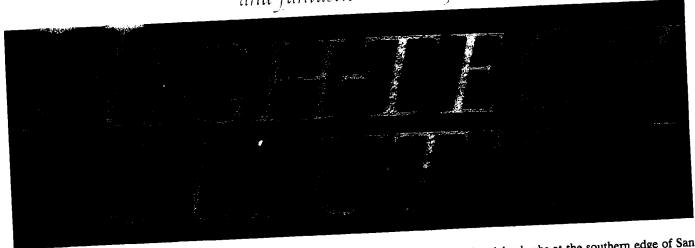
To residents of smokestack cities, Silicon Valley

has it all—a fast-paced economy, an enviable lifestyle, and fantastic weather. Just don't drink the water.





SILICON VALLEY—as the belt of industrial suburbs at the southern edge of San Francisco Bay is widely and aptly known—is the home of America's booming hightechnology electronics industry. Governors, mayors, and chambers of commerce throughout the United States see Silicon Valley as a model for reindustrialization, in which clean, light, "sunrise" industries replace heavy, dirty, "smokestack"

industries as the cornerstone of American economic prosperity.

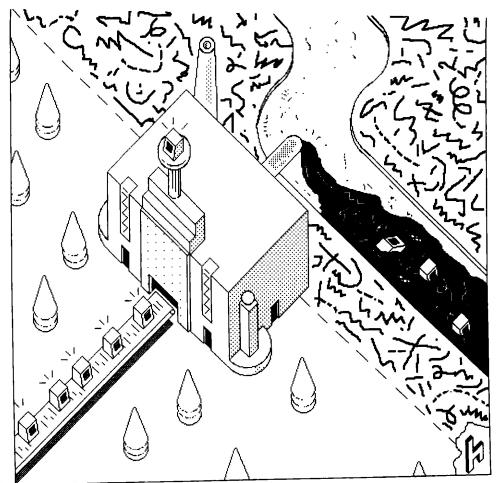
It's easy to see why the electronics industry has developed a "clean" image. Its welllandscaped factories resemble modern college libraries. Production takes place in "clean rooms" where the air is filtered and the workers wear surgical gowns. Electronic products don't breathe exhaust or drip oil, and in many applications, such as automobile engine control, microprocessor chips actually lower energy consumption while reducing polluting emissions.

Appearances do not tell the whole story, however. On December 7, 1981, water officials quietly shut down a contaminated drinking well operated by the Great Oaks Water Company just 2,000 feet from an underground storage tank at Fairchild Semiconductor's plant in South San Jose. Officials estimated that 14,000 gallons of 1,1,1-trichloroethane (TCA), a degreasing agent used to clean silicon "chips" and printed-circuit boards, plus 44,000 gallons of toxic waste materials, had been leaking from the tank undetected for a least a year and a half. Fairchild officials explained that the liquid-level indicator on the 6,000-gallon tank had malfunctioned, and had been giving incorrect readings for years.

The public was not informed of the Fairchild contamination until seven weeks later, when an environmental reporter for the San Jose Mercury News broke the news to a startled public. When the plant's residential neighbors learned about the presence of TCA in their drinking water, they blamed the area's unusually high concentration of birth defects and liver and kidney problems on that exposure, and more than 200 people filed multimillion-dollar suits against the

Industry leaders and government officials were "surprised" by the discovery of leaks. Before pioneering high-tech firm. 1982 only a handful of activists in Silicon Valley had raised the issue of high-tech pollution, and their warnings had been largely ignored. The 1975 finding by the Environmental Protection Agency that trichloroethylene (TCE), a more toxic relative of TCA, causes liver cancer in laboratory animals raised few eyebrows among industry leaders, government officials, or the mass media. "At that time, there were so many things people didn't know," says Steve Heikkila, an engineer with the San Francisco Bay Regional Water Quality Control Board. "There was no reason then for industry officials to consider the possibility of a leak when they were thinking about siting."

