

Winding stream of e-waste

Reading David Pogue's column in The Jakarta Post (Jan. 3, 2010) I found a spirit of optimism. The message is clear: The government and consumers can join forces to pressure electronic gadget manufacturers to adopt an extended producer responsibility (EPR) principle.

Pogue's assertion is contextually right since he referred to countries where some sorts of e-waste management system, however pre-mature, have been in place. His column is, anyway, intended for US readers.

In a country with a skyrocketing trend of electronic gadgets consumption, but without e-waste management system in place, like Indonesia sharing Pogue's optimism, would be misleading. Unlike in US and European Union (EU) countries, the e-waste stream in Indonesia is longer and winding.

Indonesia's consumption of electronic goods is among the highest in Southeast Asia (www.tempointeraktif.com). In 2007, Indonesia consumed 4.3 millions units of TVs, while Thailand, Vietnam, Malaysia and Singapore put away 2.7 million, 1 million, 530,000 and 300,000 units respectively. Indonesia is also leading in refrigerator consumption in the region with 2.1 million units annually.

Import of electronic products by Indonesia during the period of January to November 2010 was 50 percent higher than in the same period in 2009, amounting to US\$3.66 billion.

China is the largest electronic exporter to Indonesia with a 35 percent market share. This trend will most likely continue, particularly due to ever increasing demands of notebooks and cell phones. In 2010, shares of cell phones and notebooks were 58 percent and 26 percent of the total electronic goods imports.

Among the electronic products, cell phones are likely to experience the highest growth in consumption.

Unlike TVs, refrigerators or air-conditioner, cell phones are personal. The cell phone is also short-lived in terms of design and performance. There is a clear tendency that the "in-service lifetime" of the cell phone is getting shorter and shorter.

Penetration of the cell phone within the population is really deep and wide — users are those who are virtually 5 years of age, elementary school students to those in their 70s. Cell phones are also widely distributed in the population regardless of the great discrepancy in income levels.

However, as Graciela Flores (Natural History Jul/Aug 2007) put it, "talk is toxic", cell phone content has a reasonable amount and variation of toxic substance. A study by Timothy G. Townsend and colleagues from University Florida six years ago elucidated that typically a cell phone — without a battery — contains 45 percent plastic, 40 percent PCB (printed circuit board), 8 percent metal, 4 percent LCD and 3 percent magnesium plate.

Employing a special test known as the toxicity characteristic leaching procedure (TCLP), these researchers found metals, such as lead, copper, zinc and iron in the leachate. They also uncovered that leachates from 38 of 53 cell phone samples tested contain lead exceeding the toxicity characteristic (TC) limit, i.e, higher than 5 milligrams per liter.

Among these metals, lead is the most notorious. It is toxic to both humans and the environment. In humans, it has an effect on the central nervous system, immune and vascular systems, kidneys and the endocrine system. It has damaging effects on the development of children's brains and the resulting cognitive performance.

Lead is also considered as a potent carcinogen. This metal may accumulate in the ecosystem and is toxic for microorganisms, plants and animals. Lead is widely used in electronic products, especially to attach components to the printed circuit board.

EPR, take-back or product stewardship stands for responsibility of producers throughout the entire life cycle of their products. Product stewardship or EPR for electronics is still a rather new endeavor.

In EU countries it was initiated in 2005 following the issuance of the EU Waste Electrical and Electronic Equipment Directive (WEED). This directive requires producers in member states to finance electronic waste take-back programs and they should also treat the collected waste.

Similarly, Japan has also enacted a take-back law to impose stewardship. Nowadays it is not strange to see consumers in EU countries and Japan to bring their old electronics to the collection points established by producers. The Japanese and EU manufacturers also take back computers and TVs, but also refrigerators, stereo equipment, and even toys.

The US, however, took a different route. Instead of mandatory, EPR in the US is voluntary. EPR was, thus, implemented only by proactive, forward looking, companies. The US Environmental Protection Agency (EPA) has also formed partnerships with industry to promote safer electronics; this includes using safer chemicals.

EPR, however, can only take place in ideal circumstances. In fact, take-back will stimulate manufacturers to apply Design for the Environment (DfE), for example, to produce electronic gadgets designed for disassembly, reuse, remanufacturing or recycling.

However, EPR will not work easily in a country like Indonesia, where secondary or even tertiary and further markets for the electronic products exist. In other words, unless in an irreparable state an electronic product, say a cell phone, still has a market.

Later, after passing through several tiers of waste collectors and even flea markets, some portions of this broken cell phone will find its way to a recycling factory while some other portions will be dumped freely in the environment. So even if the recycling takes place, it will only be partial.

Under EPR, producers must develop detailed knowledge of their products and of their products' life cycles.

This will be difficult to take place here in Indonesia, since in most cases we are not always dealing directly with the manufacturers.

In the case of a cheap cell phone from China, we are dealing with traders. The government should impose an EPR regulation to pressure major cell phone manufacturers.

But how about less "established" brands of cell phones? It is no longer a secret that by importing several thousand units of cheap cell phones from China traders, there is the privilege to label them whatever brand you like.

Will these traders care about the lifecycle of the products they sell? I doubt it. But should we let this pollution time bomb tick faster?

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