Baby Care Products: Possible Sources of Infant Phthalate Exposure, published in *Pediatrics* February 2008

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What did you find?

1. Phthalate exposure is widespread in normal, healthy infants; Every baby had detectable concentrations of 1 or more phthalate metabolites in their urine and over 80% of infants had 7 or more phthalates detectable in their urine.
2. Mother's use of baby lotion, baby shampoo, and baby powder was related to higher concentrations of three phthalate metabolites – MEP, MMP, MIBP in the babies' urine.
3. These findings are strongest in younger infants (≤ 8months) who may be more vulnerable to developmental and reproductive toxicity

What did you do?

We looked at levels of phthalate metabolites in the urine of 163 infants who were on average 12.8 months old. These babies were born in 2000 to 2005 in CA, MO, MN and IA. We then looked at mother's report of baby care product use on their infant and related this information to infant urine phthalate metabolite concentrations. Our aim was to see if greater product use predicted higher urine phthalate concentrations.

What are phthalates?

Phthalates are synthetic, man-made chemicals used in a wide variety of industrial and common household products including: PVC plastics, cosmetics, personal care products, plastic toys, and vinyl products, and products with fragrance.

Why are they used?

They are considered "plasticizers" and help impart flexibility to plastics so they are more functional. They are also used in the fragrance component of many cosmetics and personal care products. Phthalates help retain color, scent, and help increase absorption of personal care products.

What are the main health effects of phthalate exposures to young children?

In **animal studies**, exposure to some phthalates early in life can lead to a variety of adverse effects with specific toxicity to the male reproductive tract. Several phthalates are anti-androgens; they decrease fetal testosterone. Some studies have also documented toxicity to the female reproductive tract leading to early puberty.

While these anti-androgenic effects have been seen following prenatal exposure, in **humans**, phthalate exposure in early childhood has not been well studied. Two studies showed that exposure to certain phthalates is associated with an increased risk of runny nose, allergies, and eczema. One study of nursing mothers and infants showed breast milk containing MEP, MMP and MBP was associated with abnormalities in reproductive hormone concentrations in infants 3 months of age. Additional studies need to be done to evaluate if post-natal phthalate exposure may have any effect on reproductive tract development.

Phthalate concentrations in infants in this study were similar or lower to those concentrations reported for children ages 6-11 years old in the National Health and Nutrition Examination Survey (NHANES).

Should parents be avoiding phthalate exposures for their children?

The health impact of childhood exposures to phthalate is unclear at this time. If parents would like to decrease their exposures, they should first limit the amount of baby care products used on the infant and apply lotions or powders only if medically indicated. They can also stop microwaving plastics, buy phthalate free-cosmetic/personal care products, and use glass alternatives when possible.

How do we know if a product contains phthalates?

This is difficult to know because manufacturers are not required to disclose phthalates in the list of product ingredients. A #3 recycling code on a plastic container/toy/tubing is vinyl or PVC and likely contains phthalates. In addition, it is likely that a majority of fragrance-containing personal care products contain phthalates as well. The Environmental Working Group (http://www.ewg.org/) and Health Care Without Harm (http://www.noharm.org/us) both have tested several products for phthalate contents.

What are US regulations surrounding phthalates?

Currently, there are no federal regulations for phthalates. The Food and Drug Administration released a comment that DEHP in medical tubing may be harmful to premature infants that are hospitalized but no regulations were created from this.

California does have a ban on six phthalates in toys and child-care articles (teethers, feeding products, etc.).The California law will go into effect in January 2009, and is the only law in place at this time.

A cosmetics bill in California didn't ban phthalates from cosmetics but will require the cosmetics manufacturers to disclose to the state chemicals in their products that are on the Prop 65 list which includes:

i. DEHP- listed as a carcinogen in 1998 and developmental toxin in 2003
ii. DBP- listed as a developmental/reproductive toxin in 2005
iii. BBP- listed as a developmental/reproductive toxin in 2005
iv. DIDP- listed as a developmental/reproductive toxin in 2007
v. Di-n-hexyl phthalate (DnHP)- listed as a developmental/reproductive toxin in 2005.

Other states that have bills similar to California's (but not yet laws) are: Maine, New York, Vermont, Maryland, Minnesota, Rhode Island, and Massachusetts.

In addition, the European Union has banned six phthalates from children's products citing the precautionary principle. DBP and DEHP have been banned from personal care products.

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