

LB, Safety, profits collided at ch

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Safety, profits collided at chip company

NAMPA, Idaho -- The first sign of leaking poisons at Zilog's aging semiconductor factory in rural Idaho in 1993 and 1994 came from the workers' blistered faces and bloody lips.

At the end of 12-hour shifts, Zilog employees staggered from the factory "clean room" -- dubbed "this old house" by plant safety managers -- their mouths bleeding and faces red, as if sunburned.

Often the workers detoured to Boise-area hospitals, coughing uncontrollably and vomiting blood. Some workers blacked out or couldn't remember their own names. Several pregnant workers reported miscarriages. One man said acid dissolved his hearing aid.

Later this month, Zilog shareholders will vote on whether to sell the Campbell, Calif.-based company #151; which makes silicon chips for telephones, televisions and personal computers #151; to private investors for \$432 million. But few, if any, of those shareholders know what went on at the Idaho plant in the early 1990s.

Zilog never publicly accepted responsibility for the mysterious ailments that prompted nearly 900 employee-accident reports at its Nampa plant in 1993 and 1994. It challenged employees' medical claims in court and in worker's compensation proceedings. Senior Vice President Mike Bradshaw says: "None of the employees have come forward with proof that they were sick because of their work."

But as Zilog increased production during a historic boom period for the semiconductor industry, its clean room workers were exposed to poisonous chemicals from leaking, badly maintained equipment, according to internal company records and consultants' reports disclosed in litigation.

The hazards included faulty chemical monitors, inoperative alarms and an inadequate exhaust system, according to reports by the company and its consultants produced in court, and in government records this newspaper obtained under the Freedom of Information Act.

Plant safety managers warned executives as early as June 1992 that failure to address the problems could "result in criminal prosecution and incarceration of Zilog officers," those documents state.

A USA TODAY investigation of Zilog operations in 1993 and 1994 found that the company:

Violated federal safety laws and local fire codes;  
Increased production despite internal reports that predicted and documented worker exposures to leaking acids and solvents and potentially to such deadly poisons as arsenic;  
Refused to pay for continuing medical care for some workers who claimed injury from the chemicals, and terminated many employees who complained about the way they were treated;  
Won state approval of a \$200 million plant addition though managers frequently misreported toxic waste from existing operations and could not always dispose of that waste on a timely basis.

"I called it a high-tech sweatshop," says Dick Piccola, a former member of the factory's Emergency Response Team.

In August 1996, Zilog confidentially paid \$2.25 million to settle a lawsuit in which 30 past and current workers #151; including Piccola #151; said they faced "disabling and in some cases life-threatening conditions arising on account of their exposure to workplace chemicals."

Zilog says now that it has spent about \$10 million since the height of its problems to ensure that "this old house" is safe. Last year, Zilog's illness and injury rate fell below the semiconductor industry average for the first time this decade. And Zilog's ultramodern \$200

million addition-- where one worker produces the equivalent of 4.5 workers at the older plant -- now represents half the company's production and revenue.

However, Zilog's illness and injury rates were among the industry's highest for most of the 1990s, exceeding the average for all industries in 1993. The company's story, never fully told, demonstrates that chipmaking is not always as clean as its image.

'Acid fumes high'

On May 5, 1993, Zilog Vice President Ed McBain twice evacuated the Idaho plant, which he then managed, after workers choked on fumes and one woman vomited blood.

In an electronic-mail memo, McBain told aides: 'We need to have an emergency session (to) correct the seven years of shitty work habits in our facilities and maintenance departments.'

The factory was built in 1979 and expanded in 1984. Its decline, by McBain's assessment, began after the arrival of new management in 1985, led by Chairman and Chief Executive Edgar Sack, 67, who holds a Ph.D. in chemical engineering and owns 15 technical patents. Sack declined to comment for this story.

McBain also was unavailable for comment. Excerpts of his diary and e-mail were disclosed to workers under a court order. The excerpts reveal that over a period of several months in 1993, McBain reported toxic brown sludge leaking from the duct work of exhaust scrubbers that remove contaminated air from the clean room; sulfuric acid -- which eats through metal -- dripping on pipes repaired with duct tape; and poisonous gas vented into employee work areas.

>On May 14, 1993, McBain wrote in his diary: 'Acid fumes were high and getting worse.'

That night, clean room worker Heidi Maston lost consciousness after pouring sulfuric acid into a malfunctioning sink that was designed to vent the fumes, court records state. Maston and two co-workers, one of whom spit up blood, were taken to the hospital.

