



# 'Remanufacturing is a Superior Choice'

## Save Money, Save the Environment with Remanufactured Cartridges

**W**hat is remanufacturing? It's reusing and refilling ink and toner printer cartridges so they can be used again. Used cartridges are collected from consumers and businesses, and sorted by remanufacturers. The cartridges are disassembled and cleaned, and any necessary replacement parts are added. High-quality toner or ink is added, and the cartridges are tested and packaged for distribution.

Remanufactured cartridges contain high-quality components, and give excellent printing results. More than 3 million companies around the world already rely on these quality products for their printing needs. They trust the quality and reliability of remanufactured cartridges for their day-to-day printing needs as well as for their most important projects.

### Remanufacturing and the Environment

Every year, more than 300 million plastic printer cartridges end up dumped in landfills in the United States and around the world — almost eight cartridges are thrown away in the United States every second, industry sources say. While we can never completely stop the cycle of cartridges entering the waste stream, we can at least stem the flow.

According to Lyra Research, in 2002 almost one billion toner and inkjet cartridges will be shipped worldwide, and only 13 percent of those will be third-party cartridges, many of which are remanufactured.

Remanufacturing matters. Every cartridge that we remanufacture is one fewer going directly to the landfill. For every remanufactured cartridge purchased, it's one less new cartridge that needs to be produced, saving it from entering the waste stream and from draining the planet's natural resources.

In fact, many printer cartridges end up dumped in places you'd never expect — in rural areas of Asia, according to a



recent report by environmental groups (see "High-Tech Trash Ends Up in Asia").

### Save Money and Get Quality

Of course, many companies want to be environmentally sensitive, but the main reason companies use remanufactured cartridges is to save money. Most remanufactured cartridges are 40 to 60 percent cheaper than the original equipment manufacturers' (OEM) cartridges, with comparable quality and reliability. In fact, many remanufactured cartridges last longer, as they often

have up to 20 percent more toner than OEM cartridges.

In short, printer cartridges don't need to be so expensive. In order to protect their profit margins, the OEMs often claim that non-OEM cartridges might damage your printer. No manufacturer (or remanufacturer) can guarantee that a cartridge will never fail, but there is little chance that a toner or ink cartridge could ever affect the functionality of a printer or fax machine. Plus, many remanufacturers offer guarantees, promising to repair any possible related damage; due to the excellent quality of remanufactured products, this is an offer they almost never have to make good on.

### Customers Deserve a Choice

The way many OEMs design their cartridges discourages reuse and remanufacturing. It would benefit both the environment and consumers for the cartridges to be designed so that they can be reused more easily.

No car manufacturer would be allowed to require consumers to buy its own brand of gasoline. Consumers deserve a choice, and third-party suppliers and remanufacturers provide that option.

Plus, many remanufacturers are small businesses, employing workers from the local communities. There are more than 500,000 people employed by remanufacturers in the United States.

## Environmentally Friendly

The reason that many remanufacturers got into the business is to help the environment. Reducing the number of cartridges that take up the limited landfill spaces is good, and remanufacturing saves natural resources, as well. The plastic in each toner cartridge takes three and a half quarts of oil to produce, and each new inkjet cartridge requires two and a half ounces of oil. Last year approximately two million cartridges were remanufactured, saving more than three million gallons of oil. Half a gallon of oil is conserved for each laser cartridge that is returned for remanufacturing, industry sources say.

## Saves Energy

Also, reusing cartridges saves energy. It uses significantly less energy to remanufacture a cartridge than to produce a new one, saving energy and the natural resources used to produce power. Remanufacturing industries (of all types of products) save as much energy each year as is produced by five nuclear plants. Plus, remanufacturing reduces greenhouse gases, which contribute to climate change, the U.S. Department of Energy said.

It even takes less energy to remanufacture products than it would to recycle them. Why? Recycling converts the material back into raw material, which is used to manufacture an original product, while remanufacturing captures a large percentage of the resources from the original product, including the added value of the labor, energy and capital.

The average toner cartridge weighs 3-1/2 to 4 pounds, which means that the total weight of cartridges thrown away each year is equivalent to 67,612 Ford Explorers or 112,463 Volkswagon Beetles.

## Reduces Waste

Plus, that's more than 3 pounds of plastics, the main material in most cartridges. Unfortunately, it's plastic that's not very recyclable, and in the landfill will take more than 100 years to biodegrade. Many consumers are familiar with the number system used to indicate recyclability of plastics. These numbers range from one, the most recyclable, to seven, the most difficult to recycle. On many products, including shampoo and water bottles, the number is stamped into the plastic on the bottom of the

# High-Tech Trash Ends Up in Asia

Many toner cartridges, along with other high-tech waste, are being shipped to a rather unexpected place – rural Asia – a recent environmental report said.

The report is based on environmental groups' investigations in China, Pakistan and India, and was sponsored by the Basel Action Network (BAN) and Silicon Valley Toxics Coalition, along with Toxics Link India, Greenpeace China and Pakistan's SCOPE.

Export of hazardous waste from developed to undeveloped countries is prohibited by the Basel Convention, a United Nations environmental treaty. According to BAN, the United States is the only developed country that hasn't ratified the treaty; China ratified it in 1991.

BAN Coordinator Jim Puckett said that despite the ban, significant amounts of hazardous electronic waste is



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**Children huddle near a typical pile of printer cartridges dumped along the road in Guiyu, China.**

being illegally imported into China where migrant workers break apart and burn computer parts such as computer, monitors, printers and other materials.

Men, women and children are working under primitive conditions, the environmental report said, with no protection from the health and environmental hazards posed by burning plastics and wires, cracking lead-laden cathode ray tubes and using acid to

extract precious metals from circuit boards.

