

Presentation on chemical bans to UK Hazards conference
by Ted Smith - International Campaign for Responsible Technology
August 1, 2020

Examples of Strategies for Getting rid of toxic hazards in electronics

1. **Building worker/community organizing support to**
 - ** ban TCE in the workplace - 1970s SCCOSH campaign
 - ** get rid of glycol ethers - Campaign to end the miscarriage of justice campaign in 1980s-1990s
2. **campaigning for changes in the laws**
 - ** Prop 65 initiative campaign in CA to focus on carcinogens and reproductive hazards in community and workplaces
 - ** Support for the ROHS directive to ban hazardous chemicals in electronic products in the EU
3. **organize campaigns to ID children of electronics workers with toxics related neurodevelopment disabilities -**
 - ** collect government data on incidence rates, then sue for recovery of social service costs of care and for damages to the families to internalize the external costs
4. **Support workers in global supply chains** who are fighting back against exposures to reproductive / developmental hazards
 - ** https://swedwatch.org/wp-content/uploads/2020/06/98_Filipinerna_200616_Uppslag.pdf
5. **Media campaigns to expose the industry's "clean image" and to challenge their "brand sensitivity"**
6. **Collaborative Work with industry to implement voluntary phase outs**
 - ** Clean Electronics Production Network initiative to ban hazardous solvents throughout the supply chain

Ted Smith, Coordinator, International Campaign for Responsible Technology - San Jose, CA USA

Background:

Chemicals used in Electronics -

Researchers working with International Campaign for Responsible Technology developed a list of 1109 chemicals known to be used in production — many were identified as very hazardous:

- 330 are acutely toxic
- 32 are carcinogens
- 60 are endocrine disruptors
- 41 are germ cell mutagens
- 46 are reproductive toxins

Source: ICRT, ETBC in collaboration with Northwestern University and Greenpeace researchers

Example 1A. SCCOSH - The TCE campaign

The campaign to ban TCE from the workplace

The SCCOSH archives are housed at San Jose State University: <https://oac.cdlib.org/findaid/ark:/13030/kt2b69r7hf/dsc/>

- When animal tests in late 1970s showed TCE was carcinogenic, SCCOSH organized for a workplace ban; the electronics industry and chemical suppliers fought back.

One of SCCOSH's earliest organizing efforts was a "complaint hot line" which led to a breast cancer screening program for workers working with TCE - many women were found to have TCE in their breast milk.

- Cal-OSHA eventually lowered the PEL from 100 to 25 ppm and as a result, many firms shifted to a so-called safe substitute TCA. This was the first successful campaign in the electronics industry that led to the phase out of a hazardous chemical.
- SCCOSH learned a lot about the limitations of PELs, the developmental toxicity of TCE and TCA, and that electronics workers are routinely exposed to multiple toxics. A key lesson was the realization that securing safe jobs and healthy families was going to require much more.
- Other Lessons learned SCCOSH also discovered that the employers dumped the used TCE on the ground and into leaking storage tanks. Some got into the groundwater and the drinking water supply; some of it migrated through porous soil and thru "vapor intrusion" penetrated occupied spaces posing a health threat that Cal EPA took very seriously, setting a threshold for action at 5 ppb – five thousand times tougher than Cal-OSHA's history-making PEL of 25 ppm for workers.
- So though 25 ppm has long been the toughest workplace standard for TCE, it is nowhere close to any health-protective standards in effect for the community as a whole.

The results of the Hotline were published by NIOSH -
see - <https://www.cdc.gov/niosh/docs/85-100/pdf/85-100.pdf?id=10.26616/NIOSH PUB85100>

Example 1B. Campaign to end the miscarriage of justice

In 1981, the State of California (**HESIS**) **issued a reproductive hazard alert for glycol ethers**

For many years, activists demanded that the electronics industry assess the incidence rates of reproductive harm in the workplace and take responsibility for the harm caused. The Campaign to End the Miscarriage of Justice (CEMJ) launched after the Semiconductor Industry Association and IBM released epidemiological studies finding that the likelihood of miscarriage increased after exposure to glycol ethers during the semiconductor production process.

The CEMJ campaign was designed to pressure electronics manufacturers into eliminating certain widely used chemical solvents, including ethylene-based glycol ethers. Many glycol ether solvents were phased-out in response to the industry sponsored epidemiological studies found high rates of miscarriage. United States microelectronics workers and their children have obtained compensation for occupationally related illnesses and developmental disabilities.