A few hours after the accident, Maston's supervisor, Toni Walling, told McBain that acid-monitoring equipment registered a nearly twentyfold increase in dangerous vapors in Maston's work area, internal documents show.

Doctors diagnosed Maston with reactive airways disease, a condition that makes her sensitive even to household chemicals. Her lungs were scarred and filled with fluid, disabling her for months.

When Maston returned to work, she told the court: 'I was kept in an isolated area for 12-hour shifts with little work and was told not to talk to other employees about the accident.' Maston said she became sick again after the worker's compensation insurer cut off her health benefits. Zilog fired her for excessive absences.

Semiconductor industry workers routinely handle deadly acids, solvents and such poisons as arsenic. Safety is essential to the process. But regulators repeatedly fined Zilog for deficient employee training from 1985 to 1994, according to records obtained under the Freedom of Information Act. The Labor Department's Occupational Safety and Health Administration describes many of the violations as 'serious.'

Former Zilog employees say they failed to understand the risks to which they were exposed. They were happy to have footholds in the high-tech industry in jobs paying more than minimum wage.

'In a place like Idaho, you either work for Zilog or flip hamburgers,' says former company chemical engineer Tsotung Ko. 'That's a situation that people don't understand. . . . People need a job.'

On May 16, 1993, a new problem emerged: A sweet smell in the clean room. Workers reported dizziness and nausea. McBain's diary says workers were 'gassed' and the area evacuated at 5:30 a.m. In capital letters, he added, 'We are sucking air from scrubber deck into photo!' That is, contaminated air was returning to the clean room.

Maintenance technician Jeff Groat told McBain and Bradshaw that he suspected the sweet odor was the deadly gas diborane. Groat, in an e-mail disclosed in litigation, reported that diborane 'is highly toxic. It is toxic below odor threshold. . . . It can cause central nervous system damage and liver and kidney damage.'

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Chemical engineer Ko testified in court that he, too, believed diborane was exhausted into the factory work area.

From company headquarters in California, Zilog CEO sack listed possible remedies in an e-mail reply, including 'shutting down some of the equipment.' But, he wrote: 'I cannot see how it will not reduce the revenue below the number I gave you.'

At the time, Zilog was headed for an 82% increase in second-quarter net profit to \$6.4 million, on a 49% revenue gain to \$49.6 million. It was on course for a record year culminating in 70% higher profits \$151-- \$26.8 million -- on 39% higher revenues of \$202.7 million.

>Toxic cocktail

A month and a half before the height of the chemical leaks, Zilog consultants reported in March 1993 that the plant's carbon filters -- which help purify clean room air -- worked at less than 10% efficiency, according to records produced in litigation.

Beginning in May 1993, plant officials and consultants discovered that poisonous air was re-entering the clean room from multiple sources, including the overloaded scrubbers, deteriorating ductwork and malfunctioning vents, according to those >same records.

On May 18, 1993, Zilog Vice President Bradshaw shut down the Nampa plant for one week at a cost to the company he estimates at \$500,000 a day. 'I actually sent people home with pay and didn't reopen until management had an idea what was happening,' he says.

Internal reports depict widespread disarray that week. An estimated 350 gallons of toxic sludge were removed from the scrubber, the waste piling so high that it blocked the equipment's observation window.

Plant Safety Manager James Cochran reported an equipment leak of sulfuric acid 213 times the industry standard.

And Bradshaw learned that an acid drain under the clean room had backed up, failing to remove dangerous fumes.

'Every weak link was repaired, and then another weak link would break,' Bradshaw says now.

Unable to identify or contain all of the leaking chemicals, officials sought to bottle complaints, workers say. On May 20, 1993, chemical engineer Ko -- known as 'the Masked Man' when he worked at Zilog because he wore a respirator in the clean room and urged others to do the same -- voiced concern that employees' lives were at risk. Ko said in a court affidavit that McBain threatened to fire him, saying: 'If you don't like the way I'm driving, get off the bus.'

Two days later, at 11 p.m., spilled solvents sent maintenance technician Tim Parker home with what doctors diagnosed as chemical pneumonia. His boss, Walling, testified to the court that she had no knowledge of the accident.

