

THE SILKWOODS OF SILICON VALLEY

Inside the pristine walls of the semiconductor industry in California's Silicon Valley, strange things are happening to some of the people who make the chips that run our computers

BY LYNNE OLSON

Dressed in white, the women bend over their delicate, exacting work, breaking the silence only occasionally with hushed voices. They barely look up as a visitor enters, dressed like them in bonnet, smock and plastic goggles with paper booties over her shoes. The visitor remarks to her guide that the workers' garb and the pristine condition of the area remind her of an operating room. "Actually," says the guide, "the air is much purer here."

The item produced in this sterile-looking "clean room" is no bigger than an infant's fingernail, yet it has profoundly changed the lives of most of us. It's the integrated circuit chip—the brain of computers, of communications equipment and scientific instruments, of pocket calculators and video games.

Judy Washington's life has been changed by the chip, too. When Washington is exposed to gas fumes at a service station, she becomes dizzy, sick to her stomach and sometimes incoherent. When she smells a strong bleach, her throat swells, she breaks out in hives and she has trouble breathing. She says her memory is going, that she often can't remember the contents of a book she just read or something she just said or did.

Washington, 35, says her health has been permanently damaged by working in a "clean room" like the one described above; she is suing her former employer. Other former electronics workers in California's Silicon Valley have made the same claim—a surprising idea to those who think of this high-tech industry as "clean" and "light." Few outsiders are aware it's also an industry that uses hundreds of toxic chemicals (some of them suspected carcinogens and reproductive hazards) as essential parts of the manufacturing process.

The health and safety of electronics workers

are highly sensitive issues in Silicon Valley, a sprawling corridor of land stretching from Palo Alto to San Jose that is the initial hub of the US electronics industry. More than 150,000 people—25 percent of the area's workforce—work at the 500 or so electronics firms in the valley.

Within the electronics industry the semiconductor firms that produce the integrated circuit chips use the largest volume of chemicals. There are about 60 in the valley, most of them less than 15 years old. Roughly 75 percent of their production and assembly workers are women, most of childbearing age.

EARLY WARNINGS

In 1979, four women at Signetics Corp., a semiconductor company, filed workers' compensation claims against their firm, contending that exposure to chemical fumes had left them hypersensitive to everyday chemicals. Other incidents included a May 1979 industrial explosion at Fairchild Camera and Instrument Corp., a major chip maker, which hospitalized three employees and sent 14 workers home after they inhaled acid fumes.

But the real bombshell fell in 1981, when the state's Occupational Injuries and Illnesses Survey showed an extremely high incidence of job-related illness in the semiconductor industry—more than three times that of manufacturing as a whole. According to the survey, which covered industry-reported illnesses in 1980, the occupational illness rate for manufacturing in general was .4 per 100 full-time workers. Illness rose to .9 per 100 in the electronics industry as a whole. However, in the semiconductor companies, the illness rate was 1.3 per 100.

Semiconductor companies vehemently de-

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nied the implications of the survey and promptly compiled a survey of their own, which contended that the high incidence of illness was the result of companies reporting minor chemical burns and inhalation cases as illnesses. Both should have been reported as injuries, the industry study said.

No new incidence-rate data on occupational illnesses in the semiconductor industry have been released by the state covering any period since 1980. California's Department of Industrial Relations and the semiconductor companies have disagreed over a "sudden dramatic drop" in the illnesses the firms reported in 1981 and 1982, according to industrial relations department spokesman Richard Stephens. Although an investigation found no wrongdoing, the state determined that the semiconductor firms had been recording some illnesses as injuries and ordered them to change their record-keeping methods. The issue is still not settled.

Industry officials maintain that their health and safety practices err on the side of caution. Yes, their production workers deal with hazardous chemicals, they say, but elaborate precautions have been taken to protect employees. "Our record is extremely good in this area," says Sheila Sandow, manager of communications for the Semiconductor Industry Association, the industry's trade group. "It's a newer industry, and so we've been able to learn from the errors of some of the older industries, especially the problems they've had in occupational health and safety."

"We're very concerned about people's welfare and safety," says Elliott Sopkin, vice-president of communications for Advanced Micro Devices Corp. (AMD). The fastest-growing semiconductor company in Silicon Valley, AMD is the place where Judy Washington used to work.

"We are constantly looking into new methodology, the technology to increase safety," Sopkin adds. "We know we can't make it as safe as somebody's bed, but we try to be as close to that as possible. We indeed deal with chemicals that are dangerous. I don't know if they are as dangerous as an automobile. An automobile is safe as long as everybody is using it properly. Chemicals are safe as long as they're used properly."

