Why we are "Challenging the chip"

Presented to
European Work Hazards Network
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Riga, Latvia
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Silicon Valley Toxics Coalition /
International Campaign for Responsible Technology
http://svtc.org
http://www.computertakeback.com/

SVTC Mission Statement

Silicon Valley Toxics Coalition does research, advocacy, and organizing to address human health and environmental problems caused by the rapid growth of the high-tech electronics industry. Our goal is to advance environmental sustainability and clean production in the industry, as well as to improve health, promote justice, and ensure democratic decision-making for communities and workers affected by the high-tech revolution.

Valley of Hearts Delight → Silicon Valley

- 1970's - Major transition from agriculture to electronics manufacturing in Santa Clara Valley
- SCCOSH formed in mid- 1970s in San Jose
- 1982 -SVTC formed after Fairchild pollution case
- 1990 - Campaign for Responsible Technology (CRT) est.
- 1997 - CRT becomes International-CRT (I-CRT)
- 1991 - EU Parliament passes WEEE & ROHS
- 2006 – EU Parliament votes on REACH

High Tech's Impact

- Semiconductor workers experience illness rates 3 times greater than manufacturing workers in other industries
- In 3 epidemiological studies, women who worked in fabrication rooms were found to have rates of miscarriage of 40% or more above non-manufacturing workers
- Silicon Valley has more EPA Superfund sites than any other area in the USA

"Printed circuit boards contain heavy metals such as antimony, silver, chromium, zinc, lead, tin and copper. According to some estimates, there is hardly any other product for which the sum of the environmental impacts of raw material extraction, industrial refining and production, use and disposal is so extensive as for printed circuit boards."

-CARE conference, Vienna 1994

Materials Intensity: the 1.7 kilogram Chip

The environmental weight of semi-conductors far exceeds their small size. 1672 grams of fossil fuel and chemicals are needed to produce one DRAM (2 gram) chip (more than 630 times the weight). A microprocessor chip could require 4 X this intensity. No other product has such materials intensity (a car has a ratio of 2 – 1).

Williams, Ayers, Heller, Environmental Science and Technology,11/2002

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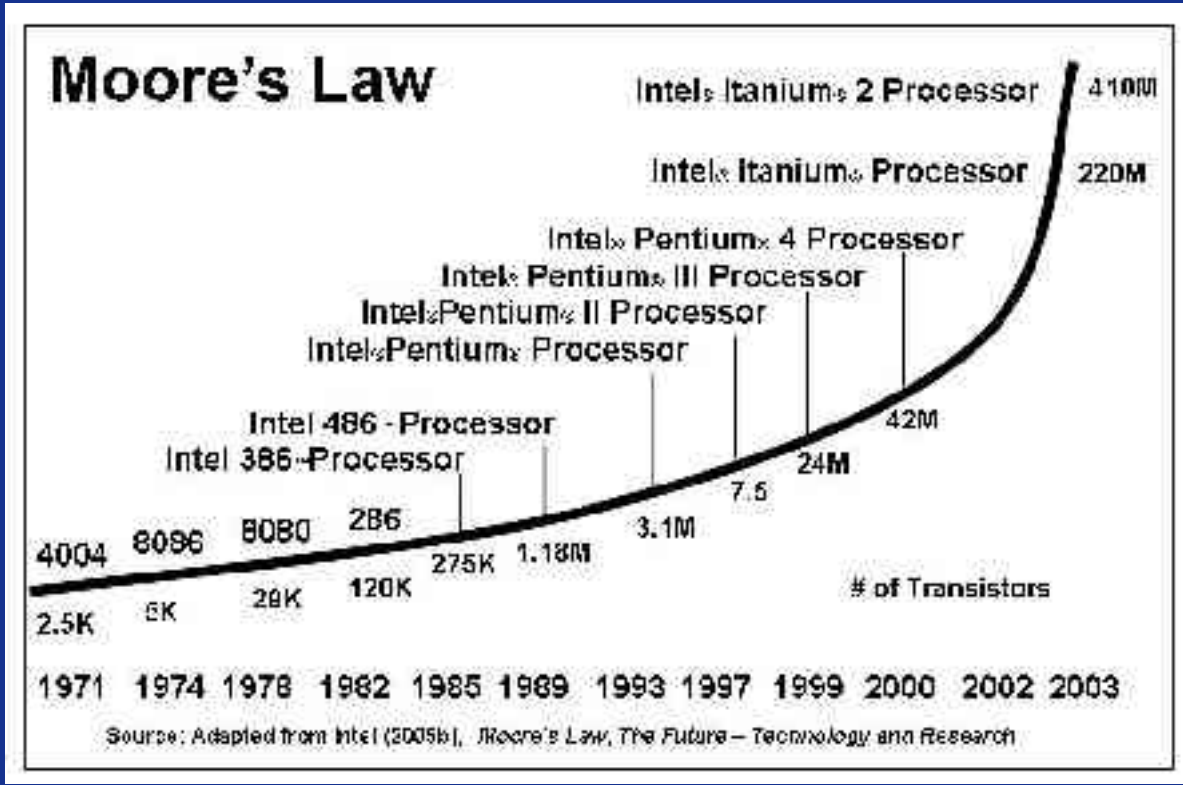
Moore's Law