## Toner Cartridges in China

Puckett, speaking with *Recharger Magazine*, said that in addition to the general computer waste, he saw thousands of toner cartridges dumped along roads and in rivers in the rural Guiyu area of China's Guangdong Province, four hours north of Hong Kong.

bottle. PET plastic bottles, such as two-liter soda bottles, are fairly easy to recycle, and are given a rating of one. Most laser cartridges are rated a seven because they contain mixed resin plastics; estimates indicate that only 5 to 10 percent of the plastics in this category are recycled. In addition, the toner residue can seldom be completely separated from the cartridge's plastic, contaminating the plastic and making the cartridges even less likely to be recycled.

### A Better Choice

That's where remanufacturing comes in. Remanufacturing is the best way to save products from the landfill.

"Although recycling of toner cartridges does have a number of benefits, remanufacturing is a superior choice, both environmentally and economically. In most cases, recycling of plastics has not proven to be economically viable," said a report facilitated by the U.S. Department of Energy Office of Industrial Technologies.

"Toner cartridges are particularly difficult to recycle because they are composed of several different types of plas-

tics and must be completely dismantled and sorted. In addition, the cartridges are dirty, dusted with toner and contain non-plastic parts, which require disposal," the report said. "Remanufacturing, on the other hand, calls for cartridges to be cleaned, inspected and refilled, reusing the majority of the original plastic parts. For every cartridge that is remanufactured, over a pound of plastics is withheld from the waste stream."

### 'Think About Environmental Impacts'

The Sierra Club, a well-known environmental group, advocates "Sustainable Consumption," maintaining a level of natural resource use and consumerism that can be maintained by the resources available. In an October 2000 report, the Sierra Club's Consumption task force encourages people to "think about the environmental impacts of their consumption choices" and to "make thoughtful choices as consumers."

Choosing remanufactured products is one way to reduce the environmental impact of printer cartridges, while getting a high-quality product and saving you and your business money. **R**

"We observed people trying to recover toner powder" from discarded toner cartridges, Puckett said. The workers appeared to be using a paintbrush to sweep remaining black toner, but he was not sure what they planned to do with the recovered toner. "It might be used to make low-grade dyes. The toner is contaminated with dirt, so I seriously doubt that they put it back in the machines (printers), although it's possible," Puckett said.

The workers' skin and clothes were dusted with toner, their hands were black with it and they were breathing in large amounts of the toner dust.

"The manufacturers say that the toner is safe for normal use," Puckett said. "But normal use is in an office — this was definitely not normal use."

Puckett said that the data sheets are based on the black toner, and contents of color toner are listed as "trade



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**A laborer in Guiyu, China, with his arms black with toner, sweeps toner out of cartridges for possible reuse.**

secrets," so possible side effects of prolonged inhalation are unknown.

"I didn't witness them opening the color cartridges," he said, "but we saw cyan, magenta and yellow dumped on the ground and spilling out of cartridges. It was easy to spot the bright patches on the ground."

Beyond the workers' attempts to recover the black toner, it did not appear that the cartridges were being used for anything. "We saw massive amounts of cartridges dumped,"

Puckett said. "They were stacked — neatly and not so neatly — along the roads and dumped in the river."

### Sources of Waste

Where were all these computer parts coming from? Many had North American origins, Puckett said. Labels on the products indicated that some of them came from United States businesses, schools and governments. He indicated

that many of the computer parts were collected for recycling in the United States, before being purchased by exporters that transport the parts to China, Pakistan and India. "Insiders say that 80 percent of computer parts collected for recycling will go offshore," Puckett said.

"Printers were being broken down like the computers. Circuit boards were being melted — a very dirty process — and the chips were being melted in an acid bath, and the solder reused. It is done in very crude conditions. They separate the metal from the plastic. The plastics go to a crude remelting area" where workers have no respiratory protection from the toxic fumes, Puckett said.

"The whole riverside was a big sludgy mess of computer parts. Even if it was dumped elsewhere, when those areas were full, truckloads were taken down to the river. Historically, the river was a common area, so trash was dumped in the river," he said. "The river is now extremely polluted — it's a large river, refreshed by rainfall on a regular basis, and yet it still has very high lead levels." In fact, the river is so polluted that drinking water must be trucked in from 30 kilometers (more than 18 miles) away.



Photo copyright Basel Action Network 2002

**Stacks of color printer cartridges along the roadside in Guiyu.**



Photo copyright Basel Action Network 2002

**(Above) Printer and scanner parts, including color toner cartridges, dumped along a tributary of the Liangjiang River in Guiyu. For perspective, note the man standing on the pile at top left. (Below) Old toner cartridges and colorful cyan and magenta toners are dumped near the river. Rivers are convenient dumping areas for unrecyclable components of imported e-waste.**



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### Reuse Helps Reduce Waste

What can be done to reduce the waste ending up in landfills and dumped in China?

"We recommend that manufacturers design for recycling and reuse," Puckett said. "Make products standardized so they can be used again and again." Reusing products helps extend their useful life, delaying their entry into

the waste stream, and reducing the number of new products that need to be manufactured.

"The toner cartridges are a classic example of why we need to standardize the technology to make them usable over and over," he said. **R**

*The full report, "Exporting Harm: The High-Tech Trashing of Asia," is also available at [www.ban.org](http://www.ban.org) or [www.svtc.org](http://www.svtc.org), along with a video (available by donation). The Basel Action Network also offers a Pledge of True Stewardship on its Web site. For more information, contact Jim Puckett at [jpuckett@ban.org](mailto:jpuckett@ban.org) or (206) 652-5555. All photos in this story are copyright Basel Action Network, 2002.*