

# TECHNOLOGY



## QUICKSTUDY ETL

Extract, transform and load software enables companies to move data from multiple sources, reformat and cleanse it, and load it into another database, a data mart, a data warehouse or another operational system. **Page 23**

## SECURITY MANAGER'S JOURNAL Developer Tool Kit Raises Backdoor Alarms

When antivirus software detects backdoor code embedded in critical applications, Vince Tuesday tracks the source to a development tool kit. **Page 24**

## QUOTE OF THE WEEK

“The damage from mismanaged outsourcing will always exceed the potential benefits from anticipated IT cost reductions.”

— Columnist Paul A. Strassmann, former CIO at NASA, page 25



**W**HEN KAISER Permanente began a program to dispose of its obsolete computer equipment two and a half years ago, it was motivated more by cost concerns than by the desire to properly dispose of products with potentially toxic content.

“My boss was concerned with more space being taken up by excess and used equipment,” says Jim Regan, manager of IT facilities at the Oakland, Calif.-based health care management company, noting that the idle assets accrued storage and property tax charges. But he quickly realized that the disposal of IT waste, which contains many toxic substances, presented a potentially large and growing liability risk to Kaiser.

Growing public awareness of the hazards of e-waste and a rising tide of regulations have increased the pressure to recycle IT products and set the stage for higher disposal costs. Meanwhile, low-cost bidders for IT equipment disposal services may be working through brokers to send equipment to developing countries — or to illegal waste dumps in the U.S. Failure to establish best practices, thoroughly check out vendors and create an audit trail may leave companies on the hook for hefty fines, lawsuits and a barrage of negative publicity.

A typical CRT monitor contains three to nine pounds of lead, recyclers say. And printed circuit boards contain beryllium, cadmium, flame retardants and other compounds that can contaminate the air and groundwater and expose

**63**  
MILLION

Number of PCs junked in the U.S. in 2003

SOURCE: NATIONAL SAFETY COUNCIL

**315**  
MILLION

Number of PCs the EPA estimates will end up in landfills by the end of 2004

PHOTOGRAPHY SUPPLIED BY THE BASEL ACTION NETWORK

# TOXIC LEGACY

Improper disposal of obsolete IT equipment is fast becoming a major liability for corporations. **By Robert L. Mitchell**



Stacks of unused equipment (right), many with corporate asset tags clearly visible, end up in illegal landfills or in places like Guiyu, China, where a worker (left) wearing no protective gear pours acid on circuit boards to reclaim precious metals.

PHOTOGRAPHY SUPPLIED BY THE BASEL ACTION NETWORK

humans to carcinogens and other toxins when equipment is shredded, burned or sent to a landfill. According to the U.S. Environmental Protection Agency, e-waste is now the fastest-growing waste stream in the U.S.

Until now, only electronics manufacturers have been under pressure from activists and regulators to reduce toxic content in their products and limit human exposure to toxins used in their manufacturing processes. That's changing.

The European Union took the lead on end-of-life issues when it issued two directives on e-waste aimed at manufacturers early last year. One requires vendors that sell IT products in Europe to phase out some particularly dangerous toxins, including lead, mercury, cadmium, hexavalent chromium and bromated fire retardants, from electronics products by 2006. The other holds manufacturers responsible for end-of-life disposal costs for their products.

Meanwhile, a wave of e-waste regulations is beginning to roll across the U.S. A new California law assesses an upfront fee for every CRT purchased to cover recycling costs, bars the export of e-waste and requires a phase-out of the toxic substances cited in the EU directive. California and a few other states also have banned landfill disposal of some IT products, such as monitors. In all, more than 24 new bills are working their way through state legislatures, according to Gartner Inc., creating a patchwork of inconsistent rules that organizations must follow and the potential for stiff fines for those that don't.