A GOOD PLACE TO WORK?

Like other Silicon Valley companies, AMD prides itself on being good to its workers and on making them feel they are an important part of the team. Advanced Micro Devices has a no-layoff policy: No one who has been with the company for more than a year will be laid off for economic reasons. Workers with per-

sonal problems—money, drugs, alcohol, marriage—can get professional help, and the company will pay for it. Stock options and cash profit sharing are part of AMD's generous fringe-benefits package.

In exchange for its generosity, AMD, like the other high-tech firms with which it's in fierce competition, expects intense work and commitment from its employees. AMD founder W.J. (Jerry) Sanders wants to see his company's sales revenues spiral from \$583 million in the fiscal year ending March 25, 1984, to \$900 million in the next fiscal year. He has promised employees a bonus of one week's pay if the company does \$400 million in sales between April and September, and another week's pay if it does \$500 million for the following six months.

According to some former semiconductor workers, the constant pressure to achieve higher silicon-chip production—endemic in the industry—sometimes results in supervisors ignoring suspicious smells or other signs of chemical exposure. When process-control technician Judy Washington would ask to

THE MAKING OF A CHIP

The elaborate safety precautions embodied by the "clean rooms" bear witness to the dangers of producing the innocuous-looking chip that gives Silicon Valley its name. It takes chemicals to etch the electronic circuitry onto silicon chips.

Silicon chips are made from wafers of silicon. The wafer is covered with a film of oxide. Then it is coated with a photosensitive chemical mixture called photoresist.

Masked by a stencil and flooded with ultraviolet light, the exposed photoresist hardens into a pattern on the wafer. Acids and solvents strip away the unexposed photoresist and oxide. The wafer is then placed into a closed container holding an atmosphere of either arsine, phosphine or boron gas and heated to 1,000 degrees centigrade. The gas, called a dopant, chemically reacts with the exposed photochemicals on the surface of the wafer and alters its electrical characteristics. Depending on the number of layers of circuitry needed, all the steps described above may be repeated as many as six or seven times.

Finally, a metal (often aluminum) is condensed onto the wafer, providing contacts for connecting to the chip's external wiring. The scores of chips on the surface of one wafer are then inspected and sliced up into separate entities. Each chip is bonded to a frame containing a dozen or so metal legs for attaching to printed circuit boards in computers, calculators, and other devices.

have a work station shut down because of possible chemical fumes, she says the reaction from the supervisor often would be: "Oh, you can't shut the station down. We have to get 2,500 wafers out of there today."

AMD's management team strongly denies such allegations. Discussing reports of occasionally unsafe conditions, Sopkin is vehement: "Bullshit. It's safe. It's as safe as the people who work here. And that's our responsibility—to make them safety aware."

Like most large semiconductor companies, Advanced Micro Devices runs lengthy safety classes for its employees, using both lectures and films. Basins and containers of chemicals in the production area are clearly marked with their names and the procedures to follow if a worker is exposed. Emergency showers and eye washes are provided in each work area; emergency evacuation procedures are posted on bulletin boards. Exhaust ventilation hoods over the work areas pull potentially hazardous fumes from the air. Company officials say the air is constantly monitored for fumes resulting from equipment malfunction. A nurse is always on duty, and workers exposed to chemicals are rushed to a nearby industrial clinic.

As evidence of the effectiveness of their safety efforts, semiconductor officials point to the results of a 1981 study of the industry conducted by California's Division of Occupational Safety and Health (Cal-OSHA). The study, which monitored the air of 13 semiconductor companies, found that workers' overall exposure to chemicals was at a level considerably below government standards for acceptable exposure.

The Cal-OSHA survey was less sanguine about safety measures, though. It reported a wide diversity in the quality of health and safety programs at the companies studied, with the larger manufacturers providing more sophisticated, complete programs. And for protective clothing, it gave barely passing marks to the industry as a whole. Such clothing was "generally provided and in use, although the type and kinds of equipment frequently were minimally adequate and the supervision/enforcement of use fairly lax."

Critics point out that industry participation in the Cal-OSHA study was voluntary. Furthermore, the task force took air samples only during routine production and sporadic maintenance operations. Most employee exposure to chemicals, say critics, occurs under "non-routine" circumstances—chemical leaks, splashes and spills, ventilation-system breakdowns—which critics claim are common in some plants. In fact, the study acknowledges a "potential for acute exposures to hazardous chemical and physical agents due to equipment malfunctions, maintenance procedures, material

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handling problems, ventilation and scrubber system problems...."

