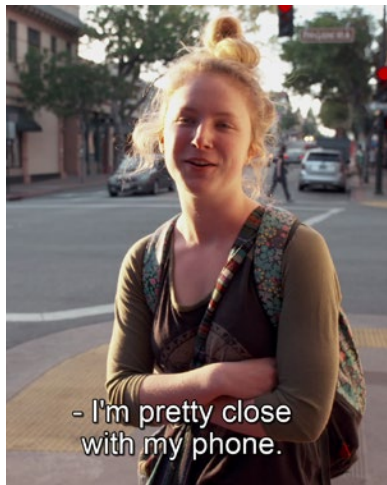


The IT industry has put immense pressure on the environment and on public health.



FILM SEQUENCES

Recommended excerpts are highlighted. See page 11.

Excerpts – clip 1 of 4:

Introduction: In a beautiful cloud 0:00–1:11

On the street, people are asked which devices they use and can't do without. Director Sue Williams says she too is attached to her sleek and elegant phone, computer, and tablet.

In the past two decades, these devices have changed the way people communicate and live. "We store our lives in a beautiful cloud," Williams says.

Designed to die 1:12–2:29

The secrets of the industry emerge: Devices that are "designed to die" can damage human lives as well as the environment.

IT, and the Wuhan and Yangtze rivers 2:30–3:39

Ma Jun documents pollution in China's Yangtze River in 2011; an electronics factory releases toxic chemicals into a lake. The IT industry there has put immense pressure on the environment and on public health. There are 300 million rural residents without access to safe drinking water, and more than 60% of China's groundwater is unfit for consumption.

See it to believe it 3:40–4:13

A man rows on a filthy river.

Old ladies ask for help 4:14–5:10

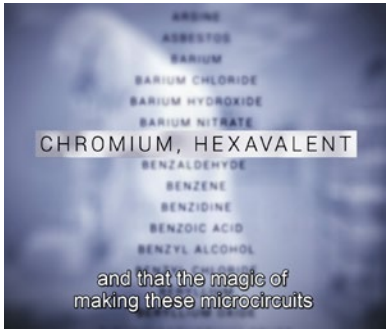
Ma Jun recalls meeting old women on their knees, pleading for help. Even though as a member of an NGO he lacks administrative power, he decides to bring their message out in the open to investigate the effects of the IT industry.

Silicon Valley 5:11–6:30

Ted Smith arrived in 1969 to study law; he describes the rapid growth surge of the electronics industry in Silicon Valley, which includes Hewlett-Packard, Apple, Intel, and IBM.

Working for IBM 6:31–7:35

Art Rodriguez describes IBM's clout. Mike Gray was the first microprocessor buyer for IBM. In the 1980s, the sale of personal computers took off as 50,000 units were shipped in the first year.



Many neighborhoods were unaware of toxic chemicals leaching out of soil in sites owned by HP, National Semiconductor, IBM, and Google.

As clean as a hospital...? 7:36–8:52

The semiconductor industry should really be seen as a chemical-handling industry, Smith argues, as it employs toxic materials that include asbestos, barium, benzene, chromium, copper cyanide, and hexavalent. Rodriguez recalls using sulfuric acid to clean disks. Smith could see that people were getting sick from exposure to chemicals on the job.

“Green gunk” 8:55–12:47

After Yvette Flores was exposed to lead oxide, or “green gunk,” her son Mark was born with developmental disabilities. Since then, he has been completely dependent on her for his care. A lawsuit has been filed against her employer. Lawyer Amanda Hawes talks about “systemic concealment of chemical poisoning.” Her team filed lawsuits on behalf of IBM workers and families.

The corporate mortality file includes 33,000 deaths. Richard Clapp says the impact includes a fourfold increase in breast cancer, along with non-Hodgkin’s lymphoma, brain cancer, and skin cancers.

IBM faces 200 lawsuits 12:49–15:05

Jim Moore and Alida Hernandez’s case: IBM blocked the mortality analysis from being presented in court. Linda Greer talks about brands and companies refusing to accept that chemical exposure in their facilities caused disastrous environmental and occupational health impacts. IBM refuses a request for an interview.

Excerpts – clip 2 of 4:

“Lucky supermarket on unlucky site” 15:06–18:10

Smith describes contaminated sites and the arrogance of a company representative, who told him, “You should be lucky that we’re here.” Toxic chemicals stored in underground tanks leak and enter the groundwater, affecting hundreds of families, who experience higher rates of miscarriages and birth defects.

