

EXPLOSIVE SITUATION

A mid-August chemical fire at a high-tech battery plant in San Jose proved to be a major inconvenience for thousands of people, a physical irritant for few people, and a reminder that electronics is by no means a clean industry. However a proper response by emergency personnel averted a serious disaster.

Altus Corporation (not to be confused with Aldus or Altos) manufactures lithium batteries for the Air Force's Minuteman missile program, the space program, and a variety of other uses. It is located near the interchange of two of San Jose's major freeways.

At 1:00 pm on Friday, August 12, a fire of unknown origin broke out in a building housing battery acids such as thionyl chloride and ammonium chloride. A toxic cloud was released, floating in the direction of down-town San Jose. At least twenty-two people were treated at area hospitals.

San Jose, like other Silicon Valley communities, has enacted a comprehensive hazardous materials ordinance, so firefighters knew which chemicals to expect at the site, roughly where they were located, and how to deal with them. Most important, they knew that extensive water use would release large volumes of acid into the atmosphere. They also realized that batteries stored in an adjacent building would release highly flammable hydro-gen gas if reached by the fire.

Firefighters controlled the fire in the acid-containing building by 2:30 pm, but they let it burn, unwilling to spread toxic fumes by pouring water on the blaze. To prevent a hydrogen explosion, they soaked the battery-storage area.

One square mile around the plant was evacuated. Highways 880 and 101 were shut down, although 880 was reopened at 3:10 pm. Flights were delayed at the nearby San Jose airport. The County's new light rail line was shut down, and vents were closed at public buildings, such as the County jail, that are downwind from Altus.

Because the risk of explosion and/or toxic release remained as long as the fire was burning, highway 101 was closed until 1:00 the next morning. (San Jose Mercury News, August 13 and 14, 1988, plus broadcast news reports)

There have been other acid releases and explosions in Silicon Valley, but never had such an event directly touched so many people. The incident should strengthen the hand of fire officials and environmental groups working for stronger regulation of hazardous gases. However, the wide range of firms using an vast number of toxic materials in various types of high-tech production make it virtually impossible to anticipate, let alone prevent, all such problems in the future.

AUSTIN DOESN'T KNOW

Bay Area broadcast news directors and newspaper editors recognize that toxic fires, hazardous leaks, and even studies of chemical risks attract readers and viewers. Not so in Austin, Texas, where Kathleen Sullivan, a technology business writer for the *Austin American-Statesman*, was fired early this year for aggressively investigating industrial accidents in the city's small but growing high-tech sector.

When Sullivan reported in detail the public and private subsidies that Austin was offering in its successful attempt to lure Sematech, the semiconductor manufacturing consortium, she was pulled from that story—until Austin got Sematech.

In February she was forced out. The *Texas Monthly* (April, 1988) reports, "she was forced to resign for reasons the paper won't explain and was offered \$8,000 if she would promise not to criticize the paper, sue it, use the notes she had gathered at the *Statesman* for future stories, or ever again apply to work at a newspaper within the Cox chain." Sullivan rejected the offer.

Fortunately, her skills and expertise on high-tech are well regarded elsewhere. She quickly found a job on the financial page of the *San Francisco Examiner*, where she now covers Silicon Valley.

ANOTHER SEMATECH UPDATE

Robert Noyce, co-founder of both Fairchild Semi-conductor and Intel, as well as one of the inventors of the integrated circuit, has reluctantly agreed to head Sematech, the Semiconductor Manufacturing Consortium. With the well respected Noyce in the symbolic driver's seat, Sematech should have an easier time obtaining support both from Congress and from high-tech companies.

Throughout the organization of Sematech, Noyce had refused to take the helm, citing personal considerations and his responsibilities at Intel. In July, however, Noyce announced his change of heart, telling the **San Jose Mercury News** (July 28, 1988) "Finally, it dawned on me that this was just far too important to let somebody else do [it]."

The **San Jose Business Journal** (August 1, 1988), offered an explanation of Noyce's personal considerations: "The decision to take the full-time position as chief executive of Sematech will likely be a significant change in lifestyle for Noyce and his wife Ann Bowers, who have a home in Los Altos and another residence in Colorado. Bowers... now heads her own consulting firm in Los Altos called Enterprise 2000." Jack Carsten, a former Intel executive, speculated that "Noyce and Bowers—both are pilots—will commute between Austin and Los Altos in their own private plane."

