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Session 3
Voluntary Asset Recovery Programs for Used Electronics and the Role of ESM

Presented by:
Steve Bushnell and Arjen Salemink
Electronic Industries Alliance
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Introduction

As the use of personal computers (PCs) becomes increasingly widespread, there is growing interest in promoting the environmentally sound disposition of end-of-life equipment. EIA supports the responsible management of used PCs in a manner that is both protective of the environment and economically viable. These goals can be promoted by encouraging the reuse, refurbishment, and recycling of used PCs, and the development of sensible, risk-based environmental regulations governing the disposition of materials without remaining function or value.

This paper briefly describes examples of existing asset recovery programs offered by electronic manufacturers as well as through third party management companies that direct used PCs and other electronics away from the waste stream for reuse, refurbishment, and recycling. This paper also underscores the importance of ensuring that the OECD System governing transboundary waste shipments (including the development of environmentally sound management (ESM) Guidelines for PCs) promotes ESM without creating unnecessary barriers to current and future voluntary asset management programs. This submission is intended to provide a foundation for the company-specific presentations that are to be made at the second ESM Workshop in Vienna, Austria.

I. ESM in the Context of Recycling Waste PCs.

EIA member companies support the environmentally sound and economically efficient recovery of waste electronics. We look forward to working with OECD governments on the development of ESM Guidelines for waste PCs that facilitate recycling and ensure an adequate level of environmental protection.

EIA believes that the OECD's work on ESM for waste PCs should be guided by a number of important principles, many of which are reflected in past OECD Council Acts. Specifically, the efforts of the OECD's Working Group on Waste Management Policy (WGWMP) to develop ESM Guidelines for PCs should take account of the following:

1. ESM Guidelines should focus on ESM in the context of transboundary waste shipments for recovery.

2. ESM Guidelines should promote the environmentally sound and economically efficient recycling of waste PCs.

3. Intact PCs and related peripherals destined for evaluation and possible re-use are not wastes and should remain outside the OECD System for controlling wastes, including any future standards for ESM.

4. ESM Guidelines should comprise OECD (international level) guidance for governments addressing the management of transboundary wastes shipments at the facility level.

5. ESM Guidelines should not impose unnecessary barriers to the recycling of waste PCs, but should instead promote flexible, cost effective approaches to recycling.

6. ESM Guidelines must not constrain product and /or treatment technology innovations.

7. ESM Guidelines should recognize the capacity of OECD governments to regulate recycling facilities within their borders in a manner that ensures ESM.

8. ESM Guidelines should not be expanded to unrelated concepts concerning domestic producer responsibilities or design for environment (DfE), as these issues are already being addressed through other OECD initiatives and are beyond the WGWMP's mandate.

EIA and its members currently work in a voluntary manner to promote the environmentally sound and economically efficient management of used PCs and other end-of-life electronic equipment. EIA members are global leaders in innovative design techniques that eliminate or minimize adverse environmental impacts throughout the product life cycle, or make the product easier to recycle at the end-of-life stage. The industry has also been a leader in the development of voluntary asset recovery programs to reuse, refurbish, and recycle used PCs and other electronics. The challenge for the OECD and other entities is to encourage the continuation and expansion of these current and future asset recovery initiatives, while allowing for local governments, third party recyclers, and others to expand their recycling efforts.

II. Voluntary Asset Recovery

Substantial quantities of used PCs and other electronics are currently managed in an environmentally beneficial, cost-effective manner through voluntary asset recovery programs. Many electronics manufacturers offer asset recovery services to their customers, either through in-house programs or through the use of outside contractors, which result in the reuse, refurbishment, and reclamation of end-of-life PCs and other electronics.

These programs usually share the following characteristics:

- They often involve materials that have sufficient economic value to offset their transportation and processing costs.

- They often operate in a commercial setting where large volumes of relatively high value electronics or PCs can be efficiently collected and shipped to an appropriate facility for refurbishment and recycling.

- They are generally conducted in conjunction with the sale of new electronics or PCs or under circumstances where the manufacturer retains control over the product (e.g., through leases) or where there is an ongoing relationship between the manufacturer and the user (e.g., through the servicing of products).

Hewlett Packard operates product refurbishing centers in the United States, Germany, and Australia, in which Hewlett-Packard products – mainly computers, peripherals and test and measurement systems – are refurbished for resale. Some products are resold at the Hewlett Packard web site (http://hpshopping.com) – an online store that sells new and lower-priced refurbished consumer products.

IBM's Environmentally Conscious Products program supports a network of Materials Recovery Centers (MRC) around the globe that process surplus and scrap electronic equipment from within the corporation, local communities, and customers. Ten of IBM's major MRCs processed more than 55,000 metric tons of end-of-life equipment in 1998, of which more than 90% was recycled and less than 4.3% sent to landfill.

