Whole Life Considerations in IT Procurement

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Abstract

Goal, Scope and Background. Waste associated with the manufacture, use, and disposal of electronic products, or e-waste, is a growing threat to the environment. IT procurement professionals can have a positive affect against that threat through careful consideration of the environmental awareness of their vendors. Method. Consideration of three case studies from the City of Seattle illustrates the challenges in gathering information from vendors on their environmentally sustainable practices; the reasons that this information is important; and possible solutions. Conclusions and Recommendations. We owe it to ourselves, our planet and our progeny to encourage sustainable practices in electronics manufacturing, use and recycling. This paper suggests some beginning steps that purchasers of electronics can take toward that end.

Keywords: Computer manufacturing; computer recycling/reuse; environmentally aware computer manufacturers; e-waste; IT procurement; sustainable electronics practices; toxins in computers

Introduction

The City of Seattle has long been considered a leader in environmentally sustainable purchasing practices. In recent years, the City has made efforts to extend that culture of whole life responsibility to the purchase of its Information Technology (IT) equipment. For some of us in the IT purchasing staff, this was a new way of looking at IT procurement.

We will discuss the reasons we think this is an important trend that should be emulated in other government and corporate purchasing departments. To illustrate the City's commitment to this new paradigm in IT procurement we will present case studies of three recent purchasing decisions and give some examples of our ongoing relationship with the City's main computer workstation vendor. These relationships have grown and have been positively affected by the City's stated environmental goals. Finally we'll look at the tools that are available today to help procurement staff meet these goals and some tools that are coming in the near future.

1 The Problem, or Why Should We Care?

Information Technology (IT) equipment is a unique and challenging environmental problem. From the manufacturing process, through the packaging and delivery and the end of life, this equipment presents many sustainability issues to a conscientious purchaser.

According to the Silicone Valley Toxics Coalition (http://www.svtec.org/cleancc/focus.htm, and see the link to the SVTC in the references addendum), the manufacturing of a computer includes the "assembly of more than 1,000 materials, many of which are highly toxic, such as chlorinated and brominated substances, toxic gases, toxic metals, photo-active and biologically active materials, acids, plastics and plastic additives. Comprehensive health impacts of the mixtures and material combinations in the products are often not known. The production of semiconductors, printed circuit boards, disk drives and monitors uses particularly hazardous chemicals, and workers in chip manufacturing are reporting cancer clusters and birth defects. In addition, new evidence is revealing that computer-recycling employees have high levels of dangerous chemicals in their blood.

The list of toxic components in computers also includes lead and cadmium in computer circuit boards, lead oxide and barium in computer monitors' cathode ray tubes, mercury in switches and flat screens, and brominated flame retardants on printed circuit boards, cables and plastic casing.

When we consider the fact that all landfills leak - even the best are not completely tight and eventually allow a certain amount of chemical and metal leaching - the mountains of e-waste destined for landfills is particularly disturbing."

The production of a single six-inch silicon wafer generates 2,840 gallons of wastewater, 25 pounds of sodium hydroxide and seven pounds of hazardous waste (Karliner 1997).

When the equipment is transported it is encased in many layers of protective boxing, plastic and foam that often end up in our landfills. Of course the transport itself contributes to air quality problems and must be considered in the whole life impact assessment.

During the use of the equipment, it may contribute to ergonomic problems for users such as eyestrain from monitors or repetitive movement injuries from the use of the keyboard and mouse. Computer use also affects HVAC (heating ventilation and air conditioning) and other environmental quality systems, and it consumes electricity.

Finally, at the end of life the lead, plastics and other toxins that reside in various parts of the equipment should be carefully separated and recycled. However for many years this simply was not done and even now it is a difficult and costly process.
The results of this historical lack of environmental stewardship are a staggering amount of toxic electronic waste. The lead alone in all of the old monitors and television sets that have accumulated in landfills presents a very real threat to the health of the planet and our progeny.

