommendations will follow.

However, on the basis of the discoveries highlighted in this report, BAN makes the following recommendations:

Recommendations

1. **E-Trash Transparency:** BAN calls on all recyclers, electronics manufacturers, enterprises, and governments taking electronic waste from the public to be willing to tell the public at large via their websites where they send their e-waste, who will manage it, and how. Information provided should include all downstream recyclers, refurbishers, facilities involved, and the countries in which they are located.
2. **Federal e-waste export ban:** We call on the Obama Administration, via executive order, to ensure that the export to non-OECD countries of any federal e-waste considered hazardous under the definitions of the Basel Convention be prohibited. The US federal government is the world's single largest generator of electronic waste, yet it continues to ignore internationally-accepted trade norms on where and how this waste should be managed. We are far behind most of Europe and many other countries in this regard, and remain the only developed country in the world that is not a Party to the Basel Convention. Until congress is capable of ratifying international agreements again, the Executive Branch deciding to properly handle the federal government's own e-waste would be an important first step to catch up with the rest of the world. And not only would we begin to protect the global environment but we would also provide thousands of recycling jobs here at home.
3. **All e-waste should be considered Universal Waste:** Universal Waste is a designation used for post-consumer waste which contains hazardous substances. Federally-designated Universal Waste falls under the export control procedures of the Resource Conservation and Recovery Act (RCRA) which requires consent from the importing country. As most of these countries are forbidden to import this material from the United States, the mere act of requiring consent will erect a dam against the flood of e-waste from our shores.

- 
4. **Electronic tracking to become an expected verification mechanism:** BAN urges all enterprises and institutions to include the expectation to place electronic tracking devices into their recyclables. Contractual agreements should ensure downstream due diligence and conformity with transactional expectations and requirements. It is your right and indeed your responsibility as a customer of recyclers to know where your hazardous waste goes.
 5. **Use only ethical recyclers that abide by the Basel Convention and Basel Ban Amendment:** Your hazardous waste should only be handled by the most ethically responsible recyclers available. The easiest way to accomplish this is by finding an e-Stewards Certified Recycler (www.e-stewards.org). It was precisely due to the problem of unethical and unsustainable exportation of hazardous electronics to developing countries that the e-Stewards Certification was developed. The e-Stewards program is the only voluntary certification available in the United States for electronics recyclers that is compliant with the Basel Convention and its Ban Amendment - the international accords which have been accepted by the vast majority of countries and trading partners in the world. e-Stewards recyclers are also held to the highest standards of accountability; any violations involving willful export of hazardous waste will result in suspension.
 6. **Recyclers, cities, and institutions urged to join e-Stewards program:** Those companies involved in recycling or refurbishing e-waste or used electronic equipment are urged to become e-Stewards Certified Recyclers. All other companies and institutions are urged to become e-Stewards Enterprises. For more information on these programs visit: www.e-stewards.org.
 7. **All OEMs and all voluntary or state-mandated producer responsibility schemes must review and revise their price structure:** Following the crash in commodity prices for plastics and metals, prices paid to recyclers must be increased to ensure sustainable profitability for recyclers. Prices in extended producer responsibility (EPR) takeback schemes cannot be under the sole control of OEMs, but rather must be set by a fair, multi-stakeholder advised, and state-run process.

Appendix 1: A Short History of BAN's E-Waste Campaign

Basel Action Network (BAN) was founded in 1997 to continue the mission and work of Greenpeace International's Toxic Trade Campaign that ended in 1996. BAN's mission is "to champion global environmental health and justice by ending toxic trade, catalyzing a toxic-free future and campaigning for everyone's right to a clean environment."

BAN serves as a watchdog of the Basel Convention on the Transboundary Movement of Hazardous and Other Wastes and their Disposal (Basel Convention

1989), a United Nations (UN) treaty designed to control or prohibit export of hazardous wastes to developing countries from developed countries. BAN seeks to enforce the Basel Convention and the Basel Ban Amendment (1995). The Basel Ban Amendment was passed as a decision and proposed amendment to the Basel Convention itself, which when in full force will effectively prohibit the export of all hazardous wastes including most electronic wastes from being exported from developed to developing countries.

Exporting Harm: Discovering Guiyu

In 2002, BAN published the report and film *Exporting Harm: The High-Tech Trashing of Asia*, the documentary that revealed for the

first time to a Western audience the fate of their old computers, TVs, and other types of techno-trash or "e-waste."



What BAN discovered during our December 2001 visit was a cluster of villages in the township

Figure A1: Boy on Guiyu e-waste dump from the report "Exporting Harm." This lad came to symbolize the newly discovered e-waste crisis. ©BAN 2001.

area known as Guiyu in Guangdong province, China.

This area had been unknown up to that point, quietly become a hidden dumping ground for massive volumes of the world's toxic e-waste. In the course of three days, BAN's founder, Jim Puckett, working with Chinese interpreter and activist Clement Lam, captured the previously unknown horror of informal recycling of foreign e-waste as it was being practiced in China.

BAN's cameras and chemical analyses revealed highly polluting and harmful methods of "recycling" involving: burning, smashing, melting, and chemical striping... all conducted without adequate personal protection of the workers, their children, and the surrounding community.

Exporting Harm placed a spotlight on a new form of corporate and personal irresponsibility. Suddenly everyone involved in manufacturing, consuming, or disposing of an electronic device became suddenly aware of their role in a grand scheme of globalized environmental injustice.

The revelation became pivotal for the Parties (ratifying countries) of the Basel Convention. Policymakers and activists working at the nexus of human rights and the environment were suddenly sensitized to a new form of exploitation, but the discovery had the greatest implications for the electronics manufacturing and recycling industries. These industries, along

Technology's Toxic Trash Is Sent to Poor Nations

By JOHN MARKOFF

SAN FRANCISCO, Feb. 24 — The global export of electronics waste, including consumer devices, computer monitors and circuit boards, is creating environmental and health problems in the third world, a report to be issued on Monday by five environmental organizations says.

The report says that 50 to 80 percent of electronics waste collected for recycling in the United States is placed on container ships and sent to China, India, Pakistan or other developing countries, where it is reused or recycled under largely unregulated conditions, often with toxic results.

The groups said there were no precise estimates of the amount of such waste currently created by the disposal of obsolete consumer electronic and computing gear. The Environmental Protection Agency estimated last year, however, that in 1997 as many as 3.2 million tons of "e-waste" ended up in United States landfills and that the amount might increase fourfold in several years.

The groups also cited National Safety Council estimates that as many as 315 million computers have or will become obsolete from 1997 to 2004, generating a wide range of potentially toxic wastes.

For example, each color computer monitor or television display contains an average of four to eight pounds of lead, which can enter the environment when the most



Figure A2: First article based on BAN's *Exporting Harm* report on Guiyu discovery—the story that started it all. ©New York Times 2002.

with large institutional generators of electronic waste such as major corporations and governments, were suddenly thrust into the spotlight as BAN brought back photos not only of gross pollution and toxic exposure, but of asset tags identifying the corporate and institutional origins of individual devices, as well as the brand logos of electronic devices openly burning and melting. The photographs showed beyond a doubt where the toxic e-waste had come from and who was responsible for this new environmental concern.