LENNY SIEGEL



Silicon Valley residents were alarmed by the situation, and their alarm has only grown over time. Followup tests disclosed leaking underground containers at 65 of the 79 industrial sites being monitored in the valley. Tests of well water in Mountain View and South San Jose showed traces of contamination, a discovery that led to the shutdown of wells in those areas. In the wake of the Fairchild incident, many companies, concerned about the cost of lawsuits and cleanups, began to consider installing double-walled tanks resistant to leaks. As of this writing, Fairchild Semiconductor has spent more than \$15 million to clean up a spill for which it has never admitted responsibility.

Not long after the Fairchild spill hit the front pages, fire chiefs from Santa Clara County's cities

and fire districts met to develop a model ordinance that would help prevent future leaks, reduce chemical hazards, and ease their increasingly difficult job of responding to emergencies. Major electronics firms decided to cooperate and immediately asked to be represented. The chiefs welcomed five of the industry's trade associations into the task force, but did not invite labor, environmental, or other community groups.

In July 1982 the task force held its first "public" hearing, with no advance notice to the public. The chambers of the Sunnyvale city council were jammed with high-tech representatives, but also in attendance were about a dozen activists who had learned of the meeting by monitoring an industry-association newsletter. Their comments were not taken too seriously at the time, but led by the Central Labor Council of Santa Clara County, a regional branch of the AFL-CIO, they formed the Silicon Valley Toxics Coalition to keep the public informed and to organize support for the new measure.

The basic outline of the model ordinance was released at the July hearing. The proposed laws would require that all new underground tanks used to store hazardous chemicals include an outer, or secondary, container. Existing storage tanks, some located under buildings, could remain in place but would be monitored closely. If found leaking, they would have to be replaced with double-walled containers.

The electronics industry backed the principle of secondary containment and endorsed the proposed ordinance. Through its participation in the task force, the industry had won a large number of modifications designed to make compliance easier and less costly.

The Toxics Coalition turned out scores of people at a series of later hearings. By the time the model ordinance was hammered into final form several months later, the coalition had won strong language providing for public disclosure and protecting the rights of "whistle-blowing" employees; it also had fought off pressure from petroleum companies, which wanted to exempt gas stations from the ordinance. The county-wide Intergovernmental Council adopted the recommendations of the coalition, and virtually all Silicon Valley communities have enacted the model ordinance into law.

But the crisis is far from resolved. This past June, residents of the semirural North Bayshore area of the Silicon Valley city of Mountain View learned that they too had been drinking, bathing, and washing with private well-water contaminated by TCE, apparently originating from a leaking tank at nearby Teledyne Semiconductor. The levels of contamination found ranged from low concentrations to 400 times the "acceptable" level set by state officials. In addition, three electronics firms in nearby Sunnyvale were issued "cleanup and abatement" orders from the water board regarding leakage that is believed to have occurred at least two



SAVE 50% AND MORE OFF NORMAL RETAIL

MANUFACTURER DIRECT

Down comforters are for those who appreciate luxury, love warmth and wish to save energy. Hand-guided sewing and the finest European down... nature's best insulation... go into every comforter we make. Our comforters are covered with a soft down proof cotton/poly fabric Coordinating down pillows are the perfect complement for total sleep comfort.

We're America's largest retailer of down comforters and down pillows, manufacturing premier quality down products in La Crosse, Wisconsin since 1911. By selling directly to you, we eliminate the middleman and retail markuv, saving you 50% and more off normal retail. Our Guarantee: If for any reason you are not completely satisfied with your purchase, please return it for a full refund. Delivery: Immediate.

Call or write for your free down catalog: 1-800-356-9367, Ext. R12.