The credibility of the study was further damaged, some contend, when Mike Williams, the study's project leader, went to work in the industry shortly after completing the survey. Williams, now in charge of health and safety at AMD, says the conclusions his task force reached and his switch of jobs were not connected. "I had no thought of going into this industry when I was doing the study," he says. "My primary objective in participating in the Cal-OSHA study was furthering the knowledge and information about health and safety in the industry."

Preliminary findings from a new National Institute of Occupational Safety and Health (NIOSH) study of semiconductor companies support the conclusion of the Cal-OSHA report. "In terms of employee exposures, we really didn't see routine exposures of anybody at anything approaching [government] standards," says Jay Jones, the NIOSH employee in charge of the study.

Critics of the NIOSH survey, though, claim the investigation was cursory at best. The gov-

ernment researchers collected air samples and did in-depth studies at only four of the 21 plants they went to, Jones acknowledges. (Only one of those four was in Silicon Valley.)

Despite the findings of Cal-OSHA and NIOSH, many semiconductor workers remain greatly concerned about the dangers of working in the industry. "How can they say it's not hazardous to your health when they have all these open chemicals, these spills?" says Anita Zimmerman, a former semiconductor production worker. The Cal-OSHA study reported finding "a general apprehension expressed by many operators concerning the adequacy of monitoring and detection systems for advising and warning employees when dangerous conditions exist and the need for emergency evacuation."

CHEMICAL DANGER

"The 'clean' image is an illusion," says Pat Lamborn, program director of the Santa Clara Center for Occupational Health and Safety, an information and advocacy center founded by public-health workers and former electronics employees in 1979. "The cleanliness is to protect the chip from contamination, not the workers. They're working with some very dangerous things in that industry, and people

are suffering the effects."

In the last two years, the Santa Clara Center has received more than 500 calls on its "hot-line" from semiconductor workers requesting information about a chemical or chemicals to which they've been exposed, says Lamborn.

The problems workers report are as varied as the chemicals they use. They range from minor skin and respiratory problems to severe diseases, such as scleroderma in which the body's immune system goes awry and mounts a resistance to its own tissues. A look at the chemicals used in the industry and what the Cal-OSHA study and other expert sources report about their effects on health makes it clear what is at stake:

- Some gases—such as arsine, phosphine and diborane—are essential to the process that gives the silicon wafer its electrical properties, yet they are extremely toxic. Inhaling them can cause breathing and stomach problems; kidney, liver and heart damage; anemia; nausea; dizziness and fluid in the lungs. Arsine, for example, has been linked to miscarriages and other reproductive problems.

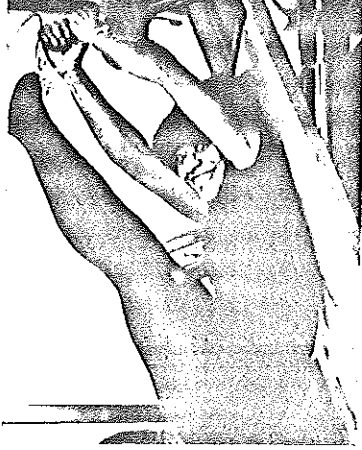
- Exposure to acids, either by breathing a mist or through splashes and spills, can result in skin irritation and rashes; an allergic, asthma-like sensitivity to chemicals; breathing difficulties, bronchitis and irritation of the throat,

THE SAD END TO A SILICON VALLEY SUCCESS STORY

Anita Zimmerman, now 32, was hired by Advanced Micro Devices in August 1980 as a masking operator. Her job was running the equipment that masks the silicon wafer with a stencil and etches away the unexposed photoresist and oxide with chemicals. Within ten months, she was promoted to masking trainer, teaching other workers the process. "I was in hog heaven," she says wryly, adding she thought she had begun her climb up AMD's ladder of success.

Then came September 10, 1981. As she was working, Zimmerman says, "From out of nowhere came this awful smell of chlorine, like a swimming pool." The smell was the sign of a leaking chlorine-based gas. Despite complaints from workers, she says her area was not evacuated for more than half an hour. "People were vomiting, eyes and noses were burning, and by the time we were evacuated, my voice was hoarse. By the end of the day, it was gone completely."