Upon publication, BAN interviewed many US electronics recyclers and was unable to find a single company that was not exporting hazardous electronic equipment or fractions to developing countries. Virtually everyone who was involved in the manufacturing, use, and disposal of electronics was caught in the act of "exporting harm", all carried out in order to avoid the higher costs of more carefully and safely recycling the material at home.

Re-Use Abuse in Africa: The Digital Dump

A few years later in 2005 BAN travelled to Lagos, Nigeria and, after discovering similar conditions, released another report and film entitled "The Digital Dump: Exporting Reuse and Abuse in Africa." This time the exports were done under the name of reuse – that is the exports went first to the vibrant repair and refurbishment market in Lagos supposedly for resale, but in fact much of the imported scrap material was actually non-repairable and simply dumped in waysides outside of the marketplace.

Much of the discarded electronics found in Lagos was identifiable by asset tags and by the forensic examination of hard drives, revealing not only the former users but their private data as well. The Digital Dump report and film were also responsible for prompting a team of Danish journalists to visit neighboring Ghana and their markets for the first time. There the now infamous Agbogbloshie e-waste dump



Figure A3: Scavenger boy on the e-waste dump outside of the Alaba Market in Lagos, Nigeria ©BAN 2005.

outside of Ghana's capital city of Accra was discovered.

The Digital Dump provided an impetus for the 8th Conference of the Parties of the Basel Convention, held in Nairobi, Kenya in 2006 and resulted in an outpouring of concern for waste dumping in Africa and e-waste in general. At that meeting, the Nairobi Declaration on the Environmentally Sound Management of Electronic Waste¹ was established, and the European Commission announced that they would contribute one million euros to assist in addressing the e-waste crisis in Africa. That donation spawned the Basel Convention's

¹ <http://archive.basel.int/meetings/cop/cop8/docs/16eREISSUED.pdf> (see annex IV)

Figure A4: Melted imported CRT from the routine burning of e-waste behind the Alaba market in Lagos, Nigeria. ©BAN 2005.





E-waste Africa Program.² The Digital Dump is also said to have been instrumental in the European Union’s (EU) decision to

2 <http://www.basel.int/Implementation/TechnicalAssistance/EWaste/EwasteAfricaProject/tabid/2546/Default.aspx>

prevent the export of any e-waste that has not been declared functional prior to export. This policy guidance eventually became law in the 2012 update (recast) of the EU Directive on Waste from Electronic and Electrical Equipment (WEEE).

Shining the Spotlight

From the years 2008 to 2010, BAN was instrumental in harnessing mainstream media outlets and government investigations to spread the word about the global dumping of e-waste and the need for developed nations to be more responsible in controlling indiscriminate exportation, especially in the United States which has never ratified the Basel Convention. BAN assisted the US Government Accountability Office (GAO) in creating a critique of the US Environmental Protection Agency’s (EPA) lack of attention to these harmful exports entitled, “EPA Needs to Better Control Harmful US Exports through Stronger Enforcement and More Comprehensive Regulation”.³ BAN also appeared in numerous major

media programs and journals, including CBS’s 60 Minutes (“The Wasteland”), 20/20 on ABC, Marketplace on CBC, Frontline on PBS (“Ghana: Digital Dumping Ground”), Fresh Air on National Public Radio, and also featured in National Geographic Magazine.



3 <http://www.gao.gov/products/GAO-08-1044>



Figure A5: BAN’s Jim Puckett with Mr. Scott Pelley of CBS’s 60 Minutes, in Guiyu, filming “The Wasteland”. ©CBS 2008.

Birth of e-Stewards Certification

Instead of focusing its attention on more exposés of a problem that clearly had global dimensions, and due to the particular problem of the United States, BAN decided in 2008 to create a market-based solution to address the global e-waste crisis. The biggest volume of the e-waste trafficking was that which was pouring out of the United States. This source was due largely to the fact that the US was not a Party to the Basel Convention and had no national legislation to prevent the export of hazardous electronic waste to developing countries. However, we believed that in the United States and around the world there was a market for responsible recyclers, and once the public and enterprise companies knew of the problem of the dumping of e-waste in developing countries, they would seek out recyclers that would not engage in such irresponsible behavior. BAN began work on creating a new standard (best practices) which could be used as requirements in a third-party audited Certification program. However, when the US EPA decided to convene a multi-stakeholder process to create a best-practices document, we decided to put our effort on hold and work hard to make the EPA effort a success.

BAN with the Electronics Take Back Coalition worked diligently in that effort which came to be called R2. However, when the EPA agreed with some of the industry participants to allow in R2 exports of e-waste that would actually violate international law contrary to what was agreed at the outset, the participating environmental groups chose to walk away. Not to be discouraged in achieving true reform, leaders in the electronics recycling industry urged



BAN to get back to work to create its own truly responsible standard that would correct the shortcomings of R2 and embrace the Basel Convention.

In April of 2010, the e-Stewards Standard and Certification Program was launched by BAN. Today, it provides the most robust standard in the world for responsible recycling and re-use of electronic waste. The e-Stewards program is supported by major corporations and institutions such as: Samsung, LG, Alcoa, Boeing, Wells Fargo Bank, Bank of America, along with many American cities, including Kansas City, San Francisco, and Seattle. It also has the support of over 70 environmental groups, including: the Electronics TakeBack Coalition (ETBC), Greenpeace, and the Natural Resources Defense Council (NRDC). For more information on e-Stewards, visit the program website at www.e-stewards.org.



Container Tracking – Citizen Enforcement

During the years of development of the e-Stewards program, BAN continued to monitor global dumping sites around the world as well as begin to watch the loading docks of US and Canadian electronics recyclers, photographing intermodal¹ sea-going containers and the container numbers, which allowed them to be traced across the world.

BAN alerted authorities, particularly in Hong Kong, to more than 100 exports, most of which proved to be illegal. This container tracking proved to be very useful in determining overall flows of e-waste from North America. We were surprised to see so little moving to Africa from the US but attributed that to the fact that West African nations, since our release of the Digital Dump, had made a serious effort to prevent imports.

For the first time, BAN was able to identify Hong Kong as the major port of entry for North American e-waste. A long-time e-waste broker in a Kowloon warehouse, on hidden camera while filming the PBS Frontline documentary, corroborated our findings by stating that the port of Hong Kong alone received about 50 – 100 containers each a day of e-waste depending on whether commodity prices were low or high.

This container tracking by BAN enabled the US government to prosecute its first major e-waste export indictment against Executive Recycling of Denver, Colorado. That company was eventually charged with multiple counts of criminal acts of fraud and violations of the Resource Conservation and Recovery Act (RCRA),

¹ Intermodal containers are the seagoing containers designed to be trailered on trucks, carried on trains and loaded onto container vessels for foreign ports. Figure A6 shows an example of an intermodal container.