Another, more recent historical dysfunction in this regard has been the shipping of electronic waste products to third world countries. Please refer to the excellent work by the Basel Action Network, which documented the lack of health or environmental protections during recovery of materials from electronics. Their work exposes the horrors of this practice and the very real cost in human suffering.

We feel it is important to find ways to ensure that the vendors from whom we purchase our electronics are working toward more sustainable practices in all levels of the life cycle of their equipment. Further, we try to be aware of and consider the vendor corporation's social equity stance. Are they a good citizen of their community? Do they have a clean record on race relations? Do they use 3rd world labor? If so, do they treat those 3rd world employees with respect and pay them a living wage? These and other social equity questions are also the responsibility of a conscientious procurement official.

But how can our often overtaxed and under-resourced procurement departments ever expect to gather that information effectively? It is difficult, some might say impossible, in many cases. And that is what we will talk about with the three case studies from the City of Seattle.

2 The Stories, or What It's Like in the Trenches

2.1 Case study 1 – laptops

The first procurement example that we will share with you was a process to decide if we should standardize on a single vendor for all our laptop purchases. We had made the decision to standardize on one vendor for all desktop equipment and it was thought that we should explore the next step by looking at laptops.

Standardization is in and of itself a sustainable practice. By working to standardize on hardware, software and peripheral IT (Information Technology) equipment, we have recognized substantial cost savings (for more details, please see the reference addendum and feel free to contact the City of Seattle's Copernicus director). We have also reduced the resources needed for maintenance and support of that equipment.

The committee responsible for the laptop standardization started out with the usual paradigm: We determined the features that were needed; then researched the vendors' offerings. We looked for platforms that would best match those features at the least cost.

However, shortly after we began our project, the City's procurement department and the Chief Technology Officer (CTO) informed us that there was a new paradigm that we needed to consider. We were asked to look carefully at the environmental impacts of the products we were evaluating and include those considerations as a significant part of our assessment. This has long been an important part of the purchasing of many of the products that the City consumes, but this was the first time it had been applied so directly to IT equipment procurement practices.

It was a little hard to understand for most of us on the committee. We were IT geeks and the environmental impacts of the equipment we knew and loved had not been on our radar. However, we are all North-westerners and we love our mountains, forests, lakes, rivers and oceans. It wasn't a hard sell once we heard the facts as outlined above. Yet, the implementation of this new paradigm proved to be a little more problematic then the acceptance of it by the team.

To address the problem we developed a list of environmental questions as a part of the vendor evaluations. The questions covered toxic materials used in manufacturing and contained in the products themselves. They also asked about end of life recycling options and packaging. A list of the questions used is included in the addendum section. Vendors were informed that the environmental considerations would be given equal weight with the features and cost of their products.

This new way of looking at things was also a very unique idea to the vendor's sales representatives that we were working with. They didn't adjust quickly to what they perceived as 'new' concerns. This was information they were unfamiliar with and had not previously been provided to them by their companies. Part of our work was educating them about how to get environmental information about their products. It was a difficult and frustrating process for everyone concerned.

In the end, only two of the vendors gave us acceptable answers to our questions. Even those couldn't be rated very high as far as environmental responsibility. But at least they were trying and made the effort to answer our questions. As we'll see later, that turned out to be an important first step toward positive change.

Ironically, one vendor whose environmental stance is relatively well known, and generally ahead of others in the industry, never responded at all to our questions and was thus dropped from our considerations. This again emphasizes the trouble this nascent paradigm can cause as we all learn together how to make it work.

The vendor we ultimately chose was the one that had made the best effort to answer our questions and had thereby ended up with the highest score in that section. As it happened they also scored well in the features and cost so there was no question who won the contract.

2.2 Case study 2 – PDAs

Another IT procurement project is just coming to a close. It is an attempt to standardize on a single vendor for our handheld computers (PDAs, or personal digital assistants).

We chose to use a very similar set of environmental considerations. We made a few minor changes to address the differences between the platforms (e.g., PDAs do not have monitors attached, and thus some of the questions about lead in the glass were removed or changed). We sent them to the vendors and again emphasized that they would be given equal weight with the other considerations used to select a standard.