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Teflon chemical found in infants; Hopkins researchers are studying toxin's effects on newborns

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Researchers at Johns Hopkins Hospital drew blood from the umbilical cords of 300 newborns and discovered something that would be deeply unnerving to many parents:

Ninety-nine percent of the babies were born with trace levels of an industrial chemical - suspected as a possible cancer-causing agent - that is used in the manufacture of Teflon pans, computer chips, cell phones and dozens of other consumer products.

Now Dr. Lynn Goldman, Rolf Halden and their colleagues at the Johns Hopkins Bloomberg School of Public Health are working with other scientists to determine whether the toxic chemical has harmed the infants, possibly by interfering with their thyroid glands and hormone levels.

Previous studies, some funded by industry, have found perfluorooctanoic acid, or PFOA, in the bloodstream of most Americans. But the Hopkins study, supported by the federal and state governments, is the largest independent research project to examine the compound's effects on newborns, who may be more vulnerable to endocrine-disrupting chemicals.

"It's very clear that PFOA is being released into the environment, and it's pretty much ubiquitous," Goldman said. "But we don't know if it's toxic to people at these levels."

DuPont, which manufactures Teflon and has used the chemical for more than 50 years, says there is no evidence that PFOA is harmful to humans.

"The chemical does have an effect on animals that are fed high doses of it. But animals respond differently to PFOA than people, and there is no evidence that there are any health effects in people," said David Boothe, a DuPont manager.

The Hopkins study comes as the U.S. Environmental Protection Agency is working with industry to try to reduce PFOA emissions into the environment.

The EPA announced last month that DuPont has voluntarily agreed to reduce its use of the chemical, although not eliminate it, and take more steps to halt emissions from its plants. In December, the company agreed to pay a \$10.25 million civil penalty - the largest ever levied by the EPA - for withholding information about the potential health and environmental impacts of the compound.

An EPA scientific advisory panel released a draft report in the spring that said the chemical has caused tumors when fed to rats and is a "likely carcinogen in humans." But the same panel said last week that more research needs to be completed before the EPA concludes whether PFOA causes cancer.

"It's a mystery right now," said Dr. Frank Witter, medical director of labor and delivery at the Johns Hopkins School

of Medicine and a partner in the research. "At some point, with more research, we may be able to say something more than 'it's just there.' But we have not finished that analysis yet."

PFOA is a highly durable, man-made chemical used since the 1950s in the manufacture of Teflon nonstick pans, rain-repellent clothing, aerospace equipment, computer chips, cables, automobile fuel hoses and numerous other products.

"We make a lot of chemicals that are extremely persistent, and we mass-produce them, but we never consider the life cycles of these chemicals," Halden said. "It's kind of a tragedy. In some instances, it takes years or decades before we learn of their toxicity" to people.

The research project at Hopkins began in late 2004. Over five months, Goldman and her colleagues collected blood samples from the umbilical cords of 300 newborns. The researchers used an instrument called a liquid chromatography mass spectrometer to analyze the blood, and they found that 298 of the samples contained PFOA, Goldman said.

Now the scientists are working with other researchers at the U.S. Centers for Disease Control and Prevention and a commercial lab to further scrutinize the samples and find out whether the babies' thyroid hormone levels are normal, Halden said. The researchers are also comparing PFOA levels to the birth weight of the babies, and looking at whether they were born full term. The study should be finished in a few months and then will be offered for publication in a scientific journal, Halden said.

It's not clear how PFOA gets into the environment and, eventually, into people's bloodstream. The chemical can be found in many places around the planet and has even been detected in polar bears.

Researchers with the Washington-based Environmental Working Group, a watchdog organization, believe the chemical may be released through the breakdown of fast-food packaging and stain-proof carpets, furniture and clothes, ending up in food, house dust, air and drinking water.

But Susan Hazen, an EPA acting assistant administrator, said this is speculation. "We have no evidence at this time that routine use of consumer products is a source of exposure," Hazen said.

DuPont agreed last year to pay a settlement of more than \$100 million after residents living near a company Teflon plant in Parkersburg, W.Va., filed a class action suit claiming that PFOA escaped from the factory and contaminated local waters.

Boothe, the DuPont manager, said PFOA clearly had leaked from the Parkersburg plant. But he said there are probably "quite a few" other sources of the chemical's escape into the environment.

He said DuPont is working hard to stop all leakage of the chemical from factories. The firm has installed water discharge filters and air pollution control equipment at the Parkersburg plant and two others in Fayetteville, N.C., and Deepwater, N.J.

"The EPA is working with the industry to find out what the sources of exposure are," Boothe said.

Jane Houlihan, vice president for research at the Environmental Working Group, is among critics who say PFOA is dangerous and should be banned. It is disturbing, she said, that the Hopkins researchers have found the chemical in newborns.

"The fact that PFOA can cross the placenta from the mother to child is very troubling, given that this is a chemical that is broadly toxic and linked to birth defects in lab animals," she said. "The time in the womb is a time of particular vulnerability to environmental chemicals."

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Johns Hopkins researchers Rolf Halden (left), Dr. Lynn Goldman and Dr. Frank Witter are trying to determine whether the chemical used to make Teflon, found in trace levels in blood from the umbilical cords of 298 of 300 newborns, has harmed the infants.

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