Table A1: BAN Container Tracking from North American Ports to Foreign Destinations 2008 - 2013

Country	2008	2009	2010	2011	2012-13	Total	%
Hong Kong	58	32	32	26	28	176	62
China	5	5	10	5	2	27	10
Pakistan	1	4	0	2	8	15	5
Vietnam	6	2	5	1	0	14	5
Indonesia	1	1	10	0	0	12	4
Malaysia	8	0	0	0	0	8	3
Taiwan	1	5	0	1	0	7	2
Thailand	1	1	2	0	0	4	1
South Korea	3	0	0	0	0	3	1
Macau	0	0	0	3	0	3	1
Singapore	0	1	1	0	0	2	1
Countries receiving one container: Belgium, Côte d'Ivoire, Dubai, Egypt, Honduras, India, Japan, Nigeria, Peru, Saudi Arabia, South Africa, Uruguay.	12	5					
TOTAL						283	

resulting in with sentences including seven-figure fines and jail sentences.¹

BAN also exposed a Chicago area recycler named Intercon Solutions that wanted to become an e-Stewards Certified recycler. At the same time, they were undergoing certification in the e-Stewards program, we happened to have volunteers photographing intermodal containers around Chicago.

At Intercon they spotted two containers, one of which was exported to Hong Kong. We subsequently informed the authorities there and in Hong Kong, customs and Environmental Protection Department officials opened the containers and declared them to be full of cathode ray tubes (CRTs)

1 <http://www.justice.gov/usao-co/pr/executive-recycling-company-and-executives-sentenced-fraud-and-international>



and batteries – both illegal to import into Hong Kong or Mainland China.

We announced Intercon’s illegal export publicly and barred them from becoming an e-Stewards Certified recycler for two years. One year later after losing substantial business, Intercon sued BAN for defamation. In the meantime, whistleblowers who heard about the lawsuit sent us hundreds of internal documents on the extensive exporting practices of Intercon -- enough to make Executive Recycling look like amateurs.² Intercon subsequently went out of business before our defense case could go to trial.³

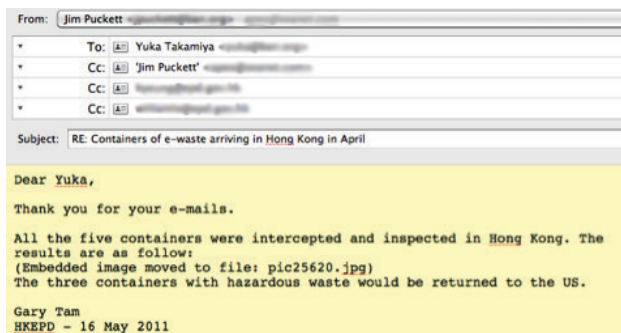
2 [http://wiki.ban.org/Intercon_Solutions - Evidence_.26_Supporting_Documents](http://wiki.ban.org/Intercon_Solutions_-_Evidence_.26_Supporting_Documents)

3 <http://www.ban.org/news/2015/10/22/e-waste-recycler-lawsuit-against-environmental-group-dismissed>

Figure A6. (Left) Photograph taken by BAN volunteers of the infamous TGHU 950672 container at Intercon Solutions, a Chicago area recycler.

The container was subsequently exported to Hong Kong and determined to be contraband after BAN notified Hong Kong authorities. Intercon later sued BAN for defamation. ©BAN 2011.

Figure A7. (Below) E-mail correspondence with Hong Kong authorities regarding the 5 Intercon containers they inspected.



Container No.	Date of container inspection	Hazardous Waste Found
YMLU4855029	28/4/2011	No
MSKU1228602	26/4/2011	CRTs & Batteries
TGHU9506276	5/5/2011	CRTs & Batteries
SEAU8674369	29/4/2011	No
MVIU0015156	11/5/2011	Batteries



CRT Flood at the Vietnam-Chinese Border

In the course of investigating the destinations of American e-waste including that from Intercon Solutions, BAN discovered a massive flow of hundreds of intermodal containers a week going to Haiphong, Vietnam. The e-waste was not destined for Vietnam, but rather it was being taken off of the ships in Haiphong, loaded onto trucks, and then quickly driven up the highway 260 kilometers due north to the Vietnamese border town of Mong Cai, an entry point to southern China via the border town of Dongxing and one of the most notorious smuggling routes in the world.

There, BAN's volunteers witnessed an amazing sight of about 30-60 intermodal containers a day being backed up to the Beilun River (in Chinese) / Ka

Figure A8. Sampan boats being loaded at the riverbank with US CRTs, in a massive smuggling operation that went on for years at Mong Cai, Vietnam near the Chinese border. ©BAN 2010.

Long River (in Vietnamese) where they were opened and unloaded piece-by-piece by a small army of temporary workers.

Under the watchful eye of Chinese dealers and the Vietnamese army, the workers

Figure A9: Containers from the US opened at the banks of the Ka Long River, Mong Cai, Vietnam. ©BAN 2010.



would carry the equipment by hand from the containers to open sampan boats lined up on the banks to take the American CRTs and computer waste up the river and across to the Chinese side. Once upriver, BAN investigators witnessed Chinese smugglers offloading the American e-waste from the boats and placing it on small trucks that had driven down dirt roads, which laced miles of the riverbanks on the Chinese side.

BAN's best estimates conclude that this activity took place, weather permitting (approximately 200 days each year) for the 8 years between 2007 and 2014 and averaged about 30 containers per day. Such an

estimate would equate to 48,000 containers (1,200,000 tons) passing this way, in a slow-motion tsunami which carried a very significant volume of North American televisions and computer monitors into China during these years.

It was this flood of e-waste that prompted BAN's interest in tracking technology. While BAN was able to witness the massive flows of e-waste crossing into China from Vietnam, we could not by ourselves discover where the Chinese trucks finally delivered the CRTs. We needed another way of tracking waste beyond simple shipping container data -- a way that could show us the final endpoint.

Figure A10: Sampans being loaded at the riverbank with US CRTs, in a massive smuggling operation that went on for years at Mong Cai. ©BAN 2010.



