

# Skin Deep: Should You Worry About the Chemicals In Your Makeup?

By LAUREL NAVERSEN GERAGHTY

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NOT that you would notice from the color, thickness or shine, but nail polish is not what it used to be. Last year many nail polishes contained a little-known chemical that made the veneer more flexible and resistant to chipping. This year some of the biggest brands, including Revlon, Estee Lauder and L'Oreal, have taken that chemical out and replaced it with another ingredient meant to do the same thing.

The original ingredient is one of three related chemicals that have become the focus of a growing debate over cosmetic safety. They are called phthalates (pronounced THA-lates), and they are also used in fragrances, lotions, shampoos and hair spray. Cosmetics makers have removed the chemicals from some of these products, but by no means all of them. Virtually all fragrances contain phthalates.

Some research suggests that high levels of exposure to certain phthalates might cause cancer or reproductive system abnormalities in laboratory rats and mice. One small study published in May suggested that infant boys exposed to higher phthalate levels in the womb were more likely to exhibit what may be anomalies in the placement of their penises. And last year the European Union banned the use of two key phthalates in beauty products.

By removing the phthalates, the nail polish makers with worldwide markets meant only to comply with that new law, not to concede that the chemicals might be dangerous. On the contrary, their scientists contend that phthalates in beauty products pose no health risk to humans. And many other scientists agree.

"There are real uncertainties about animal studies," said Dr. Michael Thun, the head of epidemiological research at the American Cancer Society. "One, we are dealing with a different species. Two, you're extrapolating from a high dose down to low doses."

Many, if not most, makeup users have still never heard of phthalates. But as the debate over their safety heats up, the strange word may grow more familiar. And consumers may increasingly wonder if their nail polishes, lipsticks, perfumes, lotions and shampoos are safe. "You start to hear words like birth defects," said Linda Wells, the editor of Allure. "It's one of those things that prey on the fears that everybody has."

The Campaign for Safe Cosmetics, a coalition of environmental and consumer groups, is making phthalates a centerpiece of its campaign against dozens of synthetic chemicals used in cosmetics. In California it persuaded legislators to propose a law to ban the use of phthalates in beauty products, but the bill was voted down in May. Similar legislation is pending in New York.

The coalition is pushing to alert makeup users as well. "There will be an increasing number of advertisements that are even more provocative to raise consumer awareness," said Janet Nudelman, its coordinator. More provocative, that is, than the one that ran in USA Today last fall and on billboards during the Cannes Film Festival in May. It pictured a little towheaded girl playing with lipstick, with the headline, "Putting on makeup shouldn't be like playing with matches."

Federal agencies have looked at phthalates in cosmetics and so far have found little cause for concern. In 2000, for instance, the National Toxicology Program, a division of the Health and Human Services Department, found that the risk of phthalate exposure from nail polish and other cosmetics is for most people minimal to negligible. The Food and Drug Administration has found no risk from using makeup containing phthalates, a spokeswoman said.

Not surprisingly, the cosmetics industry also finds little to worry about. In 2003 the Cosmetic Ingredient Review panel, a research group financed by the Cosmetics, Toiletry and Fragrance Association, reviewed the research on three phthalates used in cosmetics -- DEP (diethyl phthalate), DMP (dimethyl phthalate) and DBP (dibutyl phthalate) -- and concluded that no evidence suggests they are harmful to humans. "I can assure the American public that those chemicals are safe," said Dr. Wilma F. Bergfeld, the chairwoman of the review panel and head of clinical research in dermatology at the Cleveland Clinic.

They are also ubiquitous. When scientists from the Center for Food Safety and Applied Nutrition of the F.D.A. analyzed the chemical makeup of 48 consumer cosmetics -- including hair care products, deodorants, lotions, creams, nail polishes, fragrances and body washes -- they found at least one phthalate in most of them. Phthalates are often used to make scents and colors last longer.

The chemicals are also found in some insect repellents, detergents, vinyl products like raincoats and shower curtains, medical equipment and food packaging. (The chemicals help make soft plastics supple.)

People easily absorb the chemicals through the skin or the nail bed or ingest them in food or breathe them in the air. A 2000 study by the Centers for Disease Control found that more than 75 percent of Americans tested had traces of phthalates in their urine.

What worries some are studies showing that certain phthalates in high doses can be harmful to rodents. The research has shown that a metabolic byproduct of DBP can be toxic to their liver or kidneys and can cause a reduction in fertility or genital malformation in offspring born to mothers exposed to it. And at high doses, DEHP (di-2-ethylhexyl phthalate), which is used in fragrances, has been found to cause liver toxicity and tumors in rodents.

Whether the same thing could happen in humans is not known, however, because only a few human studies have been done. A small study of men conducted at the Harvard School of Public Health and published in 2002 and 2003 found that metabolic byproducts of several phthalates were associated with lower than normal sperm concentration and motility.

And in May researchers at the University of Rochester published the results of a study of 85 mothers and their baby sons, reporting that the boys who were exposed to higher levels of certain phthalates in the womb were more likely to have a shorter anogenital distance (the space between penis and anus).

But one statistician, Rebecca Goldin, an assistant professor of mathematical sciences at George Mason University and the director of research at its Statistical Assessment Service, has found flaws in the Rochester study, which she says render their results insignificant. "They did not make the standard statistical adjustments for combining their data," Dr. Goldin said.

Given that problem and the small total of data, the research on humans "is just not really enough to form any firm conclusions," said Antonia Calaphat, the chief of the personal care products laboratory at the National Center for Environmental Health, a branch of the Centers for Disease Control. The Food and Drug Administration continues to monitor phthalate research. "The next step for the F.D.A. is to get an exposure estimate and risk assessment," its spokeswoman said. "If we determine that they are a health hazard, we will take steps to protect the welfare of the American public."

Meanwhile Dr. Thun recommends an open mind. While it would be inappropriate for regulatory agencies to brush aside the potential danger of phthalates based on what is known, he said, the research gives consumers no cause to panic.

"There is currently little or no evidence that cosmetics cause serious health problems," he said. "There's always one side that claims that there are sort of serious health effects from cosmetics that are not being adequately regulated and on the other side, claims that everything's hunky-dory. No doubt the truth lies somewhere between the two."