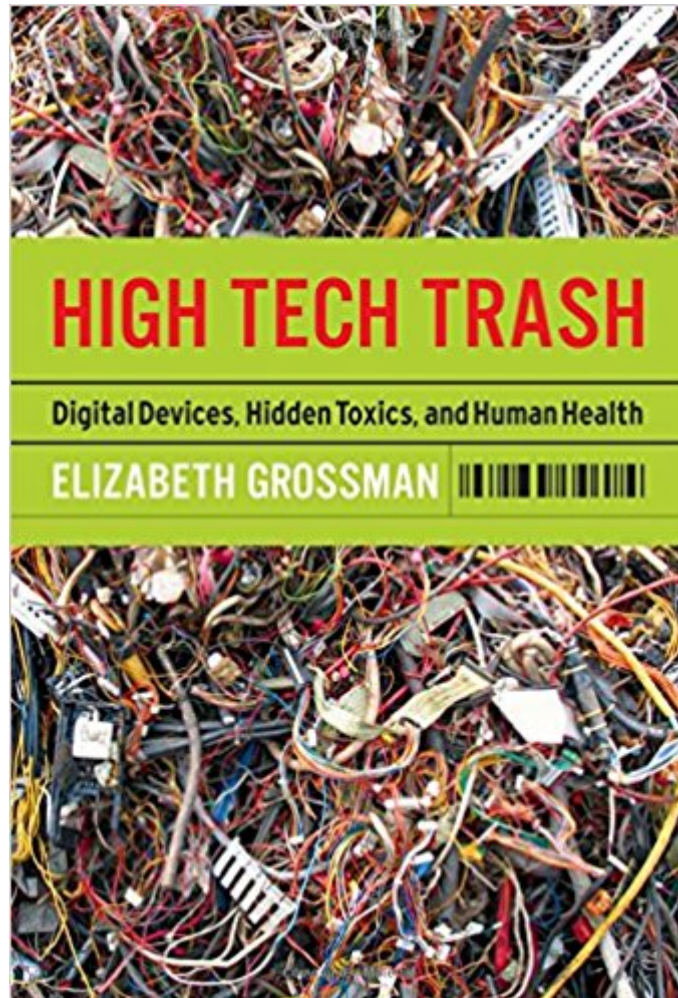




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# High Tech Trash: Digital Devices, Hidden Toxics, And Human Health



## Synopsis

The Digital Age was expected to usher in an era of clean production, an alternative to smokestack industries and their pollutants. But as environmental journalist Elizabeth Grossman reveals in this penetrating analysis of high tech manufacture and disposal, digital may be sleek, but it's anything but clean. Deep within every electronic device lie toxic materials that make up the bits and bytes, a complex thicket of lead, mercury, cadmium, plastics, and a host of other often harmful ingredients. "High Tech Trash" is a wake-up call to the importance of the e-waste issue and the health hazards involved. Americans alone own more than two billion pieces of high tech electronics and discard five to seven million tons each year. As a result, electronic waste already makes up more than two-thirds of the heavy metals and 40 percent of the lead found in our landfills. But the problem goes far beyond American shores, most tragically to the cities in China and India where shiploads of discarded electronics arrive daily. There, they are "recycled"-picked apart by hand, exposing thousands of workers and community residents to toxics. As Grossman notes, "This is a story in which we all play a part, whether we know it or not. If you sit at a desk in an office, talk to friends on your cell phone, watch television, listen to music on headphones, are a child in Guangdong, or a native of the Arctic, you are part of this story." The answers lie in changing how we design, manufacture, and dispose of high tech electronics. Europe has led the way in regulating materials used in electronic devices and in e-waste recycling. But in the United States many have yet to recognize the persistent human health and environmental effects of the toxics in high tech devices. If "Silent Spring" brought national attention to the dangers of DDT and other pesticides, "High Tech Trash" could do the same for a new generation of technology's products.