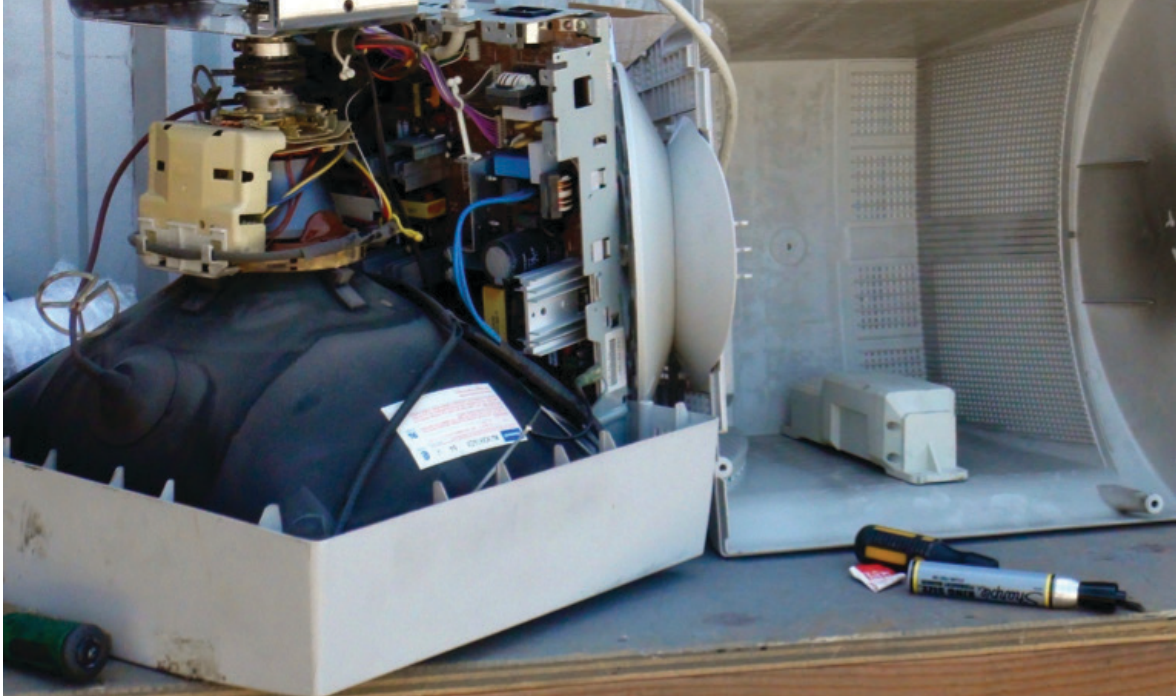


Figure A11: Tracking device ready to be mounted with epoxy inside the housing of a CRT. Los Angeles, California. ©BAN 2011.

MIT Senseable City Lab Points the Way: Trash Track

While researching the potential for e-waste tracking, we discovered the Massachusetts Institute of Technology Senseable City Lab's Trash Track program¹ and were intrigued by its success. The core work of the Senseable City Lab at MIT is to combining sensor technology, data analytics, and actuation to improve urban environments.

Over the last 7 years, they have applied this approach to tracking urban waste. By gathering fine-grained location data on the movements of waste and waste collectors, they were able to shine light on the waste management chain with the goal of making stakeholders more accountable.

In 2009 the MIT-SCL launched its first project using geolocation devices to track

waste materials disposed after consumption, called "Trash Track". The project was triggered by the question: Why do we know so much about the supply-chain and so little about the 'removal-chain'?

With the help of researchers and volunteers, MIT-SCL tagged waste objects in Seattle, New York, and London. Objects ranged from corrugated cardboard boxes and newspaper to aluminum cans and electronic waste. In the Seattle experiment, tracking sensors showed that household hazardous and electronic waste traveled further and visited more intermediate facilities than other types of waste.²

¹ <http://senseable.mit.edu/trashtrack/>

² Offenhuber *et al*, 2013, p. 150

MoniTour: Tracking CRTs from California to China

BAN watched the progress of the project closely and sure enough, the technology seemed to work well and was able to reveal the destination of trash within a few weeks of deployment.

We contacted MIT-SCL about our special need of learning where the end-points of the border crossing e-waste might be going and finding this out with trackers capable of operating for a much longer period of time. This effort, nicknamed MoniTour, began in 2011 and involved deploying trackers with larger batteries on waste cathode ray tubes (CRTs). It was done quietly as a partnership between BAN and MIT-SCL to solve the Vietnam to China CRT flow riddle.

The first round of ten trackers deployed in Southern California in 2011 saw five exported -- four to China and one to Malaysia. And sure enough, two of these showed their pathways as having moved across the border at the same Mong Cai smuggling site we had previously uncovered. The trackers then moved north and stopped reporting in the area around Guangzhou in Guangdong Province of China.

BAN next travelled to those two Chinese locations -- the GPS end-points of these trackers. However because the trackers

themselves were attached to the plastic housings of the CRT monitors and not to the glass, what we discovered were only the destinations for the plastic and not the more hazardous CRT glass or circuit boards. Because the importation of CRTs was highly illegal in China, the plastics recyclers were moreover unwilling to reveal to us where the glass and circuit boards from the imported monitors and TVs ended up.

So BAN and MIT-SCL followed up the project the next year in 2012 with trackers mounted inside the CRT glass tubes, but that experiment likewise failed to lead us to the glass importation locations in China. Very soon thereafter in 2013, the Chinese government swept into the border area of Dongxin, conducting a major enforcement operation with smugglers apprehended. Barriers were erected and border agencies restructured, effectively ending the



Figure A12 (above): Graham Kaplan and Colin Groark, readying a tracker battery. Los Angeles, CA. ©BAN 2012.



Figure A13 (left): Graham Kaplan (BAN) and Dietmar Offenhuber (MIT-SCL) in Los Angeles after a day of delivering CRTs with trackers. ©BAN 2011.

smuggling we had witnessed along the river for so many years.

This initial collaboration with MIT-SCL led BAN to realize the efficacy of tracker technology. We soon began to envisage doing tracking on a much larger scale.

Waste Trade Denial

Over the past few years, there have appeared several studies and academic articles asserting that groups condemning e-waste export have their facts wrong and that in fact very little e-waste is really being exported from countries like the United States.

Unfortunately, these articles were not based on field studies actually observing real trade and movement, but rather on generic trade data of proxy commodities and by conducting voluntary surveys. Neither of these techniques accurately can determine true flows of e-waste trade. Following these misleading studies, some have written opinion articles in trade journals that have even gone so far as to suggest that environmental groups have perpetuated a myth

Figure A16 (right): Another computer plastics sorting operation from where a tracker sent its last signal. Guangdong Province, China. ©BAN 2012.



Figure A14 (above): BAN Researchers Colin Groark and Graham Kaplan delivering a CRT monitor to a recycler in Los Angeles. ©New York Times 2012.



Figure A15 (above): Computer plastics sorting operation from where a tracker sent its last signal. Guangdong Province, China. ©BAN 2012.





Figures A17, A18: Where another CRT tracker ended up in Monitour Project. Penang, Malaysia recycler with dumpsite. ©BAN 2012.

in their photographic documentaries. In August of 2015, BAN published an article in e-Scrap News magazine entitled “Exporting Deception: The Disturbing Trend of Waste Trade Denial.”¹

We asserted in that article that asking industry to describe their own export activity was inherently biased. Likewise, using trade data, which actually has no defined categories for e-waste, is also fatally flawed.² What was needed instead was precisely what was recommended at a stakeholders’ workshop held on June 21, 2011 at the United States Environmental Protection Agency in Washington, D.C.

As can be seen in the following chart published from the summary report³, partici-



pants rated the use of electronic tracking as being the most promising and effective way to determine actual waste flows. Unfortunately, the government chose to ignore the advice of the stakeholder group, citing high costs and difficulty.

Rather than continue to rely on dubious studies based on poor data, BAN decided to do what the government said was too difficult. We sought the funds necessary to conduct a study using real data -- something the stakeholders called on the government to do with taxpayer money in the first place.

¹ <http://www.resource-recycling.com/site-content/publications/articles/Puckett0815ESN.pdf>

² On January 20, 2016, BAN published the following critique of an academic article by Josh Lepawsky regarding use of tariff codes to characterize e-waste trade flows: http://wiki.ban.org/images/9/93/Lepawsky_Issues.pdf

³ <http://msl.mit.edu/publications/CharacterizingTransboundaryFlowsofUsedElectronicsWorkshopSummaryReport%201-2012.pdf>

Figure A19. (Right)
 Chart from 2011 EPA workshop.