Global High-Tech Production is Undergoing the Largest Industrial Expansion in the History of the World

Precautionary Principle

"When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof."

Rachael's Environment & Health Weekly #586

Why we need the Precautionary Principle

" Professionals… have invariably commented on the rapid pace of change in tools and materials and on the fact that adequate toxicological assessment of chemicals almost never proceeds their introduction into manufacturing settings…"

Quote: Myron Harrison, M.D., IBM, in Hazardous Materials Toxicology

Why We Need the Precautionary Principle

" … The pace of change is quickening… 3-4 years ago, a typical schedule of a new technology… was 6-8 years. Executives… are now demanding the schedule be compressed into a 2-3 year time frame…"

Quote: Myron Harrison, M.D., IBM, in Hazardous Materials Toxicology

Why We Need the Precautionary Principle

" … Engineers are not evaluated nor rewarded on their ability to… understand new or unusual health hazards… Unfortunately, the opportunities for professionals to be involved before these new processes arrive at the manufacturing floor are being diminished…"

Quote: Myron Harrison, M.D., IBM, in Hazardous Materials Toxicology

OSH Findings in Recycling Workers

- The levels of BFRs found at electronics dismantling plant were several orders of magnitude higher than in other environments
- Recycling workers are being highly exposed to PBDE and TBBPA
- Some studies have also shown exposures to computer technicians and office workers
  - Analysis and toxicology of BFRs with emphasis on PBDEs, by Pettersson and Karlsson, Orebro University, Sweden

Europe Leads the Way with 2

Waste Electrical Electronic Equipment (WEEE)

Restriction of the use of certain Hazardous Substances in electrical & electronic equipment (RoHS)

Basel Convention
to prevent the export of
hazardous e-waste

…but US fails to adopt

Exporting Harm

The High-Tech Trashing of Asia

February 25, 2002

Prepared by

The Basel Action Network (BAN)
Silicon Valley Toxics Coalition (SVTC)

With Contributions by

Toxics Link India
SCOPE (Pakistan)
Greenpeace China

E-waste dumped in China

Chinese workers sorting wires before burning

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Burning e-waste in China

Burning e-waste in Nigeria

Burning e-waste in Nigeria

Nigerian Boy in front of e-waste pile in Lagos

Nigerian boy with circuit boards

International Campaign for Responsible Technology (ICRT)

Global Symposium on Strategies for a Sustainable High-Tech Industry
November 14-17, 2002
San Jose, CA

http://www.svtc.org/icrt/index.html

Attendees of the First Symposium on Global Strategies for a Sustainable High-Tech Industry

International Campaign for Responsible Technology (ICRT)

Draft Mission Statement,
adopted November 16, 2002

- We are an international solidarity network that promotes corporate and government accountability in the global electronics industry. We are united by our concern for the lifecycle impacts of this industry on health, the environment and workers' rights.

International CRT

Silicon Valley Toxics Coalition

RCA Workers in Taiwan

Soesterberg Principles

Electronic Sustainability Commitment

Each new generation of technical improvements in electronic products should include parallel and proportional improvements in environmental, health and safety as well as social justice attributes.

Adopted by the Trans-Atlantic Network for Clean Production, May 16, 1999

Bejing Conference on Clean Production and E-Waste

E-Waste and Clean Production Conference in Bejing – April 2004

Computer TakeBack Campaign

Take it back

Make it clean

Recycle Responsibly

www.computertakeback.com

Computer TakeBack Campaign

The goal of the Computer TakeBack Campaign is to protect the health and well being of electronics users, workers, and the communities where electronics are produced and discarded by requiring consumer electronics manufacturers and brand owners to take full responsibility for the life cycle of their products, through effective public policy requirements or enforceable agreements.

