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Inspections show chip-firm faults

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Four out of five semiconductor companies inspected for a recent federal study, including Silicon Valley firms, violated worker health and safety regulations ranging from exposing workers to fires and explosions to leaving them unprepared to respond to emergencies.

The random inspection of 17 semiconductor companies throughout California — 10 of them in Silicon Valley — was the

OSHA visits yield 101 citations

first comprehensive study of health and safety conditions in what has often been described as a "clean industry."

The investigation by the federal Occupational Safety and Health Administration found that smaller firms employing 300 or fewer workers were more likely to violate

federal regulations than their larger counterparts.

OSHA's study is the latest in a series of developments during the last three years that has raised questions about the safety of the silicon chip manufacturing industry.

Although reluctant to draw conclusions from the inspections about the industry as a whole, OSHA regional administrator Frank Strasheim said the agency's findings suggest that "there are problems there." He has requested that the inspection program be repeated next year.

"What I wanted to find out was if the industry was safe by design or safe by accident," Strasheim said. "There was not a major finding to suggest that a catastro-

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What it means
to face the facts

SO THINGS aren't going as well as they should and you have a drink. That's the way it starts.
That makes you feel better so you have

Semiconductor companies violate safety, OSHA says

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phe is about to happen. But that doesn't mean that it doesn't exist.

"Maybe the reason we didn't find it is because the sample size was small. I'm not satisfied enough to walk away."

OSHA issued 101 citations during the inspection program, which began in April and concluded in September. Twenty of those were "serious" citations for violations that could lead to serious injury or death, according to documents obtained by the Mercury News through the Freedom of Information Act. The agency fined the companies a combined total of

\$6,520.

Industry officials downplayed the violations cited during OSHA's inspections, dismissing the majority of them as minor infractions.

"The main gist of the inspections was to determine if there was a major problem; what they found were general discrepancies," said Lee Neal, director of safety, health and environmental affairs for the Semiconductor Industry Association, which is based in Cupertino.

"I think they are unfamiliar with the industry and they are trying to put their best foot forward in making their case," Neal said.

The 20 serious violations, Neal said, do not reflect "what is happening in this industry."

Features of study

This investigation, however, does highlight recurring concerns about safety and health conditions for workers who use a wide variety of toxic gases and liquids to etch microscopic circuits onto silicon wafers. They include:

- ✓ A 1986 study at a Massachusetts semiconductor plant that found that women production workers suffered twice the miscarriage rate of other women at the plant. The finding prompted some Silicon Valley firms to warn their employees.

- ✓ In response to the Massachusetts study, which was criticized for several shortcomings, the Semiconductor Industry Association committed itself to studying the health risks faced by semiconductor production workers. IBM also later announced its own study of health risks faced by semiconductor production workers.

- ✓ A 1987 study by the University of California found that semiconductor manufacturing plants underreported 60 percent of all their work-related injuries and illnesses. Researchers examined records from six states, including California.

Environmental and workers' rights groups have pushed for investigations of health and safety conditions at semiconductor companies. Although encouraged by OSHA's recent inspections, the director of the Santa Clara Center on Occupational Safety and Health said that should only be the beginning.

"I think now it's time to put pressure on OSHA to do something to follow up," said the center's director, Alicia Orosco.

Ted Smith, executive director of the Silicon Valley Toxics Coalition, said, "From the statistics, it sounds like there is certainly more reason for concern than we had been led to believe."

In large part, the semiconductor industry has been exempt from regular federal health and safety inspections because of a comparatively low rate of injuries, said Pete Conroy, an OSHA regional industrial hygienist who coordinated the inspection program. In addition, it also has fewer health citations than other industries, making it a low priority for OSHA health inspectors.

Ongoing concern in the agency about the potential exposure to highly toxic chemicals used by the semiconductor industry prompted the inspections.

Sped up program

Although it had already planned to embark on the inspections, OSHA sped up its program after Redwood City emergency crews were forced last March to blow up 55 cylinders of gas used in semiconductor manufacturing to prevent an accidental explosion.

The recent inspections revealed that although most companies had established health and safety programs, they were not adequate, said Conroy. The smaller companies, in particular, were more vulnerable because they often assigned such duties to workers with other responsibilities. It appeared that most of the violations were the result of negligence, Conroy said.

"If some of these places had a serious emergency they might have a problem from what we saw," Conroy said.

Companies cited

- Varian Associates — One violation for not storing respirators properly.
- Xicor Inc. Violations included employees not wearing chemical splash goggles or face shields when changing oil and filters contaminated with hydrofluoric acid; lack of ability to promptly and safely dispose of leakage or spills where flammable or combustible liquids were used or handled.
- VLSI Technology Inc. Violations included lack of labeling for each container of hazardous chemicals; areas near dip tanks not provided with proper fire extinguishers.
- Cypress Semiconductor Co. Inc. Violations included lack of labeling for each container of hazardous chemicals; no written hazard communication program; no log of recordable occupational injuries and illnesses maintained.
- Micro Power Systems Inc. Violations included not checking that the regulator and warning devices on a breathing device worked; inadequate respirator inspection; lack of labeling of each container of hazardous chemicals.
- Epitaxy Inc. Violations included an incorrectly closed box that exposed employees to electrical shock; breathing air cylinders that were not tested and maintained; a lack of emergency planning to ensure that one individual with the proper rescue equipment would be able to assist others in case of an emergency.
- Micro Linear Corp. Violations included an employee responsible for monitoring hydrogen gas leaks not knowing proper procedures; no suitable facilities for quick drenching or flushing of the eyes and body were provided for immediate emergency use.
- Topaz Semiconductor Inc. Violations included respirators placed at stations and work areas for emergency use that were not quickly accessible at all times; employees not provided information on hazardous chemicals in their work area; chemical safety training did not include information for employees to detect hazardous chemical releases; access to portable fire extinguisher blocked; ventilation system was not working inside flammable storage room.
- Super Tex Inc. Violations included respirators not selected on the basis of hazards to which the worker was exposed; persons assigned to the emergency response teams had full beards or facial hair that would interfere with the respirator; employees had not received training concerning use of the chemical materials and solvents in use within the workplace.
- Si Fab Corp. Violations included lack of approved self-closing fire doors inside flammable or combustible liquid storage rooms; no educational program to familiarize all employees with fire extinguishers was provided; lack of a written hazard communication program for semiconductor water operations and supporting operations.

Source: Occupational Safety and Health Administration office in San Francisco and Lomas Banking Corp.

Mercury News Staff Writer Michael Feibus contributed to this report.