Figure A20. (Below)
 Cartoon criticizing the absurdity of the e-waste export denial campaign. By Monica Huang. ©BAN 2015.

Figure 1 | Results of participant voting exercise for most favored participant-proposed characterization approach



From: Characterizing Transboundary Flows of Used Electronics: Summary Report (2012).

The Body Shop Grant

The Body Shop Foundation charity exists to “fund charitable organizations or projects that are changing the world for the better”⁴. In 2013 BAN contacted the Body Shop Foundation about the need to do a

revolutionary tracking project to uncover the truth of the global waste trade and help make the world more just and sustainable. We are very grateful to have received their generous grant to begin our work. The resulting e-Trash Transparency Project is the first comprehensive examination of e-waste flows using electronic tracking ever conducted.

⁴ <http://thebodishopfoundation.org/>



Appendix 2: Export and the Law

The export of hazardous e-waste to developing countries is not only damaging to people and the environment, as revealed in BAN's reports *Exporting Harm* (2002) and *The Digital Dump* (2005), and in numerous articles by scholars and journalists, it is also likely to be illegal under international and national laws.

While possessing a strong understanding of the law with respect to the international trade in hazardous waste, BAN nevertheless will never characterize any particular shipment as being illegal, as that is a determination that must be made by the government in any jurisdiction. Rather we will state that the export is "likely" to be illegal based on known prohibitions found in legislation and international law.

The Basel Convention (1992 entry into force)¹ from which BAN takes its name, is an international treaty designed to prevent the uncontrolled export of hazardous wastes, in particular to developing countries. In 1995, the Basel Convention adopted a decision to amend the Convention to prohibit all exports of hazardous wastes moving from Annex VII countries (EU, OECD member countries and Liechtenstein) to non-Annex VII countries.² This special agreement, known as the Basel Ban Amendment, is not yet in legal force internationally, but is implemented into national laws already by many European and developing countries, including China.

¹ <http://www.basel.int/>

² <http://www.basel.int/Implementation/LegalMatters/BanAmendment/Overview/tabid/1484/Default.aspx>

The Basel Convention defines hazardous electronic wastes as whole equipment or parts that are non-functional, and that possess listed hazardous constituents (Basel Convention Annex I) in quantities that exhibit listed hazardous characteristics (Basel Convention Annex III). Based on these definitions, the most commonly found types of hazardous e-waste are equipment or parts containing lead-soldered circuit boards, mercury-bearing LCDs or switches, cathode ray tubes, and batteries (containing lead, cadmium, or mercury).

The e-Trash Transparency Project placed trackers into printers (containing leaded circuit boards), mercury-bearing LCD screens, and cathode ray tube (CRT) monitors containing lead and sometimes cadmium compounds. Each of these devices are then considered to be hazardous waste under the Basel Convention (international law) when non-functional. Each of the deployed devices was rendered non-functional and non-economically repairable.

Most countries in the world, including Thailand, China, and its Special Administrative Region – Hong Kong – are Parties to the Basel Convention.³ The United States and Taiwan, however, are not. The Basel Convention does not allow any hazardous wastes to move between non-Party and Party countries unless there is a special bilateral or multilateral agreement in place.⁴ The US has only entered into

³ https://treaties.un.org/Pages/ViewDetails.aspx?s-rc=TREATY&mtdsg_no=XXVII-3&chapter=27&lang=en

⁴ Party to non-Party Ban, found in the Basel Convention at: Article 4, para. 5; Exception found at Article 11.

one such an agreement with the member states of the Organization for Economic Cooperation and Development (OECD). Taiwan is not considered a legal nation state under the United Nations so none of the Basel Convention rules apply to them.

The United States

The United States is the only developed country in the world that is not a Party to the Basel Convention. Indeed, they are one of only two countries, together with Haiti, that signed the Convention in 1989 (signaling intent to become a Party) but never ratified. The United States has also never supported the Basel Ban Amendment despite its widespread global support from European countries and developing countries. In 2008 the Government Accountability Office (GAO), the investiga-

What follows is a quick review of the legal status of waste import and export for the countries / territories involved in this report.

glass.⁶ The CRT Rule requires that anyone who exports CRTs for materials recovery or recycling (dismantling) must obtain notification and consent from the receiving foreign government via the US EPA prior to export and register with the EPA. However, CRTs have not been exported by Goodwill/Dell, the subject of this, Part 1, of our report so these controls were not applicable.

Prior notification and consent is also required for the export of what are consid-

The United States is the only developed country in the world that is not a Party to the Basel Convention.

tive arm of the US Congress responsible for internal audits and review, released a scathing critique against the US government's failure to control exports of hazardous e-wastes.⁵

The only legislation that has even a small impact on the export of e-waste from the US to developing countries is known as the "CRT Rule" found in the Resource Conservation and Recovery Act of 1976 as amended (RCRA). This rule only governs some limited restrictions on the export of cathode ray tube (CRT) monitors or CRT

ered to be "Universal Wastes" by federal statute.⁷ Universal Wastes are certain post-consumer wastes which would normally be considered hazardous, but are instead designated as Universal Wastes to facilitate their proper recycling and management. However, most electronic waste is not designated by the federal government as Universal Waste. According to the EPA's Tracy Atagi, even LCD monitors containing mercury-laden cold cathode fluorescent lamps (CCFLs) are not Universal Waste despite the fact that they contain

⁵ <http://www.gao.gov/products/GAO-08-1044>

⁶ <http://www3.epa.gov/epawaste/hazard/international/crts/index.htm>

⁷ 40 CFR part 262, subpart H

lamps and mercury-bearing equipment which are two of the triggers for Universal Waste designation.

Unlike all developed countries in the rest of the world, LCDs and printers and many other e-wastes are not subject to any

Even though the US government is well aware that exports leaving US shores are illegal for our trading partners to import, our government does nothing about this.

States can designate materials as Universal Wastes beyond the Federal listings. California, for example, considers LCD screens to be a Universal Waste. However, state designated Universal Wastes are not subject to the federal export restrictions under RCRA. This is an unfortunate loophole in the law. As can be seen in our field trips to Asia to investigate tracker endpoint locations, many of the boxes we found were labeled as Universal Waste, presumably these labels are from state programs, like California's.

export controls by the United States. Thus it is that even though the US government is well aware that exports leaving US shores are illegal for our trading partners to import, our government does nothing about this.

→ In summary, the United States fails to control the export of any of the devices subject to this report. Nevertheless, once these hazardous e-waste devices are exported to a Basel Convention Party these shipments are likely to become criminal traffic under international law.

China

China is a Party to the Basel Convention and was an early supporter and ratifier of the Ban Amendment. As a Party they adhere to the Party-to-non-Party trade prohibition. This means that trade between themselves and a non-Party like the United States for any wastes covered under the Basel Convention is illegal unless a special bilateral or multilateral agreement is formed between the countries. No such agreement is in place between the US and China.

