Personal care products are possible sources of potentially harmful parabens for babies

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Through lotions, shampoos and other personal care products (PCPs), infants and toddlers are likely becoming exposed to potentially harmful substances, called parabens, at an even higher level than adult women in the U.S., researchers have reported. They published their findings on parabens, which have been linked to reproductive and other health issues, in the ACS journal *Environmental Science & Technology*.

Kurunthachalam Kannan and Ying Guo point out that the substances called phthalates and parabens are used in a wide range of products, from medical devices to children's toys, as well as PCPs. Phthalates hold in moisture; parabens are used as preservatives. Most people are exposed to them every day—for example, data from the U.S. Centers for Disease Control and Prevention suggests that more than 90 percent of the population is exposed to these substances. The body breaks them down quickly, but both have been detected in urine, breast milk and blood. Research suggests a link between these substances and health issues in animals and people, such as sperm damage, breast cancer and an increased risk for asthma. In previous studies, Kannan's team found that food and indoor dust contributed to phthalate exposure to varying degrees, but paraben exposure was low. Now it was time for them to look at a third route of possible exposure—the use of PCPs.

They collected 170 samples of makeup, lotions, shampoos and other products, including 20 items for babies, and tested them for nine phthalates and six parabens. Both substances were found in PCPs. In baby products, phthalate concentrations were low, but parabens were common. When the researchers calculated possible exposure levels, they estimated that the potential daily skin exposure to parabens by infants and toddlers could be as much as two to three times higher than that for adult women.

More information: "A Survey of Phthalates and Parabens in Personal Care Products from the United States and Its Implications for Human Exposure" *Environ. Sci. Technol.,* Article ASAP DOI: 10.1021/es4042034

Abstract
Despite the widespread usage of phthalates and parabens in personal care products (PCPs), little is known about concentrations and profiles as well as human exposure to these compounds through the use of PCPs. In this

study, nine phthalates and six parabens were determined in 170 PCPs (41 rinse-off and 109 leave-on), including 20 baby care products collected from Albany, New York. Phthalates were less frequently found in rinse-off PCPs but were more frequently found in perfumes (detection frequency of 100% for diethyl phthalate [DEP], 67% for dibutyl phthalate [DBP]), skin toners (90% for DEP), and nail polishes (90% for DBP). Parabens were found in 40% of rinse-off products and 60% of leave-on products. The highest concentrations of DEP, DBP, methyl- (MeP), ethyl- (EtP), propyl- (PrP), and butyl parabens (BuP) were on the order of 1000 μg per gram of the product. On the basis of amount and frequency of use of PCPs and the measured median concentrations of target analytes, the total dermal intake doses (sum of all phthalates or parabens) were calculated to be 0.37 and 31.0 μg/kg-bw/day for phthalates and parabens, respectively, for adult females. The calculated dermal intake of phthalates from PCPs was lower for infants and toddlers than for adult females. In contrast, dermal intake of parabens from PCPs by infants and toddlers was higher than that for adult females. The calculated maximum daily exposure dose of MeP, EtP, and PrP from PCPs ranged between 58.6 and 766 μg/kg-bw/day for infants and toddlers, which was 3 times higher than that calculated for adult females. PCPs are an important source of human exposure to parabens; the contribution of PCPs to phthalate exposure is low, except for DEP.

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