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Chemist raises enviromental problem on sperm density

WASHINGTON (UPI) — A chemist raised a possible new environmental problem Tuesday with a report that sperm density and thus male fertility potential appear to be declining, and that toxic chemicals may be responsible.

Dr. Ralph Dougherty, a Florida State University professor, told a meeting of the American Chemical Society his findings are tentative but are serious enough to merit further study.

Dougherty said there have been several reports in scientific literature in Europe and Japan, as well as the United States, suggesting — but not proving — that sperm density has decreased during the last 30 years.

A 1929 study found a distribution maximum of 180 million sperm per milliliter of fluid, he said, while one in 1973 found the greatest number of donors had a density of 60 million per milliliter.

In the Florida State study conducted during the past year, more students — 23 percent — had a density of 20 million than any other level. Many specialists, Dougherty said, consider such a density to be evidence of sterility.

But Dougherty noted that students in general may have lower sperm densities due to sociological and behavioral factors such as increased stress and more sexual activity.

Nevertheless, he said an examination of seminal fluid from the 132 college students revealed contamination with several toxic substances which could inhibit sperm development.

He said there was a strong correlation between toxic industrial compounds known as PCBs, or polychlorinated biphenyls, and decreased sperm density. Also found in the samples was p,p'-dichlorophenol, hexachlorobenzene and compounds resulting from metabolism of DDT.

Although there has been no published research linking PCBs with decreased sperm density in humans, animal studies have shown they can cause reproductive problems.

PCBs are used primarily in the manufacture of electrical transformers and capacitors and their production has been curtailed sharply in recent years.

Dougherty said toxic substances act on sperm density by decreasing the rate of cell division. It takes at least eight divisions to produce a single sperm, he said, so substances which inhibit division can have a dramatic effect.

"The cause for the apparent decrease in sperm density and thus male fertility potential is not clear at this point," Dougherty said. "I believe the data provide a presumption that we ought to look into the problem."

Dougherty's research was supported by the National Institute of Environmental Health Sciences, and he was aided by Dr. D.W. Kuehl of the Environmental Protection Agency's laboratories in Duluth, Minn.

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