Secondly, China has its own national import ban on a comprehensive list of e-wastes from any country. This list includes any

equipment containing circuit boards as well as all forms of display screens. This prohibition list was first established in 2000 and has been updated many times. But even at that early stage included second-hand electronic equipment and e-waste in the "List of Prohibited Goods to be Imported for Processing or Trade."¹

Finally, China has implemented the Ban Amendment into their national legislation, so they cannot accept hazardous e-waste imports from any country listed in Annex

¹ http://archive.ban.org/library/china_list.html

VII of the Ban decision (OECD, EU or Liechtenstein) such as the United States.

For the reasons cited above, any import of e-waste from the US into China is illegal.

industrial park, and the implementation of strict import controls in the region.²

In addition to hazardous e-waste, China has also increased import controls on most forms of scrap, including contaminated

...any import of e-waste from the US into China is illegal.

While this has been the case for some time, it has only been in recent years that Chinese authorities have become serious about effectively enforcing their import ban. This new wave of diligent enforcement has been observed in the results of the e-Trash Transparency Project, where far fewer tracker-enabled devices have ended up in mainland China than expected, especially when compared to other Asian destinations such as Hong Kong. This crackdown on electronic waste import and processing was also confirmed by a recent BAN visit to Guiyu in December 2015. We finally witnessed the closure of the informal sector there, a move to supplant it with an

plastics and paper. These “Green Fence” policies are well documented in trade press.³

→ All forms of hazardous e-waste, including any equipment (e.g. printers, faxes etc.) that contains a circuit board, a display screen, or a battery, is prohibited from importation into China and in accordance with the Basel Convention such imports are likely to be considered criminal.

² See BAN Press Release: <http://www.ban.org/news/2015/12/17/chinas-guiyu-shifts-away-from-crude-processing>

³ <http://www.resource-recycling.com/node/3679>

Hong Kong

We cover Hong Kong separately from China because Hong Kong, while clearly being a part of China and therefore a Basel Convention Party, is nevertheless a Special Administrative Region and possesses some distinct definitions of hazardous waste.

In an e-mail to BAN (see Appendix 4: Correspondence with Authorities) dated March 9, 2016, Patrick Ho of the Territorial Control Office of the Environmental Protection Department of Hong Kong explained the law as follows:

“In Hong Kong, import and export of waste are subject to control under the Waste Disposal Ordinance (WDO) which is modeled on the Basel Convention. Under the control, import or export of any waste requires a permit issued by the Environmental Protection Department (EPD) unless the waste is:

- i. listed in the Sixth Schedule of the WDO,*

- ii. uncontaminated as defined under the WDO and
- iii. imported for a genuine recycling or reuse purpose.

A WDO control scheme guide including a full list of the schedules are available in our website:

http://www.epd.gov.hk/epd/sites/default/files/epd/english/environmentinhk/waste/guide_ref/files/2015_ie_english.pdf

The EPD has adopted the Basel Ban of the Basel Convention in the WDO, under which import of any hazardous waste from developed countries which are members of OECD, EC and Liechtenstein is not permitted.

The banned countries (including the United States) are listed in the Ninth Schedule of the WDO. Accordingly, import of waste electrical or electronic equipment (WEEE) containing hazardous constituents or components are not permitted. Common types of such controlled waste embrace computer monitors, laptops, tablet computers and televisions with various displays technologies such as cathode ray tubes (CRT), liquid crystal displays (LCD), light emitting diodes (LED) and plasma displays, accumulators, batteries, mercury-switches, transformers and capacitors containing mineral oil or polychlorinated biphenyl. Any article or substance once given up by its original user is considered as waste

Figure A21. Screenshot from Hong Kong Environmental Protection Department website stating that they currently do not accept any hazardous waste imports. Retrieved from: http://www.epd.gov.hk/epd/english/environmentinhk/waste/guide_ref/guide_wiec_faq.html

The screenshot shows the website interface for the Environmental Protection Department of the Government of the Hong Kong Special Administrative Region. The page is titled 'Guidelines & References' and specifically focuses on 'Control on Import and Export of Waste' and 'Frequently Asked Questions'. A navigation menu on the left includes 'Home', 'WASTE', 'Problems & Solutions', 'Data & Statistics', 'Public Consultation', 'Study Reports', 'Guidelines & References', 'Waste Reduction Programme', 'Producer Responsibility Schemes', 'Waste Collectors and Recyclers', 'Waste Management Facilities', and 'Advanced Search'. The main content area features a breadcrumb trail 'Home > Waste > Guidelines & References >' and a large heading 'Guidelines & References' followed by 'Control on Import and Export of Waste' and 'Frequently Asked Questions'. A specific question is highlighted: 'Q.12 Will the EPD allow the shipment of hazardous waste between Hong Kong and a non-Basel party?'. The answer states that according to the Basel Convention, parties are prohibited from exporting and importing hazardous waste unless subject to bilateral, multilateral, or regional agreements, and that the EPD would not consider any application for shipment of hazardous waste (such as waste batteries) between Hong Kong and a non-Basel party. The website also includes an 'Air Quality Health Index' forecast for 06 May 2016 (Fri) 06:30, showing 'Low' to 'Moderate' conditions. Other elements include a search bar, mobile accessibility options, and social media links.

under the WDO, irrespective whether it is still workable or can be sold for a value.”

In addition it is useful to point out that Hong Kong as part of China (Basel Party) implements the Basel Convention’s Party to non-Party trade prohibition.¹

Currently, the Hong Kong Waste Disposal Ordinance has unique definitions from the Basel Convention with respect for example to circuit boards, which they do not necessarily consider hazardous. Thus they may not control some forms of electronic waste (CPUs, printers, faxes, keyboards, mice,

¹ Party to non-Party Ban, found in the Basel Convention at: Article 4, para. 5; Exception found at Article 11.

etc.) from entering Hong Kong, as long as they are received by a permitted facility. However, many of the operations in Hong Kong in the New Territories region are not permitted recyclers. Thus, the import of these other forms of electronic waste moving to these informal operations are still likely to be illegal.

→ In summary, any import of discarded LCDs, LEDs, plasma screens, CRTs, or battery-containing equipment from the United States into Hong Kong is prohibited, whether or not the devices are functional. Printers and other electronic equipment may be legal to import as long as the receiving facility is licensed and permitted to recycle them.

Taiwan

Taiwan is not a member of the United Nations (UN), nor a Party to the Basel Convention due to UN acceptance of the “One China” policy making the Peoples Republic of China being the legitimate Chinese government. However, in practice, Taiwan acts as a sovereign state and operates as if it were a Party to the Basel Convention. For example, Taiwan’s law requires “prior informed consent” rules and employs Basel waste definitions in their legislation and territory.

On October 13, 2015, BAN sent an inquiry to the Taiwan Environmental Protection Administration (EPA) to determine Taiwan’s official policy regarding import/export of electronic waste. BAN received a response from Ms. Wen-Huei Yau of the Taiwan EPA on November 4, 2015 (see Appendix 2) stating that:

“Non-functional LCD screens and non-functional CRTs are defined as hazardous waste in Taiwan. And based on “Industrial Wastes and General Wastes Banned from Importation (禁止輸入之事業廢棄物及一般廢棄物種類)”, hazardous wastes are not allowed to be imported into Taiwan. Therefore, according to Taiwanese law, such waste computer monitors are forbidden from entry into Taiwan at all times.”