## Book Information

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## Customer Reviews

Driven by built-in obsolescence and the desire of consumers for smaller, faster and sleeker hardware, millions of discarded plastic computer casings, lead-infused monitors, antiquated cellphones and even dead TV remote controlsÃ¢âthe "effluent of the affluent"Ã¢âare piling up annually in America's landfills, leaching dangerous toxins, including lead, mercury and arsenic, into the nation's water tables. Such cast-off "e-waste" is also being shipped to countries like India and China, where for pennies a day workers without masks or gloves boil circuit boards over primitive braziers to extract microchips (along with a slew of noxious elements), after which the silicon chips are bathed in open vats of acid to precipitate out micrograms of gold. In either instance, according to this alarming and angry study, the way in which America currently handles its cyber-age waste amounts to an ongoing but underreported environmental crisis. Grossman (Watershed: The Undamming of America) points to recycling regulations in Europe as models and demands that manufacturers of high-end technology assume more of the burden for safe disposal of discarded electronics. Her call for action is commendable and critical, but this book's often daunting jargon (pages are given over to a difficult discussion of different kinds of bromodiphenyl ethers and their varying impact on the environment) sometimes undercuts its passion. (May) Copyright Ã   Â© Reed Business Information, a division of Reed Elsevier Inc. All rights reserved. --This text refers to the Hardcover edition.

Word is getting out about a metastasizing environmental and health threat: high-tech trash, or e-waste, our cast-aside computers and cell phones, devices dense with toxic substances. Environmental journalist Grossman takes readers on an eye-opening, even shocking tour of the cyber underground, clearly and methodically explicating the science, politics, and crimes involved in the mishandling of the ever-increasing tonnage of e-waste. Grossman tracks the entire electronics manufacturing process, from mining the heavy metals used in digital machines and gadgets to the serious yet underreported pollution generated by the production of silicon chips. Then there are alarming discoveries regarding the brominated flame retardants used in electronics, poisonous compounds now found in our food and our bodies, and the appalling conditions under which exploited laborers in China, India, and Nigeria break up and burn e-waste, absorbing deadly

chemicals that are also released into rivers and the atmosphere. There is an urgent need for e-waste regulation, and Grossman's informative, harrowing, and invaluable report, as well as Giles Slade's *Made to Break* (2006) and Elizabeth Royte's *Garbage Land* (2005), are essential for informed public discourse and action. Donna Seaman

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Fairly quickly into this book I was comparing it to *Silent Spring* and to *Pandora's Poison: Chlorine, Health, and a New Environmental Strategy*. This is a brilliant elegant work. If you agree with its premises it is a fast read, ending with an appendix on how to recycle electronic waste, and a truly superb bibliography. This is a serious book, a PhD level accomplishment, and totally objective and meritorious. I am particularly impressed that Apple accepts its computer back for recycling in Japan, something we need to demand here. Indeed, if Apple and CISCO (for its routers and hubs) were to commit to total recycling, what is called for in *Blessed Unrest: How the Largest Movement in the World Came into Being and Why No One Saw It Coming* and described in more detail in *Cradle to Cradle: Remaking the Way We Make Things* I for one would immediately switch my business and my office to iPhone, MacIntosh, and Open Office from Sun (on verge of being fully implementable within Apple's operating system). Other books on my top ten: *Where to find 4 billion new customers: expanding the world's marketplace*; *Smart companies looking for new growth opportunities should consider broadening ... consultant.: An article from: The Futurist* (Forthcoming as a book, see my keynote to Gnomedex, "Open Everything") *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits* *The Manufacture of Evil: Ethics, Evolution and the Industrial System* *Diet for a Small Planet* *The Wealth of Networks: How Social Production Transforms Markets and Freedom* *Thank God for Evolution!: How the Marriage of Science and Religion Will Transform Your Life and Our World*