While other workers were bundled off to an industrial clinic, Zimmerman says she remained at the plant so she could help man-



When Anita Zimmerman was in high school, she took training in gymnastics (left). Today, lung problems have destroyed her stamina.

agement identify the escaping gas. Four hours later, the all-clear sign came and she went back to work. By the end of the day, feeling "stunned," she went off to the industrial clinic herself, where she was given some cough syrup and told to gargle with sugar water.

When she went back to work the following Monday, Zimmerman says, "Smack, there it was again"—the same chlorine smell. Again, an evacuation was staged. But the smell kept reappearing, off and on, from September 10 to October 23—the last day she worked at AMD. "By the 23rd, I was so sick, I didn't know what was happening," she says. She had trouble breathing; she was gasping for breath and wheezing. The diagnosis of her doctor: a pulmonary disease involving the obstruction of the small sacs in her lungs.

A runner and gymnast in high school, Zimmerman says that running a half block exhausts her now. "I still have periods at night where I have difficulty breathing, where I just think I stop. I wake up, I wake my husband up. I do not perform well as a wife. I don't have the stamina; I don't have the

breathing ability. It's made it very difficult on my marriage."

Zimmerman has filed a claim for workers' compensation, as well as for vocational retraining, payments for medical expenses and insurance for future medical care. Her claims are being contested.

According to Amanda Hawes, Zimmerman's attorney, AMD contends that the former worker's pulmonary problems are caused by asthma, which they say she had as a child. Zimmerman acknowledges that a doctor once diagnosed her as having asthma when she was a young girl, but she adds she had shown no symptoms for more than 15 years since the diagnosis. During that time, she was involved in gymnastics and running. "If she had pulmonary difficulties, it didn't interfere with her ability to participate actively in sports," says Hawes. "The onset of her current symptoms is too close in time following a fairly well-documented series of exposures on the job for it to be anything but a direct connection." Because of the litigation, AMD has no comment.

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windpipe and lungs.

- **Solvents**, among the most widely used chemicals in the industry, have been linked to skin problems; nervous-system disorders; liver, kidney and other organ damage; reproductive problems and cancer.

- **Metals**, which occur as dusts and fumes, can irritate breathing passages and lungs and can result in excess lung-tissue growth. Metal exposure also can result in skin irritation, sensitization and skin cancer. Some metals are suspected of causing other kinds of cancer.

Workers may develop health problems like the ones described above, but they find it extremely difficult to prove that their illnesses were job-related. Many of the symptoms reported by semiconductor workers also are associated with viral illnesses or other conditions not related to chemicals. "It's not as straightforward as somebody who fell off the ladder in front of the foreman," says Amanda Hawes, a San Jose attorney who represents Washington and Zimmerman, and specializes in workers' compensation cases. "Where any period of time has elapsed from the exposure to the onset of symptoms, or where the immediate causation can't be seen, you're going to have a tough time proving your case because you don't have a direct record of what exposures took place."

Adding to the burden of proof—and to the concern about workers' health—is the paucity of research on the effects of hundreds of the chemicals (used by the industry) on workers.

Jeanne Stellman, PhD, executive director of the Women's Occupational Health Resource Center and associate professor, School of Public Health, at Columbia University, says it's a "totally neglected field of research," calling the situation "judicious." What's more, two important pieces of the puzzle are missing: There still is virtually no information on the effects of low-level exposure to chemicals over long periods of time—the circumstances in which many semiconductor workers find themselves. Researchers also don't know how exposure to combinations of gases affects people—a pertinent point for semiconductor workers since the industry often uses complex mixtures of chemicals.

Joseph LaDou, MD, chief of the division of occupational and environmental medicine at the University of California School of Medicine in San Francisco, is worried about health threats posed by chemicals in the semiconductor industry. "These companies use such a broad spectrum of chemicals that a person could have simultaneous exposure to carcinogens and other hazards, such as reproductive hazards," he says. "What makes it worse, the technology advances so rapidly that you hardly get a handle on what people are using before there's a whole new set of circumstances."

According to LaDou, the vast array of chemicals used by semiconductor companies presents "an almost infinite number of possibilities for trouble."

Stellman warns that since the semiconductor

tor industry is so new, some slow-developing health problems, such as cancer, still may be on the horizon for some workers.

Judy Washington constantly worries about that possibility. "It's scary when you think about what can happen to you ten years from now," says the divorced mother of four. "What else will they find wrong with me?"

TWO YEARS OF LIVING DANGEROUSLY

During her two years at Advanced Micro Devices, Washington says she was exposed to many acids, solvents and gases, including boron and phosphine. Experience in wafer production netted her a job with AMD in 1979 as a process-control technician. Washington was assigned to monitor workers and equipment processing silicon wafers.