Channel Down Comforters	Colors
☐Twin (60" x 86") 569	□Lt. Blue
□Oueen/Full (86" x 86") 599	□Beige
□King (102" × 86") \$129	
Reversible Channel	
Down Comforters	Colors
Twin (60" x 86") 579	□Lt.Blue/
□Queen/Full (86" × 86") 5109	Slate Blue
□King (102" x 86") ⁵ 139	□Beige/ Caramel
Down Pillows	Colors
□Standard (20" x 26") 535	Lt. Blue
□Queen (20" × 30") 545	Beige
☐King (20" × 36") 555	□Dusty Rose
□White	
ORDER BY PHONE, TOLL FREE	
OR ORDER BY MAIL:	
	Exp. □Check
	Exp.Dt
Comforters: \$+\$	
Pillows: \$+\$	
Ship. & Hdlg.:\$5 per comforter=\$	
\$2.50 per pillow = \$	
πο	TAL=5
Signature:	
Address:	
City, State, Zip:	
Send to: The Company Store, Dept. R12. 1205 S. 7th St., La Crosse, Wisconsin 54601.	

years ago. State officials believe the TCE spill has traveled at least 1,500 feet northward and now threatens private wells. All told, the water board in June reported at least 120 other locations where toxic solvents or gasoline are known to have leaked from underground storage tanks in the Bay Area. two thirds of which are in the Santa Clara Valley.

Soon after the discovery of contaminated drinking water in North Bayshore-the wells way out to begin with. Well, the companies are often reluctant to put wells any farther from the leak than they have to: some don't want them outside their property lines. It's all a process of negotiation, and it takes time."

And time, according to Ted Smith, head of the Silicon Valley Toxics Coalition, is something the valley does not have. "We're sitting on a toxic time-bomb. Fortunately, the deep underground aquifer that stores

Officials throughout North America are touting their communities as Silicon Mountain, Silicon Beach, or Silicon Valley East, but few residents of the nation's many would-be "silicon" regions have heard about the hazards of high technology.

third such incident in Silicon Valley in three years-worried residents from Mountain View and Sunnyvale crowded into a church auditorium to hear experts explain the potential consequences of human exposure to the leaking chemicals. Anita Zimmerman, a former electronics worker suffering from on-the-job exposure to toxic chemicals, drew enthusiastic applause when she asserted, "Our health is worth more than anybody's profit margin, and our children are worth more than anybody's chips."

Silicon Valley residents wondered why wells had not been tested for contamination in areas where leaks were known to have occurred. Teledyne reported its leak to the regional water board in November 1982, and the consultant who confirmed the leak warned in August 1983 that the plume threatened private wells in North Bayshore. Yet no one tested those wells for nearly a year.

According to the water board's Heikkila, who is working on cleanups in Mountain View and Sunnyvale, monitoring wells is an expensive and time-consuming project. "First we have to go through negotiations to persuade the companies to construct wells that will monitor the leaks," a process he says costs about \$5,000 per well and up to \$400 per sample of groundwater. "We want to minimize the cost to the companies but still be able to find the level of contamination. . . . Then we have to agree on where to put the initial monitoring wells. Some people ask why we don't put the monitoring

and supplies water for the bulk of the valley's residents still appears clean. But these plumes of extremely dangerous chemicals are drifting around underground, seeking an abandoned agricultural well or some other quick path to our water supply. If that happens, the aquifer may be permanently poisoned."

It might appear that although chemical leaks in the valley have contaminated soil and groundwater within 50 feet of the Earth's surface, most public aquifers, which are 200 to 700 feet below ground, are safe. Yet one of the dangers peculiar to Santa Clara County is the literally thousands of private wells, many long-since abandoned and boarded up, that can carry toxic chemicals from shallow groundwater to deep public water sources. At present no one knows where all these wells are located.

In fact, there is still much that is not known about the extent of water contamination in Silicon Valley. According to Heikkila, leaks are "always turning up. People removing old tanks or installing new ones are constantly reporting leaks and the possibility of polluted groundwater. When we did the initial survey for leaks we hit the most likely industries, but there are some that have not been monitored yet, or where these incidents have not occurred. Of course, the more we investigate, the more we find." And when leaks are found, it is not always clear who is responsible. This leads to what Ted Zuur, toxic-waste representative for the Sierra Club's Loma Prieta Chapter, calls "the same

old story . . . finger-pointing exercises."