It appears that semiconductor industry leaders forgot to consider where they—or at least one of their number—would be willing to live when they chose Austin as the Sematech site.

KOREAN THUGS

The South Korean government may now tolerate dissent, but employers still use thuggery to intimidate employees. Violence is carried out by "Save the Company Corps," or Kusadae, usually made up of managerial staff and other male employees.

In July the Kusadae at TC Electronics, the Korean subsidiary of Tandy Electronics, carried out a series of violent attacks, including torture and sexual brutality, against women workers who were organizing a union at the firm's plant in Masan. Eighty men carried out the attacks, most of which took place in company conference rooms.

The police initially refused to intervene, but when 1,500 people protested outside the Tandy factory gate one of the attackers was arrested.

TC employs about 1,600 workers in Masan, where it assembles telephones, computers, and other electronic equipment. The North American Coalition for Human Rights in Korea reports that the parent company, based in Forth Worth, Texas, has not yet responded to its inquiries. (**Korea Bi-Weekly Report**, August 16, 1988)

U.S.-JAPAN COOPERATION

Despite the prevailing media view that U.S. and Japanese high-tech corporations are locked in a life-or-death struggles, cooperation between U.S. and Japanese firms is growing.

For example, in August Fujitsu agreed to market an estimated 15,000 Sun Microsystems work stations over the next three years. Fujitsu will sell the computers, under its own label, in Japan and other locations outside the U.S.

Some observers speculated that Fujitsu agreed to supply Sun with dynamic random access memory chips (DRAM's), as part of the deal, but Sun's spokeswoman denied it. Sun's phenomenal growth in production, sales, and profits has been slowed recently by the DRAM shortage. (**San Jose Mercury News**, August 17, 1988)

Tokyo Electric (TEC), a member of the Toshiba group of companies, is building a factory in Fremont, in Silicon Valley. TEC plans to employ 100 people, including five from Japan, when it opens in November, and it expects to hire 200 more over the next two years. TEC's U.S. operation is wholly owned by its Japanese parent, but the company produces peripheral devices and office automation equipment for U.S. marketers.

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Apple Computer's dot-matrix ImageWriter printer, for example, is produced by TEC. (San Jose Mercury News, June 29, 1988)

Nihon Semiconductor, a joint venture of LSI Logic and Kawasaki Steel, is now able to customize chips at its Tsukuba City factory. The plant has fabricated six-inch wafers there since October, 1987, but until this June the wafers had to be shipped to Silicon Valley for the application of the final metallization layer that completes the gate-array circuitry. The Tsukuba facility employs 175 people. LSI Logic is the majority owner of Nihon Semiconductor. (San Jose Business Journal, June 20, 1988)

And Tohoku Semiconductor, a 50-50 joint venture of Toshiba and Motorola, appears to have broken a record by starting memory-chip production just ten months after groundbreaking. The Tohoku plant, located in Sendai, Japan, is producing Toshiba-designed 256-kilobit and 1-megabit dynamic random access memory chips as well as Motorola-designed microprocessors. At least 340 workers are employed at the \$240 or \$300 million plant. (Business Week, July 4, 1988, and Electronics, July, 1988)

Meanwhile, NEC (Nippon Electric), the world's largest commercial producer of semiconductors, has expressed an interest in joining Sematech, the consortium of "American" circuit producers that is working to improve chipmaking technology. But Sematech's founders are not interested. NEC may be the largest producer of memory chips in the U.S., but it is considered a foreign firm ineligible for membership. (San Jose Mercury News, August 16, 1988)

SOLECTRON ASSEMBLES

Major computer companies like Hewlett-Packard, IBM, and Apple are generally well regarded for their labor relations. They pay above the going rate for workers at most skills levels, and they appear to treat their employees—even production workers—with more respect than average. What is the secret of their success? They subcontract out the dirty work.

Solectron, one of Silicon Valley's premier assembly subcontractors, just went public, and its prospectus clearly shows how the big companies use subcon-tractors. Solectron did \$60 million worth of business in 1987 (year ending August 31), and in the first nine months of the following year (fiscal 1988) its sales rose to \$66 million (an annual rate of \$88 million). The company employs

1,400 people, including 1,274 in manufacturing and operations, in north San Jose and Milpitas—the newer, low-rent reaches of Silicon Valley.