BAN followed up this correspondence to clarify the distinction between waste and non-waste, and received the following from Ms. Yau (see Appendix 2):

“Regarding the distinction between waste computer/ monitor and non-waste computer/ monitor, when used electronic devices imported from foreign countries are collected and sorted in the name of recycling, repairing and dismantling by recyclers,

and the devices will later be sold nationwide or exported to other countries, they will be considered as wastes.

However, when used electronic devices are imported by repair companies for the purpose of repairing and refurbishment, and will be returned to the original owners after repairing, the devices will not be

considered as wastes. The repair companies, at the same time, will have to show relevant documents, like repairing certificate, bilateral contract, invoice and so on, to prove that they are not recyclers.”

→ **In summary, it is clear that the import of any kind of monitor or display is prohibited under the laws of Taiwan.**

Thailand

Thailand is a Party to the Basel Convention. As such, it would be a violation of the Basel Convention’s Party to non-Party ban¹ for Thailand to accept Basel-listed hazardous waste from the United States absent a special agreement. No such special agreement exists. Electronic waste is identified as hazardous waste according to Thailand’s

Notification of Ministry of Industry² and, in accordance with the Basel Convention, requires import or export permits from any Basel Party.

→ **In summary, the import of any kind of e-waste from the United States is prohibited under Thailand’s Basel Convention obligations.**

¹ Party to non-Party Ban, found in the Basel Convention at: Article 4, para. 5; Exception found at Article 11.

² Notification of Ministry of Industry “List of Hazardous substance and chemical waste.” B.E. 2546.

Appendix 3: Methodology

Tracking Equipment and Software

In order to determine and procure the best equipment for the e-Trash Transparency Project, BAN tested several different subscription-based tracking systems. Based on the findings, it was determined that BAN's case scenario was better served by a customized solution, but one that made use of "off-the-shelf" GSM/GPRS tracking hardware.

BAN chose the hardware on the basis of tested reliability, lower price, and thin profile. For the purposes of this report we will call the tracking device a "tracker." Each tracker is equipped with a SIM card that communicates over a separately purchased machine-to-machine (M2M) subscription service.

The combined cost of a single tracker, external battery, the SIM card, the M2M service rates package was approximately \$175 (including shipping and taxes). The project, funded in large part by a grant from the Body Shop Foundation, included the purchase of over 200 trackers.

Free and open source software called OpenGTS was used to collect and display data in a user-friendly manner. Using open source software enabled BAN to customize the display information to suit the unique

Figure A22. Screen shot of typical installation video, shot for each of the deployments. Shown here is a tracker being installed inside an LCD before being closed up and deployed. ©BAN. 2015.



needs of the project and our particular hardware. The software included

integration with Google Maps, which allowed for easier interpretation of GPS data.

How the Trackers Work, Capacity and Limitations

The tracker is a digital communication device that uses the language of printable ASCII characters. Communications are sent between the tracker and the back-end server via a GSM (mobile phone) data service (via Internet) or SMS (text messages). The trackers can also be remotely configured or adjusted via the same communication methods.

The tracker makes use of the Global Positioning System (GPS), which is a world-wide radio-navigation system formed from the constellation of 24 satellites and their ground stations. GPS satellites provide a signal that is received and processed by the tracker. Using at least three satellite signals the tracker can calculate the latitude and longitude of its location with great accuracy. In the absence of satellite signals, the tracker can use its GSM signal and in that case, its approximate location can be identified by the cell tower signal it receives.

In the case of a non-existent or a weak GSM signal that prevents the tracker from being able to communicate with the back end server, the tracker can store 10,000 GPS data points that can be sent to the server the next time a successful connection is made.

The trackers that were used usually had at least a 9-month battery life, with some trackers still communicating after 12 months. The battery life varies depending on many factors including signal

strength, temperature and sleep mode settings. Prolonged battery life is primarily attributed to the tracker possessing a sleep mode function, which allows the device to hibernate in a power-saving mode for a preset time. Typically, each tracker was set to "wake up" every 24 hours, calculate its position based on the satellite signals it received, send the data to BAN's server via local GSM networks and then reenter sleep mode function.

Each tracker in the project was given a unique ID number made from the deployment state letter code followed by 6 digits. The ID number is printed clearly on all trackers so as to be visible while on camera during the deployment documentation video.

Additionally, the trackers were each fitted with a label with a message stating "if found, email tracking@ban.org."

Each tracker was adhered to its host device with industrial strength Velcro brand tape. The resulting bond, which is rated to hold 5lbs of weight vertically, made it very difficult for trackers to become dislodged. The tracker external battery packs were also adhered to their host device with the same tape and most often 3 to 6 inches away from the tracker.

In the unlikely situation of a tracker became removed from it's host device, it is highly probable that the external battery pack, which was attached to the tracker by a

mini USB connector via a 6 inch cable, would have become disconnected from the tracker.

The external battery pack, which is the main source of power for the tracker, was not wired to charge the smaller internal battery present inside the tracker. Therefore, when the external battery pack

is disconnected from a tracker, a change in battery charge level is observed with the inbound data. As the observed battery levels did not suddenly drop on any of our data to date, we can say beyond a reasonable doubt that none of the trackers exported became separated from their host equipment prior to export.

Deployment

To establish and maintain a chain of custody, BAN recorded a video of each tracker installation in the e-waste equipment. The delivery of e-waste (usually a walk-up to a loading dock or office) was also captured by covert video. Proof of recycling was also received (e.g. receipt) when provided.

Deployed tracker information was recorded on an on-line database. This information included IMEI number of the device, e-waste type, serial number, place deployed (including address, phone numbers, persons of interest, previous export history, and certifications), date deployed, deployment notes/observations, and ongoing tracker status notes.

BAN used three specific types of e-waste hardware as tracker hosts:

- CRT (cathode ray tube) monitors or CRT televisions
- LCD (liquid crystal display) monitors or TVs containing CCFLs (mercury containing cold cathode fluorescent lamp)
- inkjet or laser type printers

These devices were chosen due to their abundance in electronic waste streams and due to the fact that they have ample room to conceal trackers. They also represent hazardous waste as defined by the Basel Convention.

All units were made non-functional and not economically repairable prior to deployment in order to make the legality of export issue more certain.



Figure A23. Screen capture from covert video of CRT deployment by BAN researcher. ©BAN. 2015.

Delivery Locations

The generous project funding obtained from the Body Shop Foundation allowed the deployment of trackers across the mainland United States. With 200 trackers to deploy, as mentioned in the Project Overview, BAN decided to focus on one particular charity (Goodwill) and then to focus most of the rest of the trackers on publicly accessible recyclers. We focused on several highly populated regions of the United States. The regions included:

- Pacific Northwest (Washington and Oregon)
- California and Southern Nevada
- Midwest (Ohio, Indiana, Illinois, Michigan, Wisconsin)
- Northeast (Massachusetts, New Hampshire, New Jersey, New York)

Several trackers were also deployed in Florida and Georgia.