After she worked there for almost a year, Washington says she developed a persistent cough and sore throat. She had trouble breathing, and she was constantly nauseated and light-headed. "If I had to sit at a microscope to inspect any of the wafers from production, I would pass out and not be aware of it," she recalls. "When I'd come to, I didn't even realize [the] time [that] had lapsed."

Even more worrisome was a growing difficulty in remembering things. "I had always had a very good memory, and I was always very, very accurate in my work," Washington says. "But it got to the point where I didn't even know how to do my own job anymore. I would have to go to the girls in my department and ask them, 'Can you tell me how I run this machine? I can't remember.'"

At first doctors were unable to find anything wrong with Washington. Finally a lung specialist told her to stay home for six weeks. Shortly after she returned to work, she collapsed when the ventilation system failed temporarily—a common occurrence, she says—and she was exposed to chemical fumes. The company nurse told her she probably had a virus and sent her back to work, Washington says. She adds that as part of her job, she often reported strong gas smells and other signs of chemical exposure, but that she was told by her superiors to mind her own business.

Although her symptoms continued, Washington stayed at work for several more months, until her doctor ordered her to leave her job. When she took her doctor's letter to AMD's personnel office and asked for a transfer, she says, she was told to go home and wait until the company found her a job fitting her qualifications and pay. That was in March 1981. She still has no job.

Washington says AMD officials claim that her phone was disconnected when they called her on several occasions to offer her jobs. "My phone was never disconnected," she says. "I have records from the phone company saying I had never had a phone disconnect, never had a temporary interruption, for the time I was gone from that company to the time this suit came about."

Washington has filed a claim for workers' compensation and is suing AMD for wrongful discharge. She also has filed a suit against the companies who produced the chemicals to which she was exposed.

Advanced Micro Devices is fighting her claims, although according to her attorney, Amanda Hawes, an AMD doctor wrote to company officials on April 15, 1981, saying: "The patient at this time has pulmonary hypersensitivity due to the chemical environment of the plant. This sensitivity most likely will be long-standing. Recommendation that she find a new job in a nonchemical environment, probably outside the semiconductor industry, or be transferred within the company to a clerical position or one totally removed from the chemical environment."

Elliott Sopkin of AMD refuses to comment on the Washington case because it is in litigation. But in a general comment on workers' suits, he says, "It's not mathematically impossible we'd get a malingering. There are a lot of us who would love to retire and have somebody support us for the rest of our lives."

Susan Tanenbaum, AMD's director of employee relations, adds: "We don't deny liability in workers' compensation cases where there is clear evidence that an illness has been caused by work. But in cases where medical evidence is less than convincing—that's where we litigate the case."

Asked how many serious chemical-exposure cases AMD has had, Tanenbaum replied: "Virtually none."

SMALL RECOMPENSE

AMD's reaction is typical of other semiconductor companies faced with workers' compensation suits, says Hawes, who is handling about 50 such cases. They spend huge amounts opposing claims—especially considering how very modest the compensation is for a person whose claim is approved, she adds.

Isabel Nava found that out when she filed a claim for workers' compensation against Fairchild Camera and Instruments, where she worked from 1965 until 1980. Using silk-screening techniques, she etched patterns on parts used in electrical ignition kits for cars. In 1977, she says, she began to develop a number of medical problems: sore throat, bleeding gums, loss of memory, earaches, blurry vision, hypersensitivity to chemicals. While she was at Fairchild, Nava says, she was constantly exposed to the fumes of chemicals.

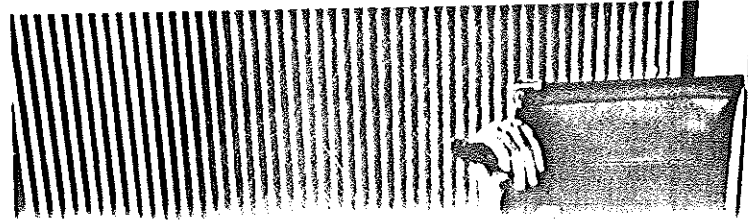
Fairchild let Nava go in 1980, claiming her performance had declined. Amanda Hawes, who represents Nava, says the question of performance may be related to Nava's cognitive problems resulting from chemical exposure. "It's very, very hard for me to concentrate and remember things," says the 44-year-old Nava.

