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Chemicals Linked To Miscarriages

Study Finds Women Making Chips at Risk

By John Enders

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SAN JOSE, Calif. — A study that links chemicals used to manufacture computer chips and miscarriages among the workers who make them has raised questions about the safety of one of the nation's cleanest industries.

IBM recently notified its workers and competitors of the Johns Hopkins University study it commissioned that found evidence that two chemicals widely used in chip making may significantly increase the risks of miscarriage.

Researchers said the results were significant, although they were preliminary and based on a small sample size, IBM spokesman Jim Ruderman said Monday. International Business Machines Corp., based in Armonk, N.Y., notified its workers, the Environmental Protection Agency, and members in the Semiconductor Industry Association last month about the study's results.

"In absolute terms they are not large numbers," Ruderman said. "Our feeling is that even one unnecessary miscarriage is too many."

Other companies in recent weeks have in turn notified their workers of the results of the IBM-commissioned study, including Intel, Texas Instruments, American Telephone & Telegraph Co., Advanced Micro Devices, Signetics and National Semiconductor, said Semiconductor Industry Association spokesman Thomas G. Beermann.

At Santa Clara, Calif.-based Intel, one of the biggest semiconductor makers in the world, company officials said they were briefed on the study results by an IBM



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A female worker checks a wafer of computer chips at IBM's Burlington, Vt., plant. A study done for IBM has found a high incidence of miscarriage among women who work with two chemicals used in chip manufacturing.

The Johns Hopkins study looked at 30 female workers who handled the chemicals at IBM plants in East Fishkill, N.Y., and Burlington, Vt., from 1980 to 1989. It found that the miscarriage rate among workers who did not use the solvents was 15.6 percent, compared with 33.3 percent among workers who did.

The two chemicals — diethylene glycol dimethyl ether and ethylene glycol monethyl acetate — are used to etch away material deposited on the silicon wafers used to make chips.

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IBM's Ruderman said changes have been made in the fabrication processes at the New York and Vermont plants, including purchasing the chemicals already mixed instead of mixing them on site.

IBM has reduced by 40 percent use of the chemicals since 1989, he said, and is also stepping up plans to phase them out and find substitutes.

The computer maker said it became concerned about the risks when a 1986 study at the University of Massachusetts for Digital Equipment Corp. indicated that some processes in "clean room" fabrication areas might be harmful.

The Johns Hopkins study was begun in 1989, IBM said. Final results won't be available until early next year.