In order to best represent the public's typical recycling habits, e-waste drop off locations were selected from state e-waste program listings found on state ecology or environmental quality agency websites and from Google search results from the phrase

"computer recycling [city of deployment]". The resulting locations included recyclers (both for-profit and non-profit), recycler drop-off sites, and charitable thrift stores. Whether or not these locations had industry certifications (e.g. R2 or e-Stewards) was not a factor in choosing the locations.

Some of the locations chosen were of small to medium capacity. The result was that tracker enabled e-waste often moved from these facilities to larger facilities (e.g. equipped with shredders, balers, etc.) allowing one tracker to collect data on multiple companies and different geographic regions.

The charitable organizations in our deployment included Deseret Industries, Goodwill Industries, and the Salvation Army. Particular emphasis was placed on Goodwill Industries because BAN had received a number of whistle-blower calls and emails asserting that Goodwill Industries was allowing export of donated electronic goods contrary to stated policies (see sections of this report dealing with Goodwill Industries). We sought to verify those complaints.

Assumptions and Fair Representation

200 trackers deployed in 200 electronic devices is a relatively small sample size when compared with the vast amount of electronic waste generated in the United States every year. Thus extrapolations must be used with caution. The extrapolations we have done in this study to indicate the potential scale of the export concern for example, must be understood with respect to a vast array of variables, which could deviate from a fair representation of the norm.

Pernicious error is a danger in any study. For example, some might argue that an advocacy organization like BAN will have a built-in bias to seek out high-risk export destinations to make their case. On the other hand, the marketplace, at the time the study was conducted, had historic lows in commodity prices, and along with heightened import controls in China could have skewed the data against a robust export trade to Asia compared to even 3 years ago. The regions we chose could have for some reason not have been nationally representative. The types of

devices we chose could have been unrepresentative of the entire scope of what is generally considered e-waste. BAN, choosing to mostly focus on but one charity may have skewed the outcome, as we are not sure whether Goodwill is representative of all charities that process e-waste. Certainly BAN's study did not look into the brokers and traders that buy directly from businesses and do not accept equipment from the general public. Nor did we survey government auction programs, which are legally obliged to seek out the least expensive methods of disposal to save taxpayer expense. There is reason to believe that brokers and government disposal is more prone to export.

As we can see, there are many variables which could skew data one way or the other. For this reason, it is important to understand that the extrapolations made in this report, based as they are on conservative estimates, are provided not as facts but as illustrative of the potentially massive scale of the problem identified.

Appendix 4:

Correspondence with Authorities

Subject: Re: Dear Patrick / Confirmation
Date: Wed, 9 Mar 2016 17:42:20 +0800
From: kkho@epd.gov.hk
To: Jim Puckett <apex@seanet.com>
CC: garytam@epd.gov.hk

Dear Jim,

Please see below our comments on the proposed section on Hong Kong on your report.

In Hong Kong, import and export of waste are subject to control under the Waste Disposal Ordinance (WDO) which is modelled on the Basel Convention. Under the control, import or export of any waste requires a permit issued by the Environmental Protection Department (EPD) unless the waste is:

- i) listed in the Sixth Schedule of the WDO,
- ii) uncontaminated as defined under the WDO and
- iii) imported for a genuine recycling or reuse purpose.

The details of our control scheme and a full list of the schedules are available in our website:
http://www.epd.gov.hk/epd/english/environmentlink/waste/guide_ref/guide_wiechtm

The EPD has adopted the Basel Ban of the Basel Convention in the WDO, under which import of any hazardous waste from developed countries which are members of OECD, EC and Liechtenstein is not permitted. The banned countries (including the United States) are listed in the Ninth Schedule of the WDO. Accordingly, import of waste electrical or electronic equipment (WEEE) containing hazardous constituents or components are not permitted. Common types of such controlled waste embrace computer monitors, laptops, tablet computers and televisions with various displays technologies such as cathode ray tubes (CRT), liquid crystal displays (LCD), light emitting diodes (LED) and plasma displays accumulators, batteries, mercury-switches, transformers and capacitors containing mineral oil or polychlorinated biphenyl. Any article or substance once given up by its original user is considered as waste under the WDO, irrespective whether it is still workable or can be sold for a value.

In your other email dated 2 Mar proposing an interview with PBS, we are occupied during the proposed time frame. However, as far as import and export of hazardous waste are concerned, the control in Hong Kong is transparent and details of the control scheme are available at our website. Should PBS need any further information about the control scheme, they are welcome to contact us.

Regards,

Patrick HO
Territorial Control Office
Environmental Protection Department
Hong Kong Special Administrative Region, China

From: 姚文惠

Reply Reply All Forward Archive Junk Delete More

Subject: Re: Inquiring into e-waste import from U.S. to Taiwan

11/4/15, 6:15 PM

To: Me <jpuckett@ban.org>

Cc: 3思謙, 曹美慧, BAN Research

Dear Jim,

Thank you for your reply.

Non-functional LCD screens and non-functional CRT are defined as hazardous waste in Taiwan. And based on "Industrial Wastes and General Wastes Banned from Importation (禁止輸入之事業廢棄物及一般廢棄物種類)", hazardous wastes are not allowed to be imported into Taiwan. Therefore, according to Taiwanese law, such waste computer monitors are forbidden from entry into Taiwan at all times.

We look forward to cooperating with BAN in future as well. If you have any question, please feel free to let me know.

Thank you.

Best Regards,

Wen-Huei Yau

From: 姚文惠 ★
Subject: Re: Fwd: Fwd: Re: Inquiring into e-waste import from U.S. to Taiwan
To: Jim Puckett ★
Cc: 'Wen- Ling Chiu ' ★, 3號思蓮 ★

1/31/16, 11:45 PM

Reply Reply All Forward Archive Junk Delete More

Dear Mr. Puckett,

Good afternoon! I am pleased to receive your email.

Regarding the distinction between waste computer/ monitor and non-waste computer/ monitor, when used electronic devices imported from foreign countries are collected and sorted in the name of recycling, repairing and dismantling by recyclers, and the devices will later be sold nationwide or exported to other countries, they will be considered as wastes.

However, when used electronic devices are imported by repair companies for the purpose of repairing and refurbishment, and will be returned to the original owners after repairing, the devices will not be considered as wastes. The repair companies, at the same time, will have to show relevant documents, like repairing certificate, bilateral contract, invoice and so on, to prove that they are not recyclers.

We will provide Customs officers with relevant information, like photos of waste monitors and computer components, so that it would be easier for them to judge whether the used electronic devices imported are wastes or not.

Thank you so much for your email. If you have any questions, please feel free to let me know.

Wen- Hwei Yau



Hong Kong BAN investigative team, BAN director Jim Puckett, journalist Dongxia Su, and trader, Aurangzaib Khan. ©BAN, 2015.

Mr. Herlin Hsieh, Chief Secretary of Taiwan Watch Institute, assisting in tracking down Goodwill trackers in Taiwan. ©BAN. December 2015.



GOODWILL