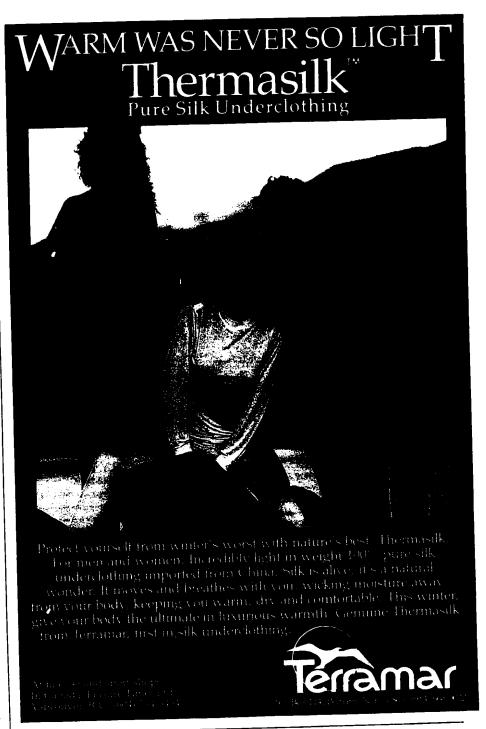
While the Toxics Coalition continues to push for more action, state agencies such as the San Francisco Bay Regional Water Quality Control Board appear to have their hands tied. Last year the state budget for toxics control was cut back \$1.8 million, and this year the electronics industry, the Toxics Coalition, and Silicon Valley legislators all urged California Gov. George Deukmejian (R) to restore the \$6.7 million he had cut from the 1984 state budget. At a meeting of the coalition in a Sunnyvale church this July, activists implored the EPA to assist in the cleanup, but received no promises.

In August, Harry Seradarian, director of toxics and waste management for the EPA's western region, appeared at a meeting of the Toxics Coalition to announce that more than a dozen chemical spills in the area had been recommended for inclusion on the federal government's Superfund cleanup list-but he would not say which of the county's 80 major chemical spills made it onto the tentative list. Like EPA Administrator William Ruckelshaus, when he spoke to coalition leader Ted Smith in July, Seradarian told the group that his hands were tied in the matter. The San Francisco Chronicle reported Seradarian as saying, "We don't inderstand the full extent of the contamination. . . . I can't agree to magically clean up these sites. It takes time."

Meanwhile, the Toxics Coalition had joined with other organizations, including the Sierra Club, to push through the state legislature a secondary-containment bill, weaker than the local ordinance, introduced by Assemblyman Byron Sher (D-Palo Alto). Assembly Bill 1362, which became effective January 1, 1984, does not require existing tanks to be upgraded for secondary containment. It requires plants storing toxic materials to obtain permits, to monitor tanks for leaks, to report leaks to local authorities within 24 hours of discovery, and to allow inspection of tanks. The draft legislation required companies to upgrade existing tanks, but that provision was dropped in the face of opposition from the electronics and petroleum industries. Although the high-tech industry supported the local ordinance it helped to create, neither it nor the petroleum industry supported A.B. 1362.

Yet there are some who, citing the record of cleanups for other toxic spills around the country, consider the electronics industry far more cooperative than the petroleum or chemical industries. Silicon Valley industrial leaders, they argue—more sophisticated than administrators of other industries, or even their counterparts elsewhere in the country—seem to have accepted early in the game the inevitability of regulation.