According to Nava and Hawes, Fairchild has offered to pay \$5,000 for medical expenses—an offer that was turned down. Nava is asking for permanent disability compensation, the cost of vocational training, reimbursement for her medical expenses and insurance for future medical care. A Fairchild

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spokesperson said the company has no comment on the case.

Despite Elliott Soppkin's jocular remark about retiring and being supported for a lifetime, amounts of money awarded in workers' compensation cases are relatively small. For example, in California, a disabled worker who claimed chemical exposure occurred prior to January 1984 would be awarded only \$10,500 if a compensation board decided her disability would preclude her from working in 35 percent of the total labor market. (A woman claiming exposure after that time would get \$21,000 because of a recent rate change.)

"The stakes are so high for this industry that some people have decided it's worth it to put up as much opposition and static as they possibly can to try to discourage people from pursuing claims," Hawes says. At risk for semiconductor companies, she explains, is the "expanding recognition that this is a chemical-handling industry and that the materials that assemblers and production workers are working with are hazardous to human health."

And those health concerns no longer are confined to Silicon Valley. The semiconductor business is booming, and many expanding companies have run out of space in Silicon Valley. They are moving some of their production facilities to such states as Utah, Arizona, Oregon, Washington, Texas and Florida.

The concerns aren't confined to employees of semiconductor firms, either, as Silicon Valley residents found out in early 1982. That's when it was discovered that the drinking water of a south San Jose neighborhood had been contaminated by chemicals leaking from the underground storage tanks of Fairchild Camera and Instrument Corp. A group of residents has filed suit against Fairchild, claiming the contamination has resulted in an unusually high incidence of birth defects, miscarriages and cancer in the neighborhood. The company acknowledges that solvents came from a failed tank on its property but contests that the contamination had anything to do with the health problems that were reported.

A SAFER FUTURE

What can be done to reduce these hazards? The semiconductor industry has a simple answer: Take the worker out of the workplace.

The industry's largest firms, including Advanced Micro Devices, are moving toward automating silicon-chip production. Their primary reason is to boost the yield of usable chips; now, human error and the contaminants brought into ultra-clean work areas by employees—dandruff and skin oil, for example—are the main contributors to spoiled chips. But another result of automation will be a reduction in workers' exposure to chemical leaks and spills. The only workers in the fabrication area will be running the machines, a safe distance away from chemicals. (Elliott Soppkin of AMD insists no workers will lose their jobs as the result of automation.)

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Automation, however, is an expensive proposition, and it probably will be at least a decade before it takes firm hold in the semiconductor industry. How should workers be protected in the meantime? Below, recommendations of former workers, workers' advocacy groups and health experts:

- Closer monitoring of the industry, including regular inspections of plants, by the federal Occupational Safety and Health Administration and its state counterparts.
- Requirement that companies give employees written warnings on each chemical they may handle, including the names of generic chemicals in brand-name products. Companies say they make available such data sheets to any worker who requests them, but some former employees claim they are difficult to get.

- An industrywide commitment to prompt evacuation of work areas at the first sign of chemical leaks or spills. Most companies insist they already follow this practice, but some former workers report their supervisors were often reluctant to evacuate because of potential loss of production.

- More frequent testing of ventilation systems and the development of more efficient systems to monitor the air for chemical leaks.

- Screening of workers before they're hired to find out if they're predisposed to illnesses associated with chemical exposure. Also, screening of workers during and after employment to determine whether they are suffering the effects of exposure.

- More study by government and private researchers of human reaction to low-level chemical exposures over long periods of time, and more testing on interactions of several chemicals used in mixtures.

- A comprehensive tracking of the reproductive histories of semiconductor workers to find out how much of a reproductive threat was posed by their exposure to chemicals.

While the experts talk about the future, Judy Washington is concerned about the hard reality of now. She and her children are living with her parents, waiting for her case to be resolved. "My kids are having a really hard time understanding what I'm going through," she says. "They don't see me laid up, so they don't think I'm disabled. But they see me forget how to do things—things that I used to do so well before. They bring me their homework and I tell them, 'I'm sorry, honey, I don't understand. Read it to me again.' It might take me an hour to figure out an arithmetic problem, if I can even do it."

"I used to get all these top job reviews—'Judy is tops at this and tops at that.' 'Judy needs absolutely no supervision to carry out any job.' And now I can't do a simple arithmetic problem."

Lynne Olson, a freelance writer based in Los Angeles, is a former Moscow correspondent for the Associated Press and a former Washington correspondent for the Baltimore Sun.