Silicon Valley Toxics Coalition 18:11–20:32

A petition from the Silicon Valley Toxics Coalition calls on the Environmental Protection Agency to exercise its authority. Many neighborhoods were unaware of toxic chemicals leaching out of soil in sites owned by Hewlett-Packard, National Semiconductor, IBM, and Google. The EPA agrees to establish “Superfund” cleanup sites and says it will take 300 years to clean them.



The new supply chain: made in China 20:33-23:15

China lures high-tech companies with land and low-cost labor as production ramps up. In the early 1990s, the Apple iPod earned \$100 million in sales. The iPhone 5 earned \$10 million a week. Scott Nova and Li Qiang describe low wages and pressure on the workers to produce. Workers' pay amounts to just 1% of the total cost of an iPhone.

Video recording by workers 23:16-25:37

Backed by footage from hidden cameras, workers for Apple, Hewlett-Packard, and HTC describe bullying, harassment, long hours, and no compensation for injuries.



Excerpts - clip 3 of 4:

Foxconn and Apple 25:25-31:40

Long shifts, isolation, and alienation have resulted in suicides. Tian Yu, aged 17, jumped off the Foxconn factory roof and received no compensation other than some assistance from the company. Government officials monitor Tian Yu's family and what they say to the media. A 2011 explosion at Foxconn in Chengdu left two dead and 16 injured. Another explosion followed at a plant supplying Apple.

On the street 31:40-42:57

People are asked how often they upgrade their phones.

Kyle Wiens of iFixit explains how Apple has a built-in battery. Consumers have to buy a new cellphone every 18 months, and manufacturing just one requires 500 pounds of raw material. Products are meant to be disposable. Luke Soules locates a supplier in Shenzhen. The Maozhou River is contaminated by waste from circuit board manufacturers.



Ma Jun and IPE 42:57-48:33

Jun receives the Skoll Foundation's award for social entrepreneurship and builds a national air and water pollution database. Jun says fines against polluters have been trivial and ineffective. (They were later increased.) Jun and the Institute of Public and Environmental Affairs, in collaboration with Linda Greer of the U.S.-based Natural Resources Defense Council, begin to trace supply chains and identify polluters, including Apple. One supplier generates 100,000 tons of hazardous waste in a year.

Every year, three million tons of electronic waste are generated in the US. Of that, only 15% gets recycled.



Endicott, New York 48:44-53:04

Cancer-causing solvents leaked from IBM plants in New York state. Several households in one neighborhood have members who have cancer or died from cancer. Toni Sherling drew a map of 16 homes with 12 cases of cancer in them. In 2015, they received a settlement from IBM.

Excerpts - clip 4 of 4:

Reimagining devices 53:12-58:39

Paul Maher of MicroPro Computers in Dublin, Ireland, designed and built updatable, upgradable, reusable computers without plastic, PVCs, mercury, or lead. The design won awards but few customers.

Dealing with obsolete devices 58:40-1:01:53

Every year, three million tons of electronic waste are generated in the U.S. Of that, only 15% gets recycled. Don Cass shows Darrin Magee sorting plastics, wires, and boards. "We have very little relationship to our garbage here," an environmental geographer observes. "We throw it away, and my point is to say, where is away? Away is here, for someone."

Back to China 1:02:07-1:08:54

Millions of used devices end up back in China for recycling. (Much of this flow is now directed to other countries. See map at end.) Dr. Huo talks about Guiyu's dismantling of ewaste and its impact on children's health. These chemicals also negatively affect China's precious arable land. Kimberly Prather notes that while we can send waste to China, some of it returns to us as air pollution. Chemical fingerprinting reveals lead in California that originated in Asia. Pollution also affects climate. Aerosol particles in the atmosphere cause too much water in some places and not enough in others, creating tipping points for hurricanes and floods. We are all responsible for our planet.

Concluding words from Sue Williams 1:08:55-1:10:02

Our relationship to our devices becomes more complicated once we know the full cost. The electronics industry is moving on to new countries with few laws and poor enforcement of them.

We all share responsibility for this problem, but we can use our voices to demand real labor safety and environmental protection. The digital revolution has improved our lives; we need to make sure it doesn't rob us of our health or our planet.

Credits and interviews with people on the street.



Our relationship to our devices becomes more complicated once we know the full cost.