Larry Borgman of Intel, a high-tech firm





REELINE

A LIGHTWEIGHT TENT THAT SHELTERS YOU WITHOUT SHUTTING YOU IN

JLF DESIGNS Water Street N. Bennington, VT 05257

802-447-1093



Encyclopedia of Mammals

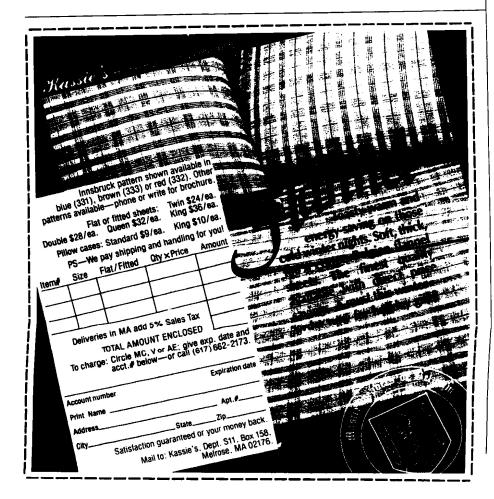
Edited by Dr. David Macdonald

A comprehensive, superbly illustrated guide to all known species of mammals, THE ENCYCLOPEDIA OF MAMMALS examines in 700 engaging articles and more than 1000 full color photographs, the full range of animal life. Species vary from the tiny shrew to the ponderous gorilla, from the aquatic whales and seals to the aerial bats, and from the predatory wolf to the preyed-upon moose. A marvellously complete and lavish reference.

960 pages, 8½ x II, \$45.00 hardbound, ISBN 0-87196-871-1



FACTS ON FILE, INC., 460 Park Ave. So., New York, N.Y. 10016 AT YOUR LOCAL BOOKSTORE OR CALL TOLL-FREE: 1-800-322-8755



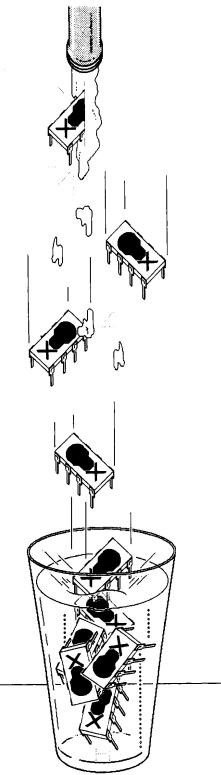
in Silicon Valley, notes that electronics firms are known for their "fast-moving, problemsolving" mentality. He says, "I think the proper question to ask is why others have not moved to solve their problems." Peter Burnes, waste inspector for the Palo Alto Regional Water Quality Control Plant, answers the question a little differently. "The population here is more sensitive than in other areas. Industry has to respond."

Burnes may have a point. One of the interesting features of the Toxics Coalition's push for regulation is the collaboration of labor and environmentalists in Silicon Valley, two groups that are often seen as having opposing interests. "It's happening all over," says Martin Manley, political director of the Santa Clara Central Labor Council. "It's not as unlikely an alliance as people think. The same chemicals that are polluting the public's drinking water are affecting workers on the job. So if you take that part of labor concerned with toxics on the job, and environmental groups concerned with toxics in the community, and if you define your goals clearly enough, I think you can get a lot of people to work together.'

Labor is a significant constituency in Santa Clara County—according to Manley, the valley counts 100,000 union members among its population—and labor has been active in the community for a long time. Workers in electronics, who are underrepresented in an industry Manley says is "famous worldwide for being vehemently antilabor," are supported by other unions in the Central Labor Council. "I believe we're strong enough to make a difference here," Manley asserts.

Labor found partners among Bay Area environmental groups, and environmentalists in turn found a forum in the Toxics Coalition. "It's true that enviro people and labor don't usually sleep together," says Ted Zuur, "but in toxics they realize they have a common problem, so they have been combining their strength. Ted Smith has welded the groups in the Toxics Coalition together into a formidable organization." Groups such as the "watchdog" Citizens for a Better Environment (CBE), Friends of the Earth, and the Sierra Club's large and influential Loma Prieta Chapter joined with labor to instruct people about the dangers of toxic chemicals and to bring the issue to the attention of residents, local government, and the media.