"High Tech Trash" by Elizabeth Grossman is an eye-opening account of the mounting environmental costs of living in a technology-dependent society. As Rachel Carson had once sounded the alarm about the dangers of chemical contamination to a prior generation, Ms. Grossman succeeds in exposing one of today's most underreported environmental problems in a persuasive and compelling manner. The author's carefully structured thesis is invigorated with skillful writing and narrative flair, creating both an intelligent and accessible work that should appeal to a wide audience. Through her careful research and analysis, we understand that greater regulation of the production and disposal of high tech equipment is urgently needed in the U.S. if we

wish to avoid poisoning ourselves with the detritus of our wasteful consumerist culture. Ms. Grossman points out that our blissful ignorance of the underside of high tech may be partly the result of years of carefully crafted industry hype about the supposed immateriality of our modern world. Ms. Grossman methodically debunks such claims while vividly and memorably describing her sometimes harrowing visits to mining sites where raw materials such as copper, gold and other minerals that are essential to producing electronic products are extracted from the ground using highly destructive and polluting practices. The author visits several semiconductor manufacturing sites where water is withdrawn at unsustainable rates and discharged into local rivers in a fouled condition. She goes on to travel to so-called 'clean room' facilities where the legacies of soil and water pollution have led to illness and financial hardship in a number of communities. Discussing the probable link between increased cancer incidents among factory workers and the innocent people who happened to live near some of these plants, Ms. Grossman argues forcefully for the U.S. to adopt the precautionary principle while demonstrating how nearly all of us may be vulnerable to exposure. We learn that the problem of dealing with obsolete and broken electronic equipment, or 'e-waste', has been recognized by some industrialized countries but not by the U.S., whose patchwork of local laws are woefully inadequate to the task even if they are not well understood by citizens. Ms. Grossman compares and contrasts the practices of recyclers both in the U.S. and overseas; these range from the primitive conditions that sometimes exist in poor countries such as China where materials are often dismantled under hazardous conditions to modern, state-of-the-art facilities in Sweden and the U.S. where used electronics are handled under safe and controlled conditions. We come to appreciate the important role that responsible recyclers can play in recovering precious metals, plastics, glass and toxic materials from discarded equipment, which in turn can help us reduce the adverse effects of disposal on the environment and ourselves. Indeed, the author's common-sense arguments are presented with such clarity and power that inaction seems absurd: one concludes that there is simply no good reason for the U.S. not to implement a cradle-to-grave producer responsibility system for electronic products that includes easily accessible and affordable recycling options for consumers. I highly recommend this important book to everyone.

This book is very comprehensive and useful to give knowledge about high tech trash in general.

I recommend this book to anyone interested in an objective, complete account of the electronic circle: raw materials, manufacturing, and waste. Elizabeth Grossman follows the trail from the mining and semiconductor companies to the third world countries where our discarded laptops and

iPods end up. Although the title and first chapter have a grim tone, the book does offer a lot of hope. High Tech Trash makes a good companion piece to Elizabeth Royte's book, Garbage Land: On the Secret Trail of Trash. Royte takes a much more personal approach to waste, writing very vivid descriptions of personalities and environments she encounters along the way. Grossman's work is more scientific and removed from the personal, attempting to fill every cranny with statistics and quotes. Although they are not exactly the same book, both cover common ground with differing styles that result in a complete picture of the US waste stream. This makes High Tech Trash relevant to those who want to purely conduct research. I not only found out the exact chemical makeup of most motherboards but also their effects on the environment and human health. The author does a good job keeping her own personal feelings on a leash - a hard task to do when you swim through these kind of waters. Unlike the corporate demonizing that takes place in *Ã* *Ã* Gone Tomorrow: The Hidden Life of Garbage, High Tech Trash explores everyone's failures (governmental, social, corporate) to an exhaustive degree. This is the kind of book that will give you plenty to think about, a lot of anger over our current e-waste situation, but also plenty of ways to use that energy to improve our system and make things better.

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