Lucent Technologies also actively remanufacturers its used telecommunications. Lucent has focused on making reuse a profitable growth business rather than simply a scrap/reclamation activity. Lucent's program has focused on systems rather than individual products, such as PCs; however, the program illustrates how manufacturers are actively removing electronics from the waste stream.

EIA members also actively work to encourage PC reuse. Many companies re-sell used products or donate them to educational and nonprofit organizations. EIA cooperates with nationally-recognized organizations to promote the reuse of computers in schools and charitable organizations.

Intel Corporation has provided a refurbishing service for some customers of PC and server products. Used PCs from Intel internal use are refurbished and reassigned throughout the company. There is also an extensive donation program for used PCs to local communities and schools. "Students Recycling Used Technology" (StRUT) was founded by Intel and Northwest Regional Education Service District in Portland, Oregon to teach high school students technical computer skills and give schools free, refurbished computers. Since 1995, over 15,000 computers have been donated by Intel and 70 other companies. Approximately 10,000 of these computers have been refurbished by students and placed in classrooms. More information on this program and a similar Texas project can be obtained at http://www.txstrut.org.

New electronic reuse operations are also seeing opportunities in obsolete electronics. For example, the National Cristina Foundation, based in Stamford, Connecticut, acts as a broker, identifying sources of discarded electronics and end users and partnering with entities that dismantle and rebuild computers for the end user (http://www.cristina.org). The Detwiler Foundation's Computers for Schools Program, based in California, contracts with technical schools and training center to repair discarded computers and transfers them to public and private schools http://www.computersforschool.com). Although EIA and its members do not directly manage these programs, EIA members are frequent donors to these programs.

III. ESM Guidelines and Other OECD Controls Should Not Unnecessarily Burden Asset Reuse and Recovery

The development of ESM standards pertaining to the recycling of PCs can play a significant role in dictating the overall success or failure of asset recovery operations. EIA encourages the OECD to avoid actions that would impose costly, unnecessary requirements on the collection, transportation, storage, and processing of used and waste PCs.

1. Asset Recovery Programs Require Unencumbered Movement of Products Across Borders

The reuse, refurbishment, and recycling of PCs and other electronics require the efficient cross-border movement of materials. This is particularly true for the OECD region, where one recycling operation may serve many countries. OECD rules must allow for recycling enterprises to take advantage of economies of scale through the centralization of expertise, technology, spare parts, and materials.

Many recycling programs are global in nature and require the movement of large quantities of used equipment to centralized consolidation facilities that have the technology, work force, tools, and economies of scale necessary to: (1) manage diverse types of used products received from a variety of locations, (2) evaluate the assemblies and components for possible re-use, repair, upgrade, and material recovery, and (3) arrange for their environmentally sound recycling and disposal, when necessary.

Economies of scale and labor costs preclude the siting of asset recovery facilities in every country where electronics are sold. Accordingly, companies often need to pursue regional approaches to asset recovery. The success of asset management and recycling programs often depends on companies' ability to move used equipment (often in its original housings) across international borders. EIA's experience with PC recycling indicates that such recycling is more efficient if centralized, large-scale facilities are used to process relatively large volumes of materials. Shipping materials across borders to centralized facilities allows these operations to succeed because it is not practical to locate a facility in every OECD country where electronics are sold.

Market forces provide a strong incentive to recycle material if the cost to produce a recycled material is lower than the cost of producing the same material from primary sources. Transportation, financing and regulatory costs associated with waste controls constitute a significant share of the cost to produce recycled materials. If such costs are high, they can inflate the production cost for recycled material vis-à-vis the production cost for primary materials, thereby, discouraging recycling and encouraging waste disposal.

Furthermore, advanced recycling and processing operations require significant capital investments in plant and equipment and personnel expertise. These advanced technologies must be applied at a rate that is economically viable for these operations to succeed. To achieve such investment, processors typically require economies of scale that can only be achieved through waste imports.

As one study evaluating a pilot project for the collection and recycling of cellular telephones in two European countries stated, "In order to optimize the economies of scale associated with end-of-life product, it may be necessary to move products around Europe to access specialist recycling centres. Transboundary restrictions are confusing and are potentially restrictive to free trade." See ECTEL, "End-of-Life Management of Cellular Phones: An Industry Perspective and Response" at p. 21 (November 1997).

The economic viability of managing used PCs hinges on the ability of the recycler to obtain the highest and best use for the products and materials. Wherever possible, product resale and reuse after its use by the original user is often the most environmentally beneficial and economically efficient outcome. If the product cannot be directly reused, it is often possible to refurbish and repair the product to make it suitable for reuse. If the product is unsuitable for refurbishment, it may possess parts that can be reused in other products.