><p>But Zilog records show that Walling herself wrote the accident report and e-mailed plant manager McBain saying that Zilog >consultants registered high solvent levels in Parker's work area. Walling acknowledges now that the reports were accurate >and her court testimony inaccurate. 'I just made a mistake,' she says.</p>

><p>Parker testified that after the accident, he was unsteady at work and had trouble completing basic tasks. Zilog asked Parker >to take a drug test and fired him when he refused. In court, Zilog defended its actions by citing Parker's arrest for marijuana >use 20 years earlier.</p>

><p>Dr. Raymond Singer, author of a textbook on chemical poisoning and an expert witness in the workers' lawsuit, diagnosed Parker as 40% disabled by workplace toxins.</p>

><p>Parker, who hasn't worked in four years and lives in a trailer in Boise, says that in his opinion: 'The chemicals French fried my >brain.'</p>

Ghost buster

Zilog workers say they were torn between a growing fear of the clean room and fear of their

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employer.

Factory alarms that should have alerted employees to chemical leaks were inoperative, inadequate or in many cases never installed, company and regulatory records show.

Clean room worker Philip Chance says in a court affidavit that he held an open bottle of sulfuric acid beneath an alarm sensor without triggering it.

Chemical engineer Ko told the court that he witnessed a portable solvent detector called a Ghost Buster "nosed into a solvent-soaked rag" without any response.

Dick Piccola said in court that he was ordered to sweep the clean room with the Ghost Buster to appease the factory's predominantly female work force. "Make the bitches happy. Make them think you're doing something," Piccola says he was told by his supervisors.

In July 1993, Cochran, the plant safety manager, told management that he was concerned about the inoperative chemical monitors. In one memo, he said: "We currently have 10 machines of which only three are connected to the visual alarm system. The other seven machines are not connected and there aren't any audible alarms. Essentially we have a non-functioning evacuation system."

Cochran also e-mailed a colleague, saying: "This is (my) first time ever with a company that when I have told employees to evacuate an area (they) wouldn't because they were afraid of losing their jobs."

Human "canaries" were used in place of alarms, company records show.

In March 1994, plant manager McBain recorded a "controlled experiment" in which chemically sensitive workers were moved to troublesome areas where some equipment was shut down. "And they still had problems," McBain wrote.

Ko was outraged. In his affidavit, the chemical engineer said, "I stated that the practice of using human beings to monitor chemicals was 'inhuman.' I even used the phrase 'criminal.'"

"Always our fault"

With increased production, Zilog workers say they experienced painful, bubbling blisters in their ears, mouths and noses accompanied by uncontrollable diarrhea, headaches and nausea.

Dozens of past and current Zilog workers complain of permanent injuries, citing doctors' diagnoses of chemically induced asthma and damaged reproductive systems.

Some employees hold Zilog responsible for ailments of undetermined causes, including cancer, depression, chronic fatigue and miscarriages.

But CEO Sack said in a private e-mail in August 1993 that worker complaints seemed to be psychological. "The work force is so antsy that things that would normally not even be noticed now cause concern," Sack wrote.

Plant officials employed an occupational medicine specialist, Dr. Howard Tsang, who apparently reached the same conclusion. The doctor's diagnoses show him assuring workers the plant was safe.

Tsang told women that the sores in their mouths were from dental fillings and herpes, according to his diagnoses and interviews with the workers. He told one woman the sores were from oral sex, another that she had been burned by coffee and another she had strep throat. Tsang suggested that the women caused nasal sores by picking their noses.

The workers' own physicians strongly disagreed.

"Nothing seemed to be Zilog's fault. It was always our fault," says former clean room worker Misti Karabinus.

Tsang, who no longer works for Zilog, refused to comment, hanging up on a reporter.

On June 25, 1993, Maria Ramos blacked out in the factory clean room. "When I opened my eyes my vision was very, very blurry. I couldn't see the clock. I had pain all through my joints. And my head just throbbed," she says.

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Two days later, working through pain, Ramos lost control of her bowels and soiled her uniform. She was told to work an extra hour to make up the time it took to change clothes.

Ramos was diagnosed with breast cancer in November 1993. Recently released after another trip to the hospital, she says, "I have no proof that will relate my cancer to Zilog, it's only what I feel."

Clean room worker Russell Weihe, hospitalized after breathing chemicals from a broken exhaust hose, says in a court affidavit that he was ordered to return to work in August 1993 before his 30-day medical leave expired.

Weihe says he resisted, telling a Zilog human relations manager: "You guys are trying to kill me in there." I told him I had a written excuse from their doctor that I didn't have to go back into the fab."