Yet despite widespread coverage of electronics pollution in the San Francisco Bay Area press, the news of Silicon Valley's problems has hardly leaked outside. As officials throughout North America tout their communities as "Silicon Mountain," "Silicon Beach," or "Silicon Valley East," few living in the nation's many would-be "sil-



icon" regions have heard about the hazards of high-technology production.

The Toxics Coalition hopes to change that situation. "We want to put out the word," says Manley. "Silicon Valley is going and telling the whole planet about how electronics is the industry of the future; well, we want to debunk the myth that it's a clean industry."

Therein may lie the explanation for the industry's relatively compliant attitude. High-tech firms may need chemicals, but they need people even more. Competition

for the country's top engineers, scientists, and programmers is high, and Silicon Valley has become a center for high-technology because it has always offered a quality of life that attracts these specialists from throughout the country and the world. According to Peter Giles, president of the Santa Clara County Manufacturing Group, "The perceived and real attractiveness of the area is important to industry as a means to attract and retain people." But how can a high-tech firm lure a young electrical engineer from St. Louis or New York if his or her children have to drink poisoned water in Silicon Valley, once called the "Valley of Heart's Delight"?

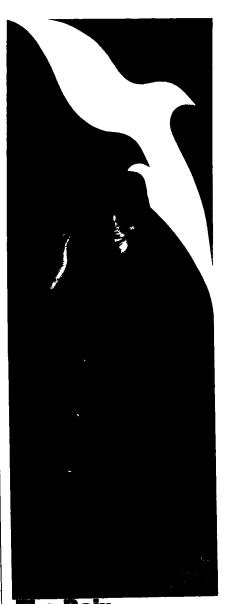
Furthermore, the problems of high-tech pollution do not end with leaking underground storage tanks. The electronics industry faces many other, less publicized problems, including waste disposal. In December 1983, CBE's San Francisco office released a report revealing widespread violations throughout the Bay Area of standards for pretreating sewage, noting in particular that one quarter of the 543 industries discharging waste in Silicon Valley were cited for violations in 1982. The city of San Jose withdrew five sewage permits in February and gave four warnings, while the EPA in July ordered 32 Silicon Valley firms, primarily makers of printed circuits, to conform to pretreatment standards immediately or face fines of up to \$10,000 per day.

Although electronics companies recycle some toxic solvents, most solid hazardous wastes are transported to landfills 60 to 200 miles away. Not surprisingly, there have been several incidences of improper transfer and disposal of these wastes, including a tank-truck leak in September 1981 that forced 4,000 residents and schoolchildren to evacuate San Ramon, northeast of the Santa Clara Valley.

Finally, air pollution, though not attributable primarily to high-tech firms in the Bay Area, is another waste product associated with the electronics industry. The Bay Area Air Quality Management District estimates that semiconductor firms in the Silicon Valley produce ten tons per day of "ozone precursors," or smog-producing emissions. Eight large firms produce 74 percent of that total.

So, despite the industry's responsiveness (relative to other industries), the Toxics Coalition is not appeased. Ted Smith says, "They have poisoned our water. They've polluted our air. They consistently try to weaken or delay regulation. That hardly makes them responsive."

Martin Manley agrees. "It's true that there's a difference in attitude between the electronics and oil industries where regulation and compliance are concerned—oil is far worse. But it's electronics that's causing



ine kain Beaters!

OUTDOOR PRODUCTS® RAIN-WEAR WITH GORE-TEX® FABRIC.

Outdoor Products® suits your style with lightweight, attractive outdoor apparel built to beat the elements!

Our rainproof, breathable GORE-TEX® fabric rainwear includes a host of quality details. The Rain Parka has factory tape-sealed seams, drawstring hood & visor, taffeta lining, and roomy cargo pockets. The Rain Pants are comfortably cut to match. Navy or Forest Green, in men's sizes S-XL and women's sizes S-L. Outdoor Products® GORE-TEX® fabric rainwear—comfortable in any weather!