Toxic Avengers Theater used drama productions to publicize the issues surrounding workplace safety and health. The Theater came about through the Worker Story Process, a model created by SCCOSH and designed to elicit the experiences of workers in order to create better solutions for health and safety in the workplace.

Example 2 - Working to change laws

A. The 1986 Proposition 65 Campaign in California

Proposition 65 requires businesses to provide warnings to Californians about significant exposures to chemicals that cause cancer, birth defects or other reproductive harm. These chemicals can be in the products that Californians purchase, in their homes or workplaces, or that are released into the environment. **Proposition 65 also prohibits California businesses from knowingly discharging** significant amounts of listed chemicals into sources of drinking water. **Proposition 65 requires California to publish a [list of chemicals](#) known to cause cancer, birth defects or other reproductive harm.** This list, which must be updated at least once a year, has grown to include approximately 900 chemicals since it was first published in 1987.

Proposition 65 became law in November 1986, when California voters approved it by a **63-37 percent margin**.

Example 2 - Working to change laws

B. The EU Restriction on Hazardous Substances - ROHS - 2003

This EU legislation requires certain hazardous substances (heavy metals such as lead, mercury, cadmium, and hexavalent chromium and flame retardants such as polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE)) to be substituted by safer alternatives in electronic equipment sold in the EU. It has served as a de-facto global standard, since all electronics companies need to sell into the EU.

Even though it was designed as a “waste directive”, it has served to protect electronics workers who are no longer exposed to these hazards in production.

The industry and the US government opposed it, but labor and NGOs around the world supported it.

Example 3: Friends of Mark Campaign -

ID children of electronics workers with toxics related neurodevelopment disabilities

Litigation for recovery of social service costs of care and for damage to the children & families

Background: Since 1978, the research version of all California birth certificates must list parental occupation and industry of the newborn child – so potential workplace exposures in utero can be part of any assessment of health issues in offspring –those apparent at birth as well as those emerging over time (e.g. neurodevelopment).

Determining what portion of the population of developmentally disabled adults are electronics **workers'** offspring may open up a way to hold the industry instead of the public accountable for the cost of their lifetime care (**“internalizing”** the **“external costs”**). Precedents for this approach include actions against tobacco and big pharma for the cost of care due to smoking and opioid addition.

The Campaign is also exploring ways to support activists in electronics production countries to set and enforce health-protective exposure standards for electronics manufacturing. - Compared to the lifetime cost of caring for folks like Mark, replacing notorious toxics with safe alternatives seems pretty smart and cost effective!

Sources: **Windham's “Use** of Birth Certificates to Examine Maternal Occupational Exposures and Autism Spectrum Disorders in **Offspring”** (Autism Research 6:57-63 (2013) show the utility to etiologic investigations of having access to parental occupational data that can in turn be coded by exposure/chemical groups based on potential neurotoxicity or reprotoxicity.

Neurotoxic chemicals and the Vulnerability of the developing brain

Granjean and Landrigan's "Developmental neurotoxicity of industrial chemicals" (*The Lancet*, Nov. 8, 2006) lays out the danger of exposing a fetal brain to toxics in succinct, graphic terms that are the driving force behind the [Friends of Mark](#) Campaign

The developing human brain is inherently much more susceptible to injury caused by toxic agents than the brain of an adult. This susceptibility stems from the fact that during the 9 months of prenatal life, the human brain must develop from a strip of cells along the dorsal ectoderm of the fetus into a complex organ consisting of billions of precisely located, highly interconnected, specialized cells. Optimum brain development requires that neurons move along precise pathways from their points of origin to their assigned locations, that they establish connections with other cells, nearby and distant, and that they learn to communicate with other cells via such connections. All these processes have to take place within a tightly controlled time frame, each developmental stage has to be reached on schedule and in the correct sequence.

Because of the extraordinary complexity of human brain development, windows of unique susceptibility to toxic interference arise that have no counterpart in the mature brain, or in any other organ. If a developmental process in the brain is halted or inhibited, there is little potential for later repair, and the consequences can therefore be permanent

Example 4 - Support workers in global supply chains - New Swedwatch Report Document and support worker campaigns against exposures to reproductive / developmental hazards

https://swedwatch.org/wp-content/uploads/2020/06/98_Filipinerna_200616_Uppslag.pdf

The health risks connected to the manufacturing of ICT products have been known since the early years of the industry.

The manufacturing of ICT products in the Philippines takes place in Special Economic Zones (SEZs) where workers are exposed to hazardous substances.