In order to implement this hierarchy, which makes sense for the environment and asset recovery facilities, materials must be shipped to centralized processing centers for an immediate evaluation of their reuse, refurbishment, parts recovery, and recycling potential. This evaluation cannot be performed at the point of initial collection. It can only be performed at a centralized facility, where appropriate expertise and capability are housed. Often, the process of transporting the product to a centralized processing facility will necessitate the shipment of these materials across national borders.

Regulatory restrictions that delay the movement of these products may age their components to the point where they are worthless for reuse or refurbishment. In the case of PCs, the value of the product for the reuse or recycling market can often be time dependent. Given the rapid development of new technology and innovation, older generation PCs can lose value quickly. As a result of the speed in which new technology is introduced, only components of relatively recent origin can be reused. Regulatory requirements that would delay the shipment of used PCs would likely hamper the viability of asset recovery.

The reuse, refurbishment, and recycling process may involve the disassembly of the PC and the separation of different material streams, which may require transport across national borders to other facilities for further processing. Controls on the movement of such materials can disrupt the reuse, refurbishment, and recycling process by impeding their ability to move across international borders. Finally, because asset recovery is contingent on the market price offered for the materials (which often fluctuate), delay and added costs may threaten the viability of asset recovery programs.

In addition, electronic products such as PCs are manufactured and assembled throughout the world. A complex, worldwide network of suppliers provides parts and materials for these operations. Thus, assemblies, components, and materials must be shipped across borders to supply this global network. Impediments to the cross-border shipments would disrupt this market and would likely result in the increased landfilling of materials.

Product refurbishment and recycling is a highly sophisticated and specialized endeavor that is part of an emerging industry and a developing global infrastructure. OECD member states should ensure that regulatory controls on movements of recyclable materials between OECD countries do not distort competition and hamper the viability of reuse, refurbishment, and recycling operations by restricting the ability of material processors to access recyclable materials in a timely and cost effective manner.

The OECD ESM guidelines for PCs should be designed to minimize barriers to trade in recyclable materials and minimize added costs that would discourage recycling, while avoiding the risks that could result from improper disposal. Companies in the best position to manage these materials -- environmentally, technically, and environmentally -

may be located in countries other than the country of origin of the used equipment. As a result, it is essential that international regulations allow for the unencumbered trade of used PCs and electronic products so that products and components can be reused to the extent appropriate and valuable raw materials can be recovered. The goal should be to establish adequate controls to address legitimate risks while encouraging the continued development of the recycling infrastructure.

2. Used PCs Destined for Evaluation and Possible Reuse Should Not be Classified as Wastes.

Used PCs and related peripherals destined for evaluation and possible re-use do not qualify as wastes and should remain outside the OECD System for controlling wastes, including any future ESM standards. OECD governments should encourage the free movement of used PCs across boarders for refurbishment and reuse as a means of minimizing waste generation and ensuring the proper recycling and/or disposal of unusable components.

PCs and electronic products that are no longer needed by their original user are distinguishable from many other types of wastes typically regulated by the OECD. Unlike many materials covered by the OECD Council Decision, PCs and other electronics pose minimal risk to the environment after their use by the original owner. Furthermore, they are valuable finished products that are often suitable for direct reuse or indirect reuse after upgrading, repair, or refurbishment. Used PCs are more "product-like" or "commodity-like" than "waste-like." Even where whole assemblies cannot be reused, component parts can be removed and reused.

The OECD has recognized that electronic equipment in the public domain that has not been physically broken should not present an environmental hazard. See OECD Progress Report on the Recovery of Electrical and Electronic Scrap, ENV/EPOC/WMP(96)14. There is no difference between new and used electronic products from the perspective of environmental risk. Both new and used products are similar in appearance and physical form, and they are often found in their original housings. Both new and used products consist primarily of metal, plastic, and glass in a physical form that is not readily dispersible and that has no prospect of causing environmental harm.

Used PCs and other electronics are often still functioning as originally designed when the original user decides they no longer want to use the product. The reasons for this decision by the user could include a desire to use newer technology, obtain additional features, achieve improved performance capability, or other reasons. A large volume of products received by EIA members for recycling are dealer returns – returns from customers that may be unused and are still in their original box or other packaging. These returns may be unsuitable for direct resale; however they are more efficiently managed by centralized recycling center for reuse or parts recovery. These activities contribute considerable environmental benefit and pose absolutely no environmental risk.