But a more troubling aspect of the

issue for Kaiser's Regan came to light early in 2002, when two activist groups released a graphic and controversial report on the export of U.S. e-waste to developing countries. The report, released by the Basel Action Network (BAN) and Silicon Valley Toxics Coalition (SVTC), asserted that 50% to 80% of e-waste collected in the U.S. is exported to developing countries. It included disturbing pictures of children in the Chinese village of Guiyu playing amid mountains of discarded IT products, and laborers smashing monitors by hand outdoors and pouring acid over circuit boards to remove valuable metals. Clearly visible in some of the pictures were the asset tags of private and public U.S. organizations that

previously owned the equipment. Follow-up stories confirming the e-waste situation in Guiyu appeared in major U.S. newspapers, including *The Washington Post* and the *San Jose Mercury News*. But as the media and activists focused on Dell Inc. and other producers as the culprits, Kaiser's management saw the potential for damage to the company's reputation and brand name if its equipment were to appear in such an exposé. Exporting e-waste isn't illegal in the U.S., but Regan began to get calls from worried doctors in his company's executive ranks.

By that time, however, he had already worked out an arrangement with Redemtech Inc., a Hilliard, Ohio-based recycler that handles the disposition of obsolete IT equipment. Regan's contract specifies a zero-landfill policy, includes written assurances that Redemtech's recycling subcontractors don't export any e-waste products and calls

for documentation of the final disposition of all IT products. Regan uses the reports to pull assets off the books and to protect the company from liability lawsuits. "We went into this with a risk-mitigation point of view. You really have to make sure that nothing on the back end sullies your reputation," he says.

Regan may have been ahead of the curve in thinking about these issues, but considering the volume of e-waste that companies like his generate — Kaiser has disposed of 65,000 pieces of IT equipment over the past two years — he's convinced that it's just a matter of time before environmental groups make an example of a large corporate user of IT products. "Do your homework and make sure you have your back covered," he advises.

Dell became such an example on the vendor side. Ted Smith, founder of the San Jose-based SVTC, says that his organization singled out the PC direct marketer for criticism last year, issued negative reports on its recycling policies and picketed company offices and even the offices of CEO Michael Dell's wife. "We decided that they would make a great target," he says, noting that since the SVTC campaign, the vendor has "begun to take these issues more seriously."

The tactic worked: Dell, IBM and Hewlett-Packard Co. all say they now offer computer return programs and recycle collected IT products.

Jim Puckett, coordinator of Seattle-based BAN, which opposes the exportation of hazardous e-waste to developing countries and works closely with the SVTC, says a high-profile user of IT products will be his organization's next target. "We're going to start going after some institutions now and making examples of them in a positive and negative way. We're going to be putting pressure on the users," he says.

Meanwhile, many IT organizations remain ignorant of the legal and technical issues surrounding proper disposal of IT equipment. "I still talk to clients on a daily basis and they have no idea what's going on. You'd think that they would know at this point that you can't just throw this stuff out," says Gartner analyst Frances O'Brien.

### E-waste Economics

Many IT organizations avoid the problem simply by storing obsolete and unused equipment — a costly proposition that both manufacturers and recyclers say will get only more expensive as the costs of both storage and disposal increase. "The No. 1 solution for IT disposal today is storage," says Lennie Myers, a vice president at Austin-based recycler Image Microsystems Inc.

When it comes time to remove equipment from service, few companies have budgeted for proper disposal, and fewer still want to convince the chief financial officer to spend the \$30

**24**  
STATES

Have e-waste legislation in the works

SOURCE: GARTNER INC.

## WAYS TO PROTECT YOURSELF

- 1 LEASE EQUIPMENT** so that the title to the equipment transfers to the leasing company at the end of the term — along with the disposition issues.
- 2 DISPOSE OF IT EQUIPMENT** when it's removed from service.
- 3 BUNDLE DISPOSAL COSTS** into new purchases by including the disposition of old IT assets in the RFP for equipment that replaces it.
- 4 EMPTY THE IT CLOSETS:** Dispose of unused, stored equipment immediately. This equipment incurs storage costs and property taxes plus disposal costs that are likely to increase over time.
- 5 INCLUDE A COPY OF THE OPERATING SYSTEM** when donating equipment. Machines without an operating system are likely to be discarded or shipped overseas.
- 6 INCLUDE CONTRACT WORDING** that prohibits the recycling vendor or its subcontractors from exporting equipment to developing countries that lack environmental regulations.
- 7 REQUIRE A FULLY DOCUMENTED AUDIT TRAIL** that shows what happened to each IT asset through its final disposition, whether sold, recycled or destroyed.
- 8 CONDUCT A DUE DILIGENCE** background check on the recycling vendor and its practices that includes an on-site visit.
- 9 CONSIDER DISPOSITION SERVICES** from IBM, HP, Dell or other major IT equipment vendors. They charge more than smaller recyclers, but they have reputations to protect and deeper pockets if liability issues arise.