Write for FREE color catalog and dealer nearest you.

"American Quality You Can Afford"

Outdoor Products, 533 So. Los Angeles St.
Dept. \$11, Los Angeles, CA 90013





he enjoyable sport of cross country-skiing is cited by leading physiologists as the most perfect form of aerobic exercise. Its rhythmic total body motion uniformly exercises more muscles than other forms of exercise and its smoothness causes no joint pain or damage. NordicTrack lets you get the same top fitness building benefits year round in the convenience of your home. NordicTrack eliminates barriers of time, weather, chance of injury, etc. Very effective for weight control.

More Complete Than Running

Adds arm and shoulder exercise. Jarless doesn't injure the joints.

More Effective Than Exercise Bikes

More complete. Adds important upper body exercise and provides more uniform leg muscle usage. Higher pulse rates, necessary for building fitness, seem easier because more muscles share the exercise.

When swimming, the water supports the body allowing major leg muscles to loaf. The stand up position on the NordicTrack exercises the lea

Features

Simple motorless mechanism. Independently adjustable arm and leg resistances. Speedometer, odometer included. Pulsemeter optional. Red oak frame for quiet operation and fine furniture appearance. Pelvic pad provides user

Exclusive Patented Flywheel Action Provides unmatched smoothness and continuity from stride to stride. Motion and resistances are same as in real skiina.

 Fits in your home or office Folds and stands on end to require only 15" x 17

Two year warranty, 30 day trial period. Call or Write

for Free Brochure. TOLL FREE -

storage area

1-800-328-5888

Minnesota 612-448-6987

PSI 124-S Columbia Court, Chaska, MN 55318





DIRECT IMPORTERS OF SCOTTISH CASHMERE

913.845.5000 VISA • MISTERCHIROC

write or call for tree Brochure.

all the grief around here. Silicon Valley is not unique in the country for a superabundance of gas stations; but we are unique in the density of the electronics industry: It's the largest high-tech center in the world."

And in the San Francisco Bay Area, at least, there is growing evidence that the public is beginning to think twice about letting electronics firms into its hometowns and backyards. In Sonoma County, north of San Francisco, community organizations have opposed all high-tech growth, citing both the threat of pollution and Silicon Valley-style congestion as reasons to reject the industry. In early 1984 a Mountain View producer of printed-circuit boards announced that it planned to shut down its plant, which employed more than 400 people, because the firm could not comply with the community's orders regarding sewage cleanup or its secondary-containment ordinance. No one protested. However, when CTS Printex announced that it was moving its plant across the bay to Fremont, residents there quickly organized Sensible Citizens Reacting Against Hazardous Materials (SCRAM) to block the proposed move.

Concerned citizens in most locales around the country, however, seem to feel that the electronics industry should be accepted, but under conditions that would help ensure its responsible behavior. This means that comprehensive regulations, including the funds to enforce them, would have to be in place before companies "grandfather in" ineffective methods of handling hazardous materials. In addition, electronics production must be kept a safe distance from residential neighborhoods and environmentally sensitive natural resources, such as vulnerable sections of underground water supplies. And because most planners recognize the need for suitable housing within a short commute of industrial areas, it all calls for careful planning.

But in the long run, the record of leaks, spills, dumping, and venting in Silicon Valley demonstrates that without assertive public agencies—backed by the combined effort of well-informed community organizations -the electronics industry cannot be counted upon to make public health and safety a high priority. Martin Manley notes that the experiences of Silicon Valley ought to serve as "a warning to everybody that you shouldn't assume high-tech is a panacea for the problems in your community. You have to do some planning, look at the consequences, look at the needs of the communitv. and work from there."

Lenny Siegel is director of the Pacific Studies Center, a public-interest information center in Silicon Valley. He is coauthor of the forthcoming The High Cost of High Tech (Harper & Row).