Example 5 - Media campaigns - Name & Shame

expose the industry's "clean image" and challenge their "brand sensitivity"

SCIENCE



LaDou examining semiconductor worker for lung disease. Only the tip of the iceberg

Toxic Trouble in Silicon Valley

They are the gleaming symbols of the postindustrial workplace: the factories of California's Silicon Valley where men and women wearing white gowns work in "clean rooms" making the computer chips of the technological revolution. But too often, it is the well-being of the chip that is being protected—not the health of the worker. Despite its clean, nonpolluting image, the semiconductor business "provides a complete spectrum of occupational hazards . . . including exposures to chemicals, gases [and] metals," writes Dr. Joseph LaDou of the University of California, San Francisco, in the current Technology Review. Even worse, there are growing indications that a few less responsible firms are actually hiding evidence of the hazards. Industry spokesmen insist they are the victims of a scare ray. Thomas Hinkelman of the Semiconductor Industry Association (SIA) charges that health scares come from "people associated with attempts to unionize the industry," which he claims "ranks among the best" in health and safety. But the criticism is mounting. "We think there is an immense problem and we've managed to expose only the tip of the iceberg," says Gayle Southworth of the Santa Clara Center for Occupational Safety and Health. Finding out how big the iceberg is hasn't been easy. Lawyer Amanda Hawes, who handles workers' compensation cases, obtained records from one company that showed numerous leaks and accidental exposures to dangerous chemicals. Yet the firm did not always tell the workers they had been exposed. In another case, when one patient of occupational-health specialist Dr. Molly Cope of UCSF asked his firm about the amount and kind of chemicals he had been exposed to, he was fired. There is no question that workers come in contact with enough toxic materials to

irritation of the bronchial passages, that result from inhaling acid vapors. Long-term effects, which are harder to predict, are even more worrisome. Although a number of solvents are known carcinogens, cancer often takes decades to develop. Solvents have also been shown to kill embryos in lab animals, a reproductive hazard that bodes ill for an industry where the majority of factory workers are women. Even industry consultants admit that the effect of chronic exposure to chemicals is a question mark. Donald Laster, an SIA consultant, concedes that, for the long term, "there is not enough information to tell what is happening in the workplace."

Handoffs: In fact, what information does exist may not be reaching the scientists who need it to evaluate the risks. In-plant nurses are seldom trained in toxicology and so do not always spot illnesses from chemicals. In one case, worker Anita Zimmerman, 32, says she was "exposed to chlorine gas every day for over a month" at her job with Advanced Micro Devices, Inc. in Sunnyvale, Calif. An industrial-health clinic told her, after one particularly high exposure forced evacuation of part of the plant, to "gargle with sugar water and take cough syrup," she recalls. Zimmerman now suffers from a form of bronchial asthma that leaves her gasping for breath. In addition, private physicians charge that their industry counterparts do not properly publish reports of occupational disease because the firms "put velvet handoffs" on them—poisons to maintain the industry's clean image. This suppression of information makes determining which exposure causes which illness a mission impossible.

Recently there also have been signs that industry is changing the rules of the game. Two years ago California officials noticed an abrupt decline in the rate of illness among semiconductor workers, which in 1980 was three times as high as illnesses in general manufacturing. "After the rate dropped we were told anonymously that they were using a different definition of illness," says Karen Jones of the CDR. What happened was that one-time events like inhalation of arsine gas were no longer being recorded as illnesses even if the worker showed symptoms of chemical exposure. Laster, the SIA consultant, argues that the semantics switch did away with "overreporting."

The greatest hope for workers' health may be that, as the industry matures, it will pay more attention to safety. And workers' compensation cases may spur companies to improve protection for employees. Until occupational diseases are investigated fully, however, more workers will become guinea pigs. That may spur a sense of déjà vu among veterans of the war for occupational health in other industries. But the fact that workers' health is being threatened in semiconductor factories could prompt second thoughts about embracing Silicon Valley as the model for the postindustrial age.

MARKER MOLEY AND JOHN CARRY



Inhaling silicon with acid. Guinea pigs?

NEWSWEEK/MAY 7, 1984 83



Sumol Thomas wearing protective clothing to process semiconductor wafers at Advanced Micro Devices Inc.

Worries Over Toxins Grow in Silicon Valley

By DAVID E. SANGER

Special to The New York Times

SUNNYVALE, Calif. — From a distance, Silicon Valley is the envy of every community seeking to lure high-technology industry. Its myriad electronics companies, 130 in this small suburb of San Jose,

— in California and elsewhere — is scrambling to counter allegations that the reputation for cleanliness is a myth.

In a wave of legal actions, workers are charging they have suffered a range of health problems, some severe and some less so. Some workers

is clean," said Dr. Joseph LaDou, a professor of medicine at the University of California at San Francisco.