Make it Clean

- Phase-Out Hazardous Chemicals
- Design for the Environment
- Adopt the Precautionary Principle
- Zero Waste

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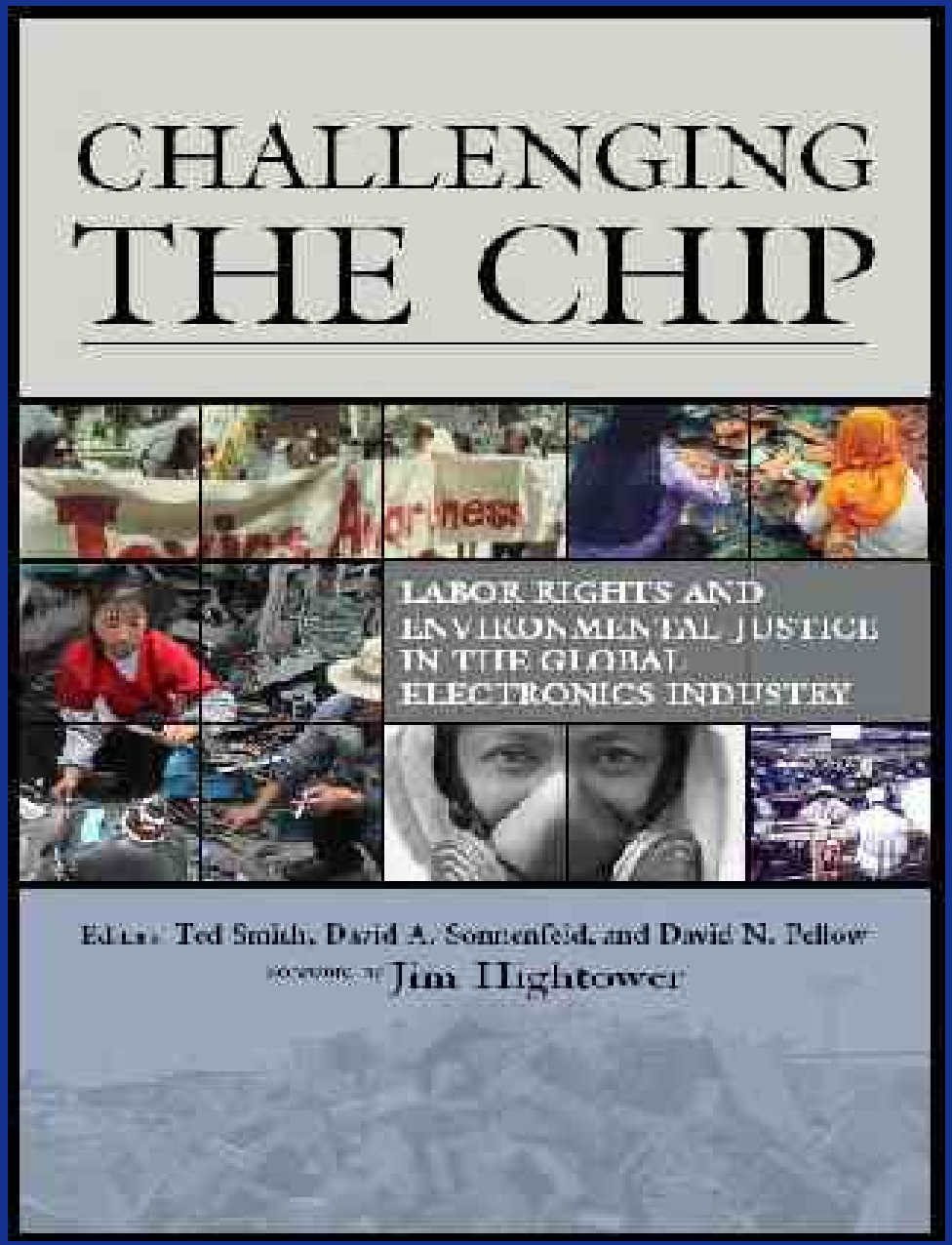

Challenging the Chip

This book is the first comprehensive examination of the impacts of electronics manufacturing on workers and local environments around the world. The contributors to this volume include many of the world's most articulate, passionate and progressive visionaries, scholars and advocates involved in documenting and challenging the social and environmental impacts of the global electronics industry. From Asia, North America, Europe, and Latin America, the authors are renowned for their contributions to the science and the politics of environmental and social justice, and bring these perspectives to the high-tech sector throughout the book

Challenging the Chip

The book's twenty-five chapters not only document the unsustainable practices of the growing electronics sector over its first quarter of a century, but also propose and chronicle creative ways in which community and labor activists, government agencies, and others have attempted through resistance, regulation, and other means to introduce more sustainable systems of production into that sector

Challenging the Chip

The production of electronics and computer components contaminates the air, land, water, and human beings with nearly unrivalled intensity. These in turn are problems also of labor rights (particularly occupational safety and health) and environmental injustice in that the people whose health is being compromised in this "new economy" are largely working class, poor, female, and often from immigrant, and ethnic minority populations.