SOURCES: RECYCLING VENDORS, PRODUCT MANUFACTURERS AND CORPORATE USERS

per PC that O'Brien says proper disposal of an obsolete PC typically costs. This problem has arisen because the end-of-life economics have changed. While disposal costs have increased, the prices of used PCs have dropped to the point where a typical system has little or no residual value after just 30 months, according to Dell. In the past, an IT organization could dispose of equipment after three years and receive a few dollars back, but today, it's more likely to incur a net cost.

"There is a de facto motivation for people to cut corners in managing end-of-life [issues]," says Bob Houghton, Redemtech's president.

"You can still get a guy in a little red truck to haul away your PCs, so nobody wants to focus on this issue," says an IT executive at a large financial services company, who asked not to be identified. Without executive sponsorship of a responsible disposal policy, he says, business units will continue to throw equipment into Dumpsters rather than incur a \$25-per-unit disposal fee billed through an internal, IT-sponsored program.

The executive was able to gain support for responsible recycling by focusing on problems with improper erasure of data on the hard disk drives of discarded PCs and the risk of non-compliance with Health Insurance Portability and Accountability Act privacy regulations. Vendors such as Image Microsystems and Redemtech verify and document disk erasure as part of their services. Because of the extra costs of responsible disposal, the executive says, it will take the negative publicity of a "Martha Stewart type of case" before businesses will fund proper disposal practices.

"There are bad things happening. As a corporation, you need to prove you did due diligence," O'Brien says. That means tracking assets and having proof of sale or proper disposal — something most companies don't do. Despite the risk of negative publicity, it's legal and relatively inexpensive to work with brokers that export IT equipment overseas. Even recyclers that say they don't export may send some equipment or components to downstream brokers that do export it. Or the equipment could end up in a field somewhere unless you've verified the vendor's practices and tracked the asset properly, O'Brien says.

She says one client received an offer to remove 3,000 dead monitors for \$3 each, well under the going rate of \$7 to

\$35. "Three months later, he got a call from the Department of Environmental Protection asking, 'Why are your monitors in this field?'" O'Brien says. Investigators such as the EPA can quickly trace equipment back to its original owner through serial numbers or asset tags.

"If we can't prove we transferred that title, we're liable," says the financial services company executive. That means paying cleanup costs and fines.

### Thinking Ahead

So, what's an IT executive to do? "The best place to [address disposal of IT assets] is where the competition is, which is upfront," says Regan. He now includes specific terms for the disposal of existing IT assets

as part of requests for proposals for new equipment. And he's moving toward more leasing, which takes the problem off his plate. All of Kaiser's 250,000 IT assets, including those that go back to vendors or leasing companies, are processed by Redemtech as they're retired. The vendor collects the equipment, wipes the disks, refurbishes, recycles or returns the equipment,

and provides written verification.

"We're looking at a net cost per PC of \$18.40, and the monitors are \$23.71 on a net basis. We've budgeted those disposal costs," Regan says. The total tab for processing 19,906 monitors and 38,204 desktops over two and a half years is approximately \$1.2 million.

That may sound expensive, but IT organizations should be wary of vendors that offer disposal services at little or no cost. "They need to be cognizant of what may be happening to those materials . . . and do due diligence on those vendors," says Tod Arbogast, senior manager of asset recovery services at Dell.

Don't sit on IT equipment that has reached the end of its life, says Wayne Balter, vice president of corporate environmental affairs at IBM. John Montgomery, chief technology officer at Marine Terminals Corp. in San Pedro, Calif., says his company had a "warehouse full of computers" but has gotten rid of them through an organization that recycles them. Montgomery refreshes 20% of his PCs each year but keeps monitors longer, which saves money upfront and delays disposal costs on the back end. He's also gradually shifting to LCD panels, which use

less energy and don't contain the heavy amounts of lead found in CRTs, although fluorescent backlighting introduces small amounts of another toxic substance — mercury.