Dr. LaDou, who has studied occupational health issues in the electronics industry for several years, added: "It's simply not true. I would not say we have an epidemic, but some of the

Super Bowl Countdown



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■ Florida governor's business Bowl	14A
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Thursday morning, January 17, 1985

San Jose Mercury News

25 cents

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Morning Final

High birth defects rate in spill area

Los Paseos residents 'convinced' toxic leak caused birth defects

By Mitchell Benson and Pamela Kramer
Mercury News Staff Writers

Four-year-old Brian Puppo wants to be a pilot.

"But I don't think he can . . . It would be too much of a health risk," said his mother, Susan, as she recalled the long list of health problems that have affected her son since birth and forced him to undergo open-heart surgery four times in his short life.

Susan Puppo and her husband, Rick, told Brian's story over and over again

Wednesday after county and state health officials released a study of the Puppos' neighborhood that showed an excess of miscarriages, congenital heart abnormalities and total birth defects in 1980 and 1981.

The officials couldn't say definitely that a chemical leak that contaminated the South San Jose neighborhood's water supply was responsible for the birth defects and miscarriages.

But the Puppos don't care. The couple is convinced it was that

Continued on Page 7A

Highlights of studies

- About twice as many miscarriages in the Los Paseos neighborhood in 1980-81 as in a nearby control neighborhood that has had no known water contamination.
- About three times as many birth defects in Los Paseos in 1980-81 as in the control neighborhood.
- More than twice as many major heart defects among infants born as a result of pregnancies in 1981 in the area served by the Great Oaks Water Co. as in the rest of Santa Clara County.
- The studies do not indicate the causes. For the state health department's full summaries of the findings, see Page 6A.

Site near S.J.'s Fairchild plant shows cluster effect, state says

By Susan Yocum and Mitchell Benson
Staff Writers

A study released by the state Wednesday confirmed that an unusually high number of birth defects and miscarriages occurred in a South San Jose neighborhood near a contaminated drinking-water well.

The study, conducted by the state Department of Health Services and the Santa Clara County Health Department, focused on pregnancies in the Los Paseos neighborhood, near the Fair-

child Camera and Instrument Corp. plant, in 1980 and 1981.

A related study by the same agencies that also was released Wednesday showed that the rate of a specific form of birth defect, congenital heart malformation, was higher in the South San Jose area served by the Great Oaks Water Co. than in the rest of Santa Clara County.

The unusually high cluster of miscarriages and birth defects is only the second that state officials have ever con-

Continued on Page 10A

MONDAY, OCTOBER 12, 1992

The New York Times

Miscarriages and Chip-Making Chemicals Linked

Continued From Page A1

MISCARRIAGES TIED TO CHIP FACTORIES

I.B.M. Finds a Chemical Risk for Some Women Workers

By JOHN MARKOFF

I.B.M. has warned its workers and other companies that two chemicals widely used in manufacturing semiconductor chips — and in other industries — may significantly increase the risk of miscarriage. The computer maker acted after a

ber of other technology companies have issued similar warnings in recent weeks. The chemicals are also used in other industries, like aerospace and printing, where thousands of workers may have come in contact with them.

None of the companies have stopped using the chemicals, but several chip makers have decided to offer alternative jobs to workers concerned about exposure.

"This is a confirmation of what has

A possible blow for an industry seen as safe to the environment.

I.B.M. issued the warnings last month after it received preliminary data from the study, which is not scheduled to be completed until next

room health risks for women after the Digital study," Mr. Ruderman of I.B.M. said. "If there are any bright spots here, it's that the rest of the operations in our clean rooms are safe." Semiconductor chips are made in special rooms virtually free of dust and other contaminants that might spoil the manufacturing process.

The new concerns about worker health and safety may prove a potential black eye for a high-technology industry that has long sought to portray itself as clean and with little impact on the environment.

I.B.M. gave information from the study to governments that are mem-

makers in Austin, Tex., began independently to look for alternatives to the chemicals mentioned in the Johns Hopkins study six months ago because of general concerns about hazardous chemicals. A spokesman for the consortium said yesterday that no alternatives had been found yet.

Although the industry is acting to warn its workers now, workplace health experts said semiconductor makers have been slow in responding to growing evidence that there are demonstrated reproductive and other health effects related to chemicals.