Challenging the Chip

This volume documents and contributes to an important international discourse of citizens, workers, health professionals, academics, labor leaders, environmental activists, and others, developing alternative visions for the regulation and sustainable development of electronics manufacturing, assembly/ disassembly, and waste disposal around the world.

Early Reviews for "*Challenging the chip*"

"*Challenging the Chip* is essential reading for anyone who owns a cell phone or computer. As its vividly written chapters reveal, our digital possessions connect us not only to global information but also to global contamination and injustice. Happily, this book shows us that we can have technology and clean water, too: Electronics sustainability is organic agriculture for iPods."

—**Sandra Steingraber**, Ph.D., author of *Living Downstream: An Ecologist Looks at Cancer and the Environment*

Early Reviews for "*Challenging the chip*"

"Contrary to high tech's clean image, this pioneering work illustrates the industry's environmental and economic downsides from its birthplace of Silicon Valley, to the four corners of the globe to which the industry recently has spread. Fortunately, at the same time that the industry has globalized, so too have social movements designed to improve economic and environmental justice. Told from the compelling and passionate perspective of workers and activists involved in these struggles, this compellation is a must-read for policy makers, students, and activists alike."—

Jan Mazurek, Department of Urban Planning, University of California at Los Angeles and author of *Making Microchips*

Early Reviews for "*Challenging the chip*"

"This is an excellent book. It is rare to see environment and labor issues brought together in a seamless fashion. Although I have heard about problems in the microelectronics industry before, nowhere have I seen such interesting reporting on the problems. This is an important contribution to the discussion of globalization and its effects—and to the understanding of the grassroots movements that have emerged in response."

—**Charles Levenstein**, University of Massachusetts, Lowell (Emeritus)

Contributors to Challenging the Chip

- *Ravi Agarwal* is Director, Toxics Link, New Delhi, India.
- *Leslie Byster* was Communications and Program Director, Silicon Valley Toxics Coalition (SVTC), San Jose, California, USA, for over ten years; she is now a consultant with the International Campaign for Responsible Technology (ICRT).
- *Shenglin Chang* is Assistant Professor, Natural Resource Sciences and Landscape Architecture Department, University of Maryland, USA; and Member of the Advisory Committee, Taiwan Environmental Action Network (TEAN).
- *Hua-mei Chiu* is a professional journalist and environmental activist from Taiwan, and a Ph.D. Candidate in the Department of Sociology, University of Essex, England.
- *Anibel Ferus-Comelo* has worked as a labor campaigner, researcher and educator in the USA and UK; currently, she is a Tutor for the Global Labour Studies certificate program for union members, University of Leeds, England.

Contributors to Challenging the Chip

- *Tira Foran* has conducted research with the Conservation Science Institute, Environmental Defense Fund, and Nautilus Institute, USA; he is a Ph.D. Candidate in the Department of Geosciences, University of Sydney, Australia.
- *Connie García* is former Policy Advocate, Border Environmental Justice Campaign, Environmental Health Coalition, San Diego, California, USA.
- *Ken Geiser* is Professor of Work Environment; and Co-Director, Lowell Center for Sustainable Production, University of Massachusetts Lowell, USA.
- *Amanda Hawes* is Partner, Alexander, Hawes and Audet; and founder and former Executive Director of the Santa Clara Committee on Occupational Safety and Health (SCCOSH), San Jose, California, USA.

Contributors to Challenging the Chip

- *Jim Hightower was editor of* The Texas Observer, *served two terms as Texas Agriculture Commissioner, produces daily radio and online commentaries, and speaks out for the American majority that's being locked out economically and politically by the elites.*
- *Yu-ling Ku* is Secretary-General, Taiwan Association for Victims of Occupational Injuries (TAVOI), Taipei.
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- *Robin Schneider* is Executive Director, Texas Campaign for the Environment, USA, a statewide grassroots organization mobilizing citizens to protect public health and the environment.
- *Amelia Simpson* is Director of the Environmental Health Coalition's Border Environmental Justice Campaign, and is based in San Diego, California, USA.

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- *Robert Steiert* is Director, Information and Communication Technology Industry, Aerospace, and Mechanical Engineering, for the International Metalworkers' Federation (IMF), Geneva, Switzerland
- *Joel Tickner* is Assistant Professor, Department of Community Health and Sustainability, and Project Director, Lowell Center for Sustainable Production, University of Massachusetts Lowell, USA.