In addition to environmental benefits, it should be noted that the reuse of PCs and other electronics offers other important societal benefits. Product reuse, either directly or after refurbishment or upgrade, often enables individuals or entities with lower technology needs to have access to technology that might otherwise be unavailable. Thus, this practice helps countries or individuals with less resources to have access to the benefits of electronic products. For example, the Cristina Foundation provides PCs to individuals with physical disabilities, who otherwise could not afford PCs. There are numerous “computers for school” programs that refurbish computers for elementary school use, a use for which the schools could otherwise not afford.

EIA supports the OECD’s decision to retain the current Green List entries for electronic scrap and assemblies. The non-hazardous waste listing for electronic scrap is a sound policy decision. Materials of potential concern in PCs and other electronics pose no more environmental risk at the end of their useful life than when they were first placed on the market. Materials that are present in electronics are embedded in material matrices and are not readily bioavailable under normal conditions of handling, storage, or transport. Thus, these products differ from other hazardous wastes such as hazardous fluids, sludges, dusts, residue, or ashes that are easily dispersed into the environment or may have harmful properties if bioavailable.

One impediment to recycling is the potential that some computer peripherals could be classified as an "Amber" (hazardous) waste. For example, computer monitors contain cathode ray tubes (CRTs), the glass tubes also found in televisions. Because CRTs contain lead to protect the user against potentially harmful x-rays, these products can sometimes be captured by listing A2010 ("Glass waste from cathode ray tubes and other activated glasses.") The classification of intact CRTs as wastes subject to the amber control procedures would discourage recycling. This interpretation is flawed. As stated above with regard to PCs, items such as intact monitors in their original housings pose no greater risk to the environment when discarded as when they did when they were placed on the market. The lead is embedded in the CRT glass and it is not available for release to the environment. A hazardous waste classification for CRTs and certain other electronics simply makes it more costly to transport these products for recycling, thereby, discouraging their environmentally sound reclamation.

VI. Other Voluntary Initiatives

In addition to developing methods to properly manage used PCs, the electronics industry has employed creative, innovative design approaches that eliminate or minimize adverse environmental impacts throughout the product life cycle -- from the manufacturing, distribution, and use of a product, to its reuse, disassembly, recycling, and disposition.

With regard to improving the management of used PCs, these design advances include the following:

- Improving the ability for products to be reused, refurbished, or repaired where possible, thereby extending the useful life of the product and delaying the need for disposal. Examples include PCs that provide for easy upgrade of expansion cards, memory, and storage devices.

- Using recycled content when such materials are securely available, cost effective, and do not interfere with manufacturing requirements or product quality. Examples include plastics made from 100% recycled content plastic resin.

- Promoting the recyclability of materials by avoiding, where possible, the use of coatings and paints on parts. EIA members have avoided the use of paper or foil labels on plastic parts, thereby, increasing their recyclability.

- Minimizing the diversity of materials within a product. When feasible, EIA members make plastic parts from the same type of plastic material to facilitate recycling.

- Providing for the coding or identification of materials. EIA members consistently label plastic parts according to ISO 11469 to facilitate recycling.

- Eliminating or minimizing the use of hazardous substances. Many chemicals, such as arsenic, cadmium, and lead have been minimized whenever possible in successive generations of PCs and other electronic products.

- Facilitating disassembly by employing techniques such as snap-fit assembly. EIA members often utilize fastener technology that allows disassembly to occur by hand or with a simple screwdriver.

We are proud of the industry's accomplishments in this area and are committed to further DfE progress to minimize the environmental impacts associated with end-of-life electronics, including PCs. For more information on EIA members' DfE Success Stories, please read "A Compendium of DfE Efforts" on EIA's website (http://www.eia.org/government/eic/doc_ list.cfm?doc_committee_key=21).

Conclusion

The existing and future infrastructure for managing discarded electronics and waste PCs requires flexibility and efficiency. The success of voluntary asset management programs and other recycling programs depends in large part on the ability of industry and management facilities to move used products and waste PCs across national borders in an efficient and unobstructed manner. It is essential for the OECD WGWMP to develop ESM Guidelines for PCs that promote the expansion of an efficient and cost effective reuse, refurbishment and recycling infrastructure.

EIA and its members will continue to work actively within our areas of expertise to contribute to the development of environmentally sound, efficient approaches to the management of used PCs and other electronics. EIA appreciates this opportunity to provide its comments on how ESM guidelines for PCs can impact voluntary asset management programs. EIA looks forward to working with the OECD WGWMP to develop environmentally sound and cost effective approaches to the management of used PCs and waste electronics.

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EIA represents more than 2,400 member companies representing the full spectrum of U.S. manufacturers in the electronics industry. Our member companies design, manufacture, distribute, and sell electronic parts, components, equipment, and systems for consumer, commercial, industrial, military, and space use.

For more information on this issue, please contact Holly Evans, 703-907-7576, hevans@eia.org.