Other Chemical Studies

Example 5 - Media campaigns - Name & Shame

Grass roots campaign

TOXIC CHEMICALS & PREGNANCY

10 WAYS TO AVOID TOXICS DURING AND AFTER PREGNANCY

PLASTICIZERS

BISPHENOLS
(BPA, BPE, BPF, BPS)

PFAS
(PFOA, Gen-X, PFBS)

MERCURY

PESTICIDES

PHthalATES

PERC and TCE

LEAD

FLAME RETARDANTS
(PBDEs, OPFRs)

1 Avoid eating, drinking, storing food in plas

2 Don't microwave in plas

3 Cook with cast iron or stainle steel rather than non-stick po

4 Avoid eating fish high mercury or PCBs li shark and swordf

5 Eat fresh, organic foo whenever possi

6 Limit cosmetics u

7 Avoid dry cleaning stain treating cloth

8 Use a wet mop wh cleani

9 Avoid consumer produ with flame retardoi

10 Remove shoes bef entering your hor

WHAT HEALTH PROFESSIONALS AND POLICYMAKERS CAN D

Advocate for policies to prevent exposure to toxic environmental chemicals

Work to ensure a healthy food system for all

Make environmental health part of health care

Champion environmental justice

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

FIGO HEAL UoC Program on Reproductive Health

For more information

Example 6: Clean Electronics Production Network

Zero exposure through phasing out hazardous solvents

CEPN Organizations

Industry	Apple, Inc. Cisco Systems, Inc. Dell, Inc. Fairphone Flex	HP, Inc. Intel Corporation Inventec Performance Chemicals Responsible Business Alliance Seagate Technology
Labor	CEREAL (El Centro de Reflexión y Acción Laboral) Int’l Campaign for Responsible Technology (ICRT) Social Accountability International (SAI)	
Research	The Sustainability Consortium, ASU University of California, Berkeley University of California, Irvine University of Massachusetts, Lowell/TURI	
Enviro/Other	Clean Production Action (CPA) Green Electronics Council (GEC) Scivera Sustainable Purchasing Leadership Council (SPLC) TCO Development US EPA	



PROGRAM COMMITMENTS



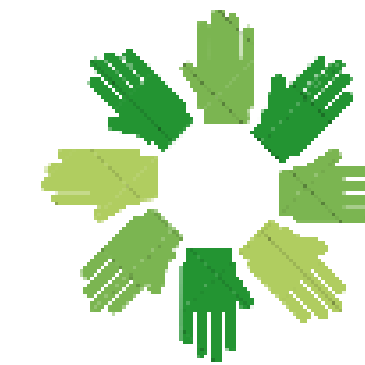
#1 Eliminate Exposures to Priority Chemicals

Protect workers from exposure to Priority Chemicals in the electronics supply chain, prioritizing elimination or substitution with safer alternatives and protecting workers until that is achieved



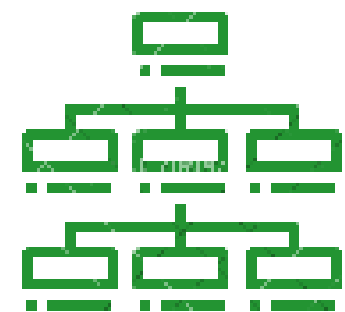
#2 Process Chemical Data Collection

Collect data on company and supplier facility use of process chemicals to support collective mapping across supply chains



#3 Worker Engagement and Participation

Build safety systems and culture around process chemical management through support for the maturation of governance systems that protect the health of workers, where workers are consulted, informed and actively participating



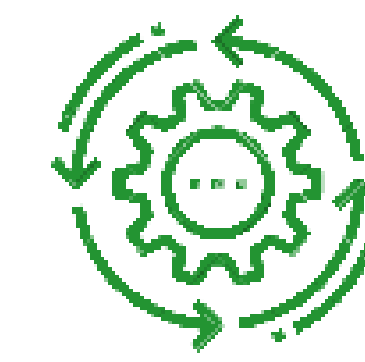
#4 Reach Deeper into Tiers

Work with selected suppliers to join the Commitment Program to reduce worker exposure to toxic chemicals in the extended electronics supply chain



#5 Verification and Reporting

Ensure progress toward implementing the Commitments through verification and annual reporting to workers and the public



#6 Continuous Improvement

Drive ongoing improvement across all commitment areas

Clean Electronics Production Network Priority Chemical Recommendations

Recommended for elimination now	Recommended for a Future Round
<u>1-Bromopropane</u>	<u>N-Methyl-Pyrrolidone (nMP)</u>
<u>Benzene</u>	
<u>Dichloromethane</u>	
<u>Methanol</u>	
<u>n-Hexane</u>	
<u>Tetrachloroethylene</u>	
<u>Toluene</u>	
<u>Trichloroethylene</u>	