Contributors to Challenging the Chip

- *Naoko Tojo* recently completed her Ph.D., and continues as Research Associate, at the International Institute for Industrial Environmental Economics (IIIEE), Lund University, Sweden.
- *Wenling Tu* received her Ph.D. in Environmental Planning at the University of California at Berkeley, USA, in 2004; and is a founding member and Co-Chair of the Taiwan Environmental Action Network (TEAN).
- *Kishore Wankhade* is Senior Programme Officer, Toxics Link, New Delhi, India.
- *Andrew Watterson* is Professor and Chair, Occupational and Environmental Health Research Group, University of Stirling, Scotland.
- *David Wood* is former Executive Director, GrassRoots Recycling Network (GRRN), Madison, Wisconsin; and was organizing director of the Computer TakeBack Campaign (CTBC), USA.
- *Fumikazu Yoshida* is Professor, Graduate School of Economics, Hokkaido University, Japan.

Dedication for ***Challenging the Chip***

This volume is dedicated to the memory of Helen Clark (National Semiconductor, Scotland) and Jim Moore (IBM, USA), who, even while battling terminal cancers, gave their utmost to improve the electronics industry's labor, health and environmental practices for the benefit of electronics workers and nearby communities around the world

Introduction to *Challenging the Chip*

This book embodies the vision of many of the inspirational leaders around the world who are challenging the patterns of health, environmental, and social injustices that have arisen as a hidden aspect of the high-tech revolution. All of us share the perspective popularly attributed to anthropologist Margaret Mead, “Never doubt that a small group of thoughtful, committed people can change the world. Indeed, it is the only thing that ever has."

Introduction to *Challenging the Chip*

While we acknowledge the accomplishments of the high-tech revolution's pioneers– Gordon Moore, Bill Gates, Bill Hewlett and David Packard, Michael Dell, and many others, we also want to highlight and amplify the incredible accomplishments of the unsung heroines and heroes of this revolution's "other side," who have been fighting to transform the electronics industry to better address the needs of its workers and affected communities around the world.

Women like:

Introduction to *Challenging the Chip*

- Amanda Hawes, founder of the Santa Clara Center on Occupational Safety and Health and an attorney who, for more than 30 years, has been fighting for improved working conditions and advocating for chemically exposed electronics workers with cancer and the offspring of exposed workers born with severe birth defects;

Introduction to *Challenging the Chip*

- Lorraine Ross, a San Jose, California housewife whose daughter's serious birth defects gave her the strength to mount a remarkable challenge to Fairchild Semiconductor Corporation's polluting practices in Silicon Valley;

Introduction to *Challenging the Chip*

- Dr. Orapan Metadilogkul, an occupational health physician who confronted the Seagate Corporation when it was compromising its workers' health in the 1990s in Thailand and faced severe retaliation for her efforts; and

Introduction to *Challenging the Chip*

- Helen Clark, a Scottish semiconductor worker who gave her life fighting to provide a voice for poisoned workers at National Semiconductor's plant in Silicon Glen.

Forward to *Challenging the Chip*

There are stories in “Challenging the Chip about electronics workers who have suffered from toxic exposures and banded together, from the Southwestern United States and the maquiladora region on the US-Mexico border to Malaysia, Taiwan, Thailand, China and India. I am moved by the story of Wen-Shen Liu, the child of a mother who was exposed to toxic chemicals while working for an RCA factory in Taiwan. She died of hepatoblastoma at age three. Her mother later died of breast cancer, one of hundreds of victims that worked for RCA. I’m inspired to learn that the families of these workers have banded together to form the RCA Workers’ Self Help Group to fight for justice, even after the company packed up and left Taiwan.

Forward to *Challenging the Chip*

- We need a lot more "people's histories" like those in this book. The stories of brave and creative women and men who fight back when their lives and their children's lives are threatened. These are the stories of people challenging the corporate elite and speaking truth to power – whether the power be the corporations or the governments that allow these practices to continue. Such stories teach us that when people come together across traditional boundaries – geographic, political, racial, etcetera – they can actually change the world.

Introduction to *Challenging the Chip*

These and many other courageous individuals who have suffered the industry's "unintended consequences" –or the "collateral damage" -- have been among the key leaders responsible for the metamorphosis from discouragement to hope for a more sustainable future in Silicon Valley, as well as in many other high-tech centers around the world.

For more information:

www.svtc.org

www.computertakeback.com