



July 22, 2005

latimes.com : [Print Edition](#) : [A Section](#)

Dozens of Chemicals Found in Most Americans' Bodies

The concentration is especially high in children, a national study says. But experts aren't sure what the health effects are.

By Marla Cone, Times Staff Writer

In the largest study of chemical exposure ever conducted on human beings, the U.S. Centers for Disease Control and Prevention reported Thursday that most American children and adults were carrying in their bodies dozens of pesticides and toxic compounds used in consumer products, many of them linked to potential health threats.

The report documented bigger doses in children than in adults of many chemicals, including some pyrethroids, which are in virtually every household pesticide, and phthalates, which are found in nail polish and other beauty products as well as in soft plastics.

The CDC's director, Dr. Julie L. Gerberding, called the national exposure report — the third in an assessment that is released biennially — a breakthrough that would help public health officials home in on the most important compounds to which Americans are routinely exposed.

The latest installment, which looked for 148 toxic compounds in the urine and blood of about 2,400 people age 6 and older in 2000 and 2001, is "the largest and most comprehensive report of its kind ever released anywhere by anyone," Gerberding said. Findings were broken down by age group and race.

At Thursday's news conference, CDC officials emphasized the good news: Steep declines were found in children's exposure to lead and secondhand cigarette smoke.

Lead levels in children have dropped significantly over several years, which Gerberding called an "astonishing public health achievement" attributable largely to its removal from gasoline and paint.

About 1.6% of young children tested from 1999 to 2002 had elevated levels of lead, which could lower their intelligence and damage their brains, compared with 88.2% in the late 1970s and 4.4% in the early 1990s.

But the discovery of more than 100 other substances in humans, particularly children, distressed environmental health experts.

"The report in general shows that people — kids and adults — are exposed to things that aren't intended to be in their body," said Dr. Jerome A. Paulson, an associate professor of pediatrics at the George Washington University School of Medicine and Health Sciences who specializes in children's environmental health. "In and of itself, that is a concern. Whether it's harmful or not we can't tell from this particular study."

The new data in the 475-page report reveal how "we have fouled our own nest," Paulson said. "We contaminated the environment sufficiently that there are measurable amounts of potentially toxic substances in people — kids and adults."

The CDC did not try to gauge the health threat the chemicals might pose. A measurable amount of a compound in a person's body does not mean it causes disease or other damage, the agency noted.

For many compounds in the report, experts have little information on what amounts may be harmful or what they may do in combination.

"We are really at the beginning of a very complicated journey to understand the thousands of substances we are exposed to," said Thomas Burke, associate professor at the Johns Hopkins Bloomberg School of Public Health.

The discovery of pyrethroids in most people is especially important, as no one had looked for them in the human body before. Pyrethroids are synthetic versions of natural compounds found in flowers, and they have been considered safer than older pesticides, such as DDT and chlordane, that build up in the environment and have been banned in the United States.

But in high doses, pyrethroids are toxic to the nervous system. They are the second most common class of pesticides that result in poisoning. At low doses, they might alter hormones. The compounds are used in large volumes in farm and household pesticides and are sprayed by public agencies to kill mosquitoes.

Pyrethroids "were a step forward [from DDT and other banned pesticides], but now we're beginning to understand that while they don't persist in the environment, many of us are exposed," Burke said. "We don't quite know what those levels mean."

Eleven of 12 phthalates tested were higher in children than adults. All of the phthalates but one are used in fragrances. In animal tests, and in one recent study of human babies, some of the compounds have been shown to alter male reproductive organs or to feminize hormones.

Representatives of the chemical and pesticide industries praised the study, saying that human biomonitoring is the best available tool to measure exposure. They echoed the CDC in saying that discovery of the chemicals in the human body did not automatically mean they posed a threat.

The report demonstrates "that exposure to these man-made and natural substances is extremely low," said American Chemistry Council spokesman Chris VandenHeuvel.

The CDC's Gerberding said that "for the vast majority" of the 148 chemicals in the report, "we have no evidence of health effects."

Many toxicologists and environmental scientists disagree.

Studies of animals, and in some cases people, suggest that most of the compounds can affect the brain, hormones, reproductive system or the immune system, or that they are linked to cancer. "These are some bad actors," Burke said.

Many of the compounds have not been studied sufficiently to know what happens with chronic exposure to low doses. "No evidence of health effects does not imply that they are not harmful," Paulson said. "It just means we don't know one way or another."

Environmental groups have called for U.S. law to require chemical companies to test industrial compounds more comprehensively, a proposal similar to one that the European Parliament is to debate in the fall.

The evidence that many contaminants amass in children more than in adults could mean that they are exposed to larger amounts — perhaps from crawling, breathing more rapidly or putting items in their mouths — or that their bodies are less able to cope with or metabolize them.

In the womb and in the first two years after birth, children undergo extraordinary cell growth, from brain neurons to immune cells, so there are more opportunities for toxic compounds to disrupt the cells, Paulson said. Animal tests show that fetuses and newborns are the most susceptible to harm from many chemicals.

In the CDC study, one of every 18 women of childbearing age, or 5.7%, had mercury that exceeded the level that the U.S. Environmental Protection Agency deemed safe to a developing fetus.

Tests on schoolchildren show that mercury exposure in the womb can lower IQs, with memory and vocabulary particularly impaired.

The CDC plans to expand the national chemical report to more than 300 compounds in two years and about 500 in four years. An estimated 80,000 chemicals are in commercial use today.