DISCUSSION QUESTIONS

For the 73-minute version of the film (with relevant clips)

1. What does Sue Williams mean when she says, “We store our lives in a beautiful cloud?” (0:00–2:29)
2. What comes to mind when viewing the image of the man rowing in a filthy river in China? (3:40–4:13)
Why didn’t people believe him earlier?
3. How has the technology industry taken a toll on ecosystems and the environment in China? (2:30–5:10)
4. In the 1970s and 1980s, the tech industry was booming in the USA and had a reputation as a “clean” industry. Why does Ted Smith call it a “chemical-handling industry”? (5:11–8:52)
5. What was the “green gunk” that Yvette Flores was working with? How did it affect her and her family? (8:55–12:47)
6. What role did the Silicon Valley Toxics Coalition play in bringing attention to groundwater contamination in California communities? (15:06–20:32)
7. Describe some of the working conditions at the Foxconn factory sites in China. (23:15–31:39)
8. Tian Yu is shown in a wheelchair. What is her story? (23:15–31:39)
9. Toni Sherling of Endicott, New York, has a map of her community. What does it show? (48:44–53:04)
10. Can an environmentally beneficial device/product be designed? Discuss. (53:12–58:39)
11. Chemical fingerprinting reveals lead from Asia travels to California. How does that happen? (1:02:07–1:08:54)
12. What can we do as consumers to help reduce the effects of pollution caused by the manufacturing of electronic devices? Discuss.



EXCERPTS

Where time is short, teachers may choose to assign the following four clips or view them in class. The total running time of the four clips is 38 minutes. The clips can be accessed online via the **Clips** tab on the screening page. The content of each clip is highlighted above in the summary of the film.

1 of 4: Death by Design 00:00–12:45, length 12:45

The birth of the semiconductor industry in California gave rise to Silicon Valley and made personal computers and iPhones possible. While the industry was initially considered to be “clean,” the mishandling of toxic chemicals during production leads to harm and gives rise to lawsuits. Similar problems emerge in China.

2 of 4: Lucky supermarket on an unlucky site 15:06–18:10, length 3:05

The improper storage and disposal of chemical waste result in contaminated soil and water and affect nearby communities in California.

3 of 4: Foxconn and Apple 25:25–31:40, length 5:15

Entire cities emerge in China just to build electronic gadgets for the world. Oppressive working conditions documented by workers and activists lead to suicides.

4 of 4: Toxic work and toxic waste: What choices do we have?

53:12–1:10:00, length 16:48

Can we reduce, recycle, or reuse consumer electronics?

QUESTIONS RELATING TO THE EXCERPTS

1. What does filmmaker Sue Williams mean when she says that devices are “designed to die”?
2. Why would people in rural China not have access to safe drinking water?
3. What is the “unlucky site” in Silicon Valley? Discuss.
4. Which chemicals affected the health of residents of Endicott, New York, and Santa Clara, California?
5. What was IBM’s “corporate mortality file”?
6. What happens to devices that become obsolete?
7. How can devices be made to last longer and be environmentally friendly at the same time? Give examples from the film.



The digital revolution has improved our lives; we need to make sure it doesn't rob us of our health or our planet.

ACTIVITIES

How much do you know about recycling electronics? Take the [quiz](#).

Reduce dependence on single-use plastics.

One of the lessons learned is that many materials used in manufacturing do not degrade and may produce toxic waste when recycled. Read about alternatives to some common single-use plastics. Be part of the solution. Buy [eco-friendly](#) products.

Don't turn devices into waste: Repair and share them.

iFixit argues that products that can be repaired should be repaired. Refurbished cellphones can be useful. Repaired computers can help bridge the digital divide. And repairing things creates local jobs. Read the [iFixit repair manifesto](#).

Who owns the pollution from manufacturing and recycling electronics?

View the 9-minute video *Lifting the Veil on Polluters in China*, also in the Global Environmental Justice Documentaries Collection.

Are the U.S. and Canada—and many other countries—cleaner because they export their polluting industries to China and Southeast Asia? Should those countries, or companies like Apple, be held accountable for cleaning up China's pollution? If so, how could this be accomplished? How is this an issue of environmental justice?

SUPPLEMENTAL MATERIAL

Each year, 50 million tons of e-waste are generated. The United Nations warns of a growing [e-waste crisis](#).

How is pollution monitored and regulated in North America? Visit the website of the [U.S. Environmental Protection Agency](#) (EPA). Read their definition of [environmental justice](#).

Read about [Environment and Climate Change Canada](#).

Do further research on [New York state's investigation](#) of chemical spills by IBM in the village of Endicott.

Tour "[iPhone City](#)," the massive Chinese factory town where half of the world's iPhones are produced. Read the *New York Times*' [in-depth article](#).

Can energy-efficient appliances make a difference? How? Read about optimizing energy use in the home in this article from [Consumer Reports](#).

Are "eco" labels on products a good guide for consumers? Or are they "greenwashing"? The [New York Times](#) says many of the claims are inaccurate, or worse.