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## Ailing Chip Workers Cite Chemicals, Not Chance

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EAST FISHKILL, N.Y., March 27 — In 1988, Miriam Nicole Sanders, James Gibbons and Glenn Haight worked side by side on an I.B.M. production line here, making computer chips and happy to be earning \$7 an hour.

Four years later, Miss Sanders was dead of cancer at the age of 24; Mr. Gibbons, now 28, had a testicular tumor and Mr. Haight, now 26, was fighting cancer.

"We were all as healthy as could be when we went into the job," Mr. Haight said the other day. "A few years later, Nicole was dead, Jim had problems and I had cancer. It can't be a mere coincidence."

Chance may be the explanation for what happened to the workers on the late shift in International Business Machines' Building 322. But this small grouping of serious illnesses from among hundreds of people who worked at the plant over the years conforms to the worst concerns of specialists studying the chemicals used by the semiconductor industry, like Bruce A. Fowler, the director of toxicology at the University of Maryland.

Ever since studies in the 1980's began to establish a link between the chemicals used in chip-making and miscarriages among some workers, groups like the Silicon Valley Toxics Coalition and the Santa Clara Center for Occupational Safety and Health have been warning that detailed health studies might turn up links between the chemicals and other illnesses. The industry and the companies that supply the substances used in chip production, including arsenic, nickel and methylene chloride, acknowledge that many of them are highly toxic. But the companies also say that the use of the chemicals is controlled so tightly during the production of silicon chips that employees are not exposed to any dangers.

"We are not aware of a single worker who has been exposed to a carcinogen and has a problem as a result of it," Jeff Weir, a spokesman for the Semiconductor Industry Association, said this week.

Neither these critics nor the industry, however, has initiated a study of broad health effects that could start to answer such questions. And no one, until now, has publicly brought forward any group of ailing workers that would allow scientists to begin to ask these questions outside of a theoretical setting.

A lawsuit filed today claims that the chemicals caused the illnesses of the three workers at the plant and four others from I.B.M. fabrication rooms here. The suit, filed in State Supreme Court in Manhattan by the workers or their family members, seeks damages from four chemical companies that made the compounds used by I.B.M.

The four companies named in the suit are the Union Carbide Corporation, the Eastman Kodak Company, the J. T. Baker Chemical Company and the KTI Chemical Corporation, a former subsidiary of Union Carbide that has been dissolved.

Eastman Kodak did not return telephone calls seeking comment. The other companies had no comment, saying they had not studied the suit yet.

I.B.M.'s spokesman, Fred P. McNeese, would only say that "I.B.M. has a longstanding commitment to a safe working environment and compliance with all health and safety regulations and laws."

Whatever happens in the case will be watched with intense scrutiny by people on all sides of the issue concerning the possible health effects of

the chip-making industry, which employs 40,000 manufacturing workers nationally.

It may be years before there are answers to the questions raised by the workers here. There may be nothing wrong with the way the chemicals are used in the industry, or with any particular use at the I.B.M. plant here. Although I.B.M. is not named in the suit, because workers' compensation laws preclude any payment, the industry is adamant that there is no risk to workers.

Critics and some independent experts have long argued, however, that because life-threatening illnesses like cancer are known to be caused by some of the chip-making compounds, the industry should study the health of its workers.

In recent years, chip manufacturers have acknowledged some limited dangers to their workers. In three industry studies of thousands of workers in the last 10 years, including one at I.B.M.'s plant here, women who worked in fabrication rooms were found to have a rate of miscarriages of 40 percent or more above non-manufacturing workers.

In 1992, after an extensive study of workers at 14 semiconductor manufacturers showed the increased risk of spontaneous abortions, the industry's experts said the cause was a class of common solvents, ethylene-based glycol ethers.

For years, the industry, including I.B.M., has been replacing those sol-

vents with less toxic ones. The industry's experts said that they have dealt aggressively with the reproductive-health problem and that they saw no hint of other serious effects on workers.

The critics say the safety statistics are misleading, in part because low-wage production workers are often long gone from their jobs by the time symptoms appear and have no way to make the cause-and-effect connection themselves.

Here in the Hudson Valley, about an hour's drive north of New York City, the fabrication-room debate among scientists was remote when Miss Sanders, Mr. Gibbons and the other workers took their places in I.B.M.'s fabrication rooms in the 1980's. Much of the focus of the health debate then was on Silicon Valley, the area around San Jose, Calif., where most of the chip-making companies were concentrated.

The fabrication rooms here, as at all chip manufacturers, look harmless enough. The industry calls them "clean rooms" because extreme precautions are taken to limit contaminants. The silicon wafers are often shielded while they are treated with chemicals. The chemicals are often sealed and, sometimes, applied by robotic devices.

But the precautions are not for them but for the costly chips. A silicon wafer can be ruined by even a speck of dust.

By the late 1980's, workers here

say, reports about the miscarriages began to circulate. Workers in Building 322's fabrication room were particularly anxious, people who worked there at the time said, because there were four miscarriages among the dozens of women who worked through the three daily shifts.

Robert Kelleher, 40, a former fabrication-room worker who is part of the suit, said the machine where he worked sometimes splashed the marple-colored Photoresist. Mr. Kelleher was diagnosed with testicular cancer in 1991.

Most of the workers in the suit had been gone from I.B.M. for several years when a Goshen, N.Y., lawyer, William L. DeProspero, began to investigate last year. Mr. DeProspero said he began to see a pattern after Mr. Barrack conferred with him about his own cancer case and described other I.B.M. workers with unexplained illnesses.

In recent weeks, Mr. DeProspero and other lawyers working on the case offered to make the workers in the lawsuit available for interviews in the hope that publicity would encourage other I.B.M. employees to join the case.

Several of the workers participating in the suit said the case was a search for answers. But Mr. Barrack, whose cancer is in remission, said he has already learned enough. "I think we were just a number," he said. "They cared more about the plant than about us."