Users may eventually reduce back-end recycling costs by purchasing products that have lower toxic content at the front end. For example, the European TCO and Blue Angel certification labels provide assurance that some toxic materials aren't present in displays and desktops, respectively. But manufacturers will never be able to completely remove all toxic content from electronic products. The best approach for IT products, Houghton says, is to "assume everything is hazardous." **43804**

### MORE E-WASTE

**It's Not Easy Being Green:** Manufacturers and researchers say there are no simple answers to the recycling problem: **QuickLink 43807**

**Vet Your Vendors:** Read the vendor requirements and questionnaire documents one Fortune 500 company used to choose a responsible recycling contractor: **QuickLink 44350**

**Vendors Respond:** Manufacturers are working to remove toxins and promote recycling of their products: **QuickLink 43806**

**Resources:** Where to get answers on e-waste issues:

**QuickLink 43805**  
www.computerworld.com

**\$30**  
**PER PC**

Average cost to dispose of an end-of-life PC

SOURCE: GARTNER INC.

## WHAT'S IN A PC? AN INGREDIENTS LIST

**Lead:** Pervasive in circuit-board solder and CRT monitor glass. Can cause mental development problems in children and increased blood pressure in adults. Long-term effects include stroke, kidney disease and cancer.

**Hexavalent chromium:** Used for corrosion protection and as a hardener in metal housings. A recognized carcinogen. May also cause respiratory problems.

**Mercury:** Used in LCD backlighting, circuit boards, some switches. Known to cause birth defects, elevated blood pressure and heart problems.

**Cadmium:** Found in batteries, printed circuit boards, some plastics. Ranked among the most hazardous chemicals by the EPA, cadmium is a known carcinogen and can cause developmental and reproductive problems.

**Beryllium:** Used in circuit boards. A known carcinogen. Suspected to cause kidney, liver, respiratory, cardiovascular and other problems.

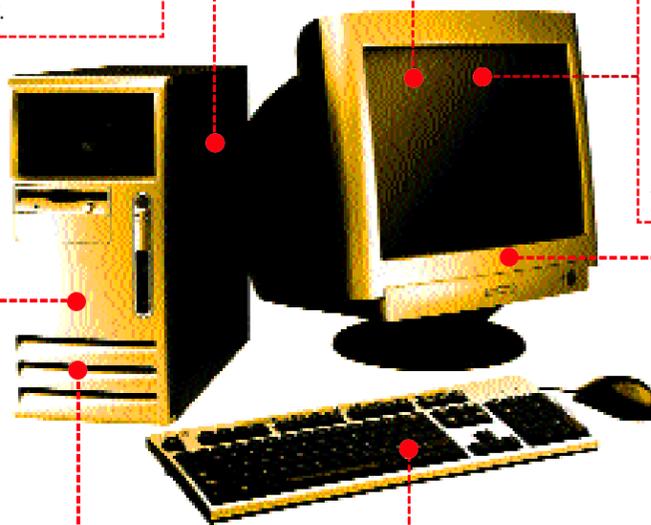
**NOTE: Substances listed in red must be phased out under California and European Union regulations.**

**Barium:** Used in CRTs to block radiation. Suspected to cause reproductive, developmental, neurological and respiratory problems.

**Phosphorus:** Found in CRTs. A suspected hazard, but toxicity is undocumented. Considered hazardous under the Federal Clean Air Act.

**Plastics:** In circuit boards, housings, cables and connectors. Can release dioxin when burned. Dioxin is a documented carcinogen and suspected developmental toxin.

**Brominated flame retardants:** Include **polybrominated biphenyls** and **polybrominated diphenyl ethers**, both used in plastics. Confirmed carcinogens. Cause birth defects. Suspected to cause reproductive, neurological and endocrine problems.



SOURCES: SILICON VALLEY TOXICS COALITION, TEXAS TECH UNIVERSITY, IMAGE MICROSYSTEMS, EPA, ENVIRONMENTAL DEFENSE