Since its formation in 1977, Solectron has specialized in traditional pin-in-hole printed circuit board assembly. Now it is pushing turnkey production services and the assembly of surface-mounted devices on printed circuit boards. Surface mounted assembly is growing rapidly, but its still represents only about a fifth of the firm's revenue.

IBM is Solectron's largest customer, using the firm primarily to assemble mass storage devices for main-frame computers. In fiscal 1987, IBM represented 43% of Solectron's net sales. In the first nine months of fiscal 1988, its share fell to 33%. Winston Chen, Solectron's president since 1979, came to the company in 1978 after eight years as Process Technology and Development Manager at IBM.

The second largest customer is Apple—which ships a large number of computers with a very small number of production workers. Apple accounted for 8% of Solectron's business in fiscal 1987 and 13% in the first nine months of 1988.

Solectron divides its current work as follows:

<u>Market Served by Customer</u>	<u>% of Sales</u>	<u>Major Customers</u>
Computer Peripherals & Access.	33%	Conner Peripherals Apple Computer
Mainframe Mass Storage	30%	IBM
Communications	9%	IBM (ROLM) Plantronics
Computer	9%	Hewlett-Packard Teradata
Workstation	8%	Sun Microsystems
Medical Electronics	6%	Lifescan Xerox
Instruments/Industrial Electronics	5%	Hewlett-Packard

(Source: Solectron preliminary prospectus, June 29, 1988)

“ELECTRONIC SWEATSHOP”

We occasionally review studies that monitor the impact of computer technology upon the American workplace. Barbara Garson, in *The Electronic Sweatshop* [Simon and Schuster, 1988] agrees with what we've found elsewhere. Employers use computer technology to redesign jobs, monitor workers, and de-skill sales, service, and professional work. Computers may be necessary to
(continued on page 4)

process and store the volume of information handled by airline reservation clerks, and they do help increase productivity. However, as they are utilized now, they frequently degrade the quality of work while heightening the exploitation of workers who sit in front of video screens.

Garson, makes the case well, but *her story is unusual because it is told primarily through the eyes of individual workers and managers*. Thus, she not only covers how McDonald's cash register operators or social workers are affected by computer technology, but she tells how they and their supervisors cope with the demands imposed by top management through new computerized systems.

She also explains to the customers of these electronic-era toilers why flexible assistance is no longer available. For example, she describes how American Airlines has standardized and quantified the typical conversation between reservation clerks and consumers.

Her chapter on the decline of "monogamy in the office"—the familiar one-on-one relationship between a boss and his secretary—is particularly intriguing. Interviewing both managers and clerical workers at Proctor and Gamble, she found that the *diversified skills of traditional secretaries* were no longer valued. Instead, clerical workers were moved to assembly-line work centers.

She interviewed one top exec, however, at a medium-size firm with just two secretaries. The exec relies upon his computer to type memos, make phone calls, and other support tasks. He only uses his secretary to screen his phone calls. The exec thinks the secretarial occupation is on the way out.

Perhaps Garson dismisses that executive's comments too quickly. At many Silicon Valley firms, such as Apple Computer, professionals and managers do much of their own clerical work with the aid of word processors, electronic mail, and voice mail (sophisticated message machines). If this trend grows, what will become of the educated women who have filled secretarial slots. Will they

become professionals and managers? Will they become assembly or service workers? Or will they be unemployed?

The enormous potential of data processing technology leaves many options for its use. Unless something is done, Garson concludes, it will be used by employers to further extend their control over workers and the office workplace.

OFFSHORE WAGE REPORT

Semiconductor production workers' hourly wages have risen in Asia's four export-oriented "newly industrializing" countries—South Korea, Singapore, Hong Kong, and Taiwan—but they remain remarkably low in the countries with the largest volume of semiconductor assembly: Malaysia and the Philippines. And even in Singapore, where pay is highest, savings are substantial over semiskilled labor in the U.S. and Japan. EDN News (March, 1988 Special Supplement) presented data supplied by Integrated Circuit Engineering Corp., a leading chip industry market research outfit.

Chip Industry Hourly Wages—1987

Country	Wage
Singapore	US\$3.00
South Korea	2.50
Hong Kong	2.50
Taiwan	2.00
Thailand	1.15
Malaysia	.80
Philippines	.60
India	.60

Such figures should be used only for rough comparison, since payment customs—such as living allowances, bonuses, and overtime—vary from country to country.

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