Weihe says the manager responded: "OK, you're fired." Zilog contends that Weihe quit.

In November 1994, former clean room worker Dottie Gudgeel produced a bone sample of arsenic 30 times normal after undergoing hip-replacement surgery. For years, Gudgeel cleaned poisonous arsenic residues from Zilog factory equipment. She says now, "I was on the company's side right up until I was diagnosed with arsenic in my bones."

"We didn't know" Zilog workers complained to OSHA, the government's chief workplace regulator, to little avail. The agency closed a September 1993 probe noting that "any problems identified in investigation are corrected."

In June 1994, OSHA stopped sending inspectors to the plant, ordering Zilog to investigate itself. OSHA area director Ryan Keumichel explains: "We have 10 people to cover the whole state. And we have 65,000 companies in the state."

Keumichel acknowledges that even when inspectors visited the plant, they performed narrow reviews. If Zilog workers complained of acid fumes, inspectors tested for acids but not for a long list of dangerous solvents also in use.

"We didn't sample any of those things because we didn't know they were there," Keumichel says.

OSHA acid tests failed even to register such problems as the overrun acid drain. Keumichel concedes, "The discovery occurred after the series of times we were out there."

Nor did the state Department of Health and Welfare act. State and federal records obtained under the Freedom of Information Act show repeated instances of Zilog inaccurately reporting its waste accumulations to regulators from 1992 to 1994, often underreporting toxic arsenic, mercury and solvents, and amending the reports later.

Records show the company often was tardy in disposing of the wastes, including as recently as last July.

At the height of Zilog's problems in 1993 and 1994, the company sought and received state approval of the \$200 million plant expansion, overcoming regulators' concerns that the addition would exceed arsenic-emissions limits.

The state Division of Environmental Quality says it tries to inspect large companies like Zilog every four years but hasn't inspected the Nampa plant since 1990. It has inspected the plant twice in a decade's time, both times resulting in consent orders against the company.

Enforcement chief Dave Pisarski says Idaho relies on companies to be self-enforcing. He terms his job as "assistance more than enforcement."

Zilog also mistakenly told the public in December 1992 that it had stopped using a dangerous solvent -- an ethylene-based glycol ether -- associated with high miscarriage rates in women and damage to male testes. It quit reporting the solvent's use to the Environmental Protection Agency.

Employees say the glycol ether, which is easily absorbed through the skin and has been shown to eat away the tails of rats, remained in widespread use until supplies were depleted. Company documents substantiate their claims.

'An honest mistake,' Zilog Vice President Bradshaw says.

Zilog managers and company consultants documented still more problems at the plant.

August 1993: Cochran reports extensive plant-safety hazards &#151; including the failure to test employees for arsenic &#151; and says Zilog 'could be heavily fined if this was discovered by OSHA.'

September 1993: California consultant Environmental and Occupational Risk Management reports that deadly arsine gas is being vented to an exhaust fan 'that provides no treatment capability and little dilution capacity' and is an 'excellent example' of how poisons could be returned to the workplace.

October 1993: San Francisco architect Keller and Gannon finds 'numerous leaking joints' and 'corroded supporting straps' in a clean-room scrubber possibly returning hydrofluoric acid and 'piranha' solvents to work areas.

January 1994: Nampa Fire Marshal Kent Stevens identifies 'far too many deficiencies' in the plant sprinkler system. 'Some of the problems I would consider very serious and need (to be) corrected immediately.' (Cochran reports that the fire marshal 'cited only those things he knew about. From my own audits/reports/recommendations there are some major deficiencies that he doesn't know about.')

March 1994: Boise consultant Industrial Hygiene Resources measures potentially deadly phosphoric acid at 'three times the OSHA permissible exposure limit.'

'Smoking gun'

At last the problems inside Zilog came to a head.

On March 10, 1994, Cochran resigned in a letter that federal Judge Mikel Williams later called a 'smoking gun' because it appeared to support some employee allegations.

In a lengthy analysis of plant dangers, Cochran criticized Zilog as 'irrational, irresponsible. The accident rate and the worker's compensation premiums of this facility are the highest I have ever seen.'

He predicted that 'all of the money saved' from deferring plant repairs would be spent on legal defenses and more expensive solutions.

Cochran himself was retained by Zilog as an expert witness paid \$100 an hour in the workers lawsuit against the company. He would not comment for this story.

