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## Toxin Traces Found in Umbilical Cord Blood

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### MedPage Today Action Points

- Be aware that the findings, although preliminary, indicate that infants could be exposed to pollutants during gestation. However, note that these findings are based on umbilical cord blood samples taken from only 10 newborns born in 2004. The geographic locations of these infants are not known.
- Be aware that the researchers are not certain about the short- and long-term effects of neonatal exposure, nor the levels at which the chemicals become dangerous.

### Review

WASHINGTON, July 18-Traces of pesticides, industrial byproducts, and mercury were found in the umbilical cord blood of all 10 newborns in a small study. The significance of the findings remains unclear.

The short- and long-term health effects of these toxins, if any, are not yet known, nor is it clear at what level these chemicals become dangerous, the researchers said. Nevertheless, the report, conducted by the Environmental Working Group, a nonprofit research organization, provided a glimpse of the hazardous chemicals fetuses might be exposed to while in the womb.

"Pollution is reaching babies during vital stages of development," said Jane Houlihan, M.S., the group's VP for research. "These findings raise questions."

The analysis was based on umbilical cord blood samples from 10 neonates, all born in U.S. hospitals in August and September 2004.

The 10 samples, from blood donated to the American Red Cross, were chosen randomly and came with no identification.

The investigators had no geographical information about where the infants were born, but the researchers said the samples were taken from hospitals around the country. The tests did not show how the chemicals entered the mothers' bodies, nor at what point during gestation these infants were exposed. There were no sample controls for comparison.

The samples were analyzed at Axys Analytical Services, Ltd., a laboratory based in Vancouver, British Columbia.

The researchers found a total of 287 chemicals from the entire group including two chemicals that were banned in the 1970s and other chemicals used in gasoline,

garbage treatment, power plants, the production of flame-resistant products, plastics, Teflon, and wood preservatives. Some of these chemicals have been linked to cancer, endocrine disruption, and neurological impairment.

Among the report's findings:

- Mercury was found in samples from all 10 newborns. The average concentration was 0.947 parts per billion (ppb).
- Polyaromatic hydrocarbons (PAHs) were tested in five newborns and found in all five. The average concentration was 285 parts per trillion (ppt). PAHs are found in gasoline and garbage.
- Polybrominated dibenzodioxins and furans were detected in samples from seven out of 10 newborns, with an average concentration of 55.9 ppt. These chemicals are used in flame retardants, plastic production, and incineration.
- Perfluorinated chemicals (PFCs) were found in all 10 newborns, with an average concentration of 6.17 ppb. PFCs are found in Scotchguard fabric protectants, Teflon, and food wrappings.
- Polychlorinated dibenzodioxins and furans were detected in all the newborns, with an average concentration of 59.4 ppt. These chemicals are used in industrial bleaching.
- Organochlorine pesticides (OCs) were detected in all the newborns, with an average concentration of 18,600 ppt. This class of pesticides includes DDT, which was banned in the U.S. in 1972.
- Polybrominated diphenyl ethers (PBDEs) were detected in all the newborns, with an average concentration of 6,420 ppt. PBDEs are a flame retardant found in computers and television sets.
- Polychlorinated naphthalenes (PCNs) were detected in all the infants with an average concentration of 617 ppt. This chemical is used in wood preservatives.
- And finally, polychlorinated biphenyls (PCBs) were also detected in all the samples with an average concentration of 7,880 ppt. PCBs were banned in the U.S. in 1976, but continue to turn up in rivers and lakes. The chemical was used as an industrial lubricant.

What's unknown from these findings is the timing of these chemical exposures, the researchers said. Whether they occur in the first trimester versus the third trimester, for example, could affect the level of risk, if any.

The lack of sufficient hard data leaves researchers speculating on what the potential impact of these exposures could be on children's health and their health during adulthood. At what point these chemical blood levels reach a measurement that borders on dangerous also remains unknown.

But the researchers said there is some evidence indicating specific amounts of these toxins are linked to possible clinical effects. For example, children exposed to levels of methylmercury at 58 ppb in maternal blood face a greater risk for a decline in brain function. Also, PCBs at 9.7 ppb in maternal blood have been associated with impaired brain development, the group reported.

Some chemicals, like lead and mercury, are more directly toxic, the researchers said, whereas "other chemicals induce a chain of events that may culminate in a health problem later in life. Hormone-mimicking chemicals like dioxins and furans, for example, could induce delayed cancers in hormone-sensitive tissues like the breast,

testicle, or prostate gland," the report said. Furthermore, the group added, chemicals like PCBs and DDT can stymie fetal growth, raising the risk for low birth weight.

Other chemicals noted in the report have been linked to increased risks of cancer. For example, perfluorooctanoic acid (PFOA), used in the manufacture of Teflon, has been known to cause breast, testicular, and pancreatic tumors in animals. Another chemical, polynuclear aromatic hydrocarbons (PAHs), has been labeled by the Environmental Protection Agency as a "probable" carcinogen, said the report.

Commenting on the study, Gabriella Pridjian, M.D., chair of obstetrics and gynecology at Tulane in New Orleans, said, "The interesting part of this study is that they found 287 different chemicals in the cord blood. We're just beginning to learn what these environmental exposures can do to the fetus."

Dr. Pridjian added that environmental factors in utero may influence genes already predisposed to birth defects. The study "brings to light a group of birth defects that are inherited in a multifactoral fashion, like cleft lip and isolated congenital heart disease."

The report came out a day after the General Accounting Office, the investigative arm of Congress, issued a report saying the EPA lacked the power to fully regulate toxic substances.

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- [AUA: Storage Tank and Incinerator Pollution Linked to Bladder Cancer](#)

**Primary source:** Environmental Working Group

**Source reference:**

Houlihan et al "Body Burden: The Pollution in Newborns," Environmental Working Group, July 14, 2005

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