Four days after Cochran quit, Zilog workers led by Ko -- the 'Masked Man' -- filed a lawsuit in federal court under the Americans With Disabilities Act holding the company responsible for widespread ills and workplace abuses.

Former Idaho Supreme Court Justice Robert Huntley took the workers' case on a contingency-fee basis. He says that in his opinion 'there was reckless disregard for the safety of the employees.'

Zilog says that the 30 employees who sued the company are a small minority of the Nampa plant's more than 500 workers. Plaintiffs registered just one-third of 533 employee-accident reports filed at the plant in 1993.

In May 1994, two months after the lawsuit was filed, Zilog CEO Sack ordered the Nampa staff to clean out company files, including computer hard disks and magnetic tape backups. Sack emphasized that his directive was to be 'strictly observed. No exceptions.' He exempted legal records from the order. The company says only non-essential paperwork was destroyed.

Workers at the Nampa plant say bags of shredded papers lined the hallways.

One surviving record, plucked by an employee from a company copier, was the handwritten note of Zilog General Counsel Richard Pickard to 'purge' the supervisory file of clean room worker Jody Santana, who had filed a wrongful death lawsuit against the company in addition to the disabilities claim.

Zilog attorney Pickard explained in court that he meant to say 'merge' rather than 'purge'

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Santana's files. The judge called the attorney's choice of words "regrettable" but "plausible."

Santana, the mother of five children, had six miscarriages and one stillbirth in the years she worked at the plant, handling glycol ethers that Zilog said it had stopped using.

Santana says her supervisors repeatedly told her she was safe at work. "I believed those guys, and they killed seven of my children," she contends.

The judge dismissed Santana's wrongful death claim, ruling that her fetuses were incapable of sustaining life and thus exempt from Idaho law.

The judge ruled against Zilog on another matter. As the workers' lawsuit neared trial, he said the company improperly withheld Cochran's resignation letter from evidence and altered the copy it produced.

In a strongly worded opinion, the judge sanctioned Zilog and its attorneys, ordering them to pay \$58,735 to the court. And he forced the company to release four boxes of documents potentially relevant to factory problems.

>Victory or defeat?

On Aug. 16-17, 1996, days before trial, Zilog officials and workers held secret settlement talks at a hotel in Boise.

According to several accounts of the proceedings, Zilog litigator John Fox said he would easily defeat the workers' cases in court.

According to those accounts, Fox told a young female worker, whom Zilog's doctor had diagnosed with herpes, that he would put her on the witness stand during trial and tell the court she got mouth sores from oral sex with her boyfriend.

The workers expressed outrage, feelings heightened by internal Zilog documents they were shown for the first time under the court order.

Former clean room worker Tim Parker says: "If we went to court I don't think one of us would have lost. I don't think there's a jury in the United States that wouldn't find Zilog guilty of negligence, fraudulence, deceit, contempt."

But the workers' attorney, Huntley, pressed to compromise. Even if they won in court, he said, they faced appeals that could exhaust them and bankrupt his law firm.

The workers concluded they had little choice. They agreed to return the company records and not discuss the settlement. Nearly half received \$15,000 apiece -- the equivalent of about six months' salary -- and that sum only because bigger winners voted to donate some of their proceeds.

Within a few months, Zilog terminated or secured the resignations of all but three of the 30 workers who filed the lawsuit, court records show. In many cases, the company attributed the layoffs to downsizing at the plant.

Zilog's prospective buyers, Texas Pacific Group -- a partnership led by financiers David Bonderman, James Coulter and William Price -- emerged last summer offering to pay \$527 million for the company.

In November, the buyers reduced their offer by nearly \$100 million after a decline in semiconductor prices and production undercut Zilog's financial performance. Texas Pacific Group would not comment for this story.

Sack plans to depart as chief executive when the deal is complete, receiving \$11.4 million in stock and salary payments and possibly more in bonuses. Bradshaw gets \$2.4 million for his stock and a two-year contract extension.

Texas Pacific Group authorized Zilog to offer factory workers \$1,000 bonuses to stay.

Former plant worker Weihe views his experience at Zilog with bitterness, saying, "A lot of people had their life ruined. A lot of us, it's taken a toll on our lives.

"Maybe if it opens industry's eyes -- maybe if it helps someone down the line, maybe if it

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saves someone's life -- that would  
>be a great.' But, he says, 'I feel it was a defeat.'

By Elliot Blair Smith, USA TODAY; Contributing: Julie Schmit and Barbara Hansen

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