

Campaign for Healthier Solutions

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What are PHTHALATES and What are Their Health Impacts?¹



Phthalates are a class of synthetic chemicals that are widely used in a variety of consumer products including medical devices, food wrap, building materials, packaging, automotive parts, cosmetics, children's toys, and childcare articles made of polyvinyl chloride (PVC).

Soft PVC products may contain up to 50 percent by weight of phthalates. Phthalates are not chemically bound to the PVC polymer and over time they leach out of products and evaporate into the air, water, food, house dust, soil, and living organisms, particularly under conditions involving heat. Phthalates are used in cosmetics to hold fragrance, reduce cracking of nail polish, reduce stiffness of hair spray, and make products more effectively penetrate and moisturize the skin.²

Some Phthalates are Already Restricted in Certain Products but Exposure is Still Widespread

Due to their widespread use, the general population is continuously exposed to phthalates.

Because of health concerns, as of February 2009 the US Consumer Product Safety Improvement Act restricted 6 phthalates in children's toys.³ Although these six phthalates are now restricted from children's products in the US and European Union (EU), they are unregulated and continue to be used in toy making in many other parts of the world, such as China and India. Through mouthing of these products, phthalates can dissolve in saliva and become absorbed into the body. In addition, children continue to be exposed to phthalates in cosmetics and personal care products such as nail polish, lotion, shampoo, soap, and hair spray. School supplies made of PVC such as notebooks and binders, art supplies, backpacks, lunchboxes, paperclips, and umbrellas may contain phthalates. Raincoats, boots, handbags, and soft plastic shoes such as flip-flops may also contain phthalates.

Phthalates are slowly released from PVC products during use, diffusing into the air. They are also released into the environment during their production, processing and waste disposal. Once in the environment, phthalates bind to particles—primarily dust particles in the home—and can be carried in the air over long distances.

Human exposure to phthalates occurs through inhalation and ingestion of contaminated air and food as well as from skin contact. Food may become contaminated when it comes in contact with packaging that contains phthalates. For the general population, this may be a major source of exposure. Children may be exposed to higher concentrations of phthalates from food consumption because they tend to consume more food than adults relative to their body weight. Also putting PVC and other products with phthalates into their mouths combined with crawling on PVC flooring will highly expose children. Fetal exposure to phthalates in the womb is in direct relation to the mother's exposure to phthalates.

Health Impacts

The US EPA classifies DEHP and BBP – two common phthalates - as probable and possible human carcinogens respectively. But the bulk of information about phthalates is that they are known to be

developmental and reproductive toxicants. This means they may impact genital development, semen quality, and can impact the onset of puberty in females with some studies observing earlier puberty and others showing delayed. They also impact the development of the nervous system, thyroid function and may possibly cause respiratory problems.

Recent studies indicate that exposure in the womb to phthalates circulating in the mother's blood may influence a child's mental and behavioral development and the risk of developing eczema in early childhood. Some phthalates such as DEHP were found at increased levels in children with autism and school children with lower vocabulary and IQ scores. Some phthalates have also been associated with pregnancy loss, obesity in children, and the beginnings of diabetes.

Many Companies and Retailers are Eliminating Phthalates and PVC products

Many hospitals are replacing PVC products with phthalate-free products to avoid exposing babies, children, adults and workers to phthalates.⁴ Car companies, children's product manufacturers, leading electronic product brands, school districts and building suppliers are replacing PVC with non-PVC and phthalate-free substitutes. Some of the biggest corporations in the world have adopted policies to reduce or phase out PVC. These include: Wal-Mart; Nike; Apple; Microsoft; Target; Sears and Kmart and many more. Download CHEJ's factsheet at http://www.chej.org/pvcfactsheets/The_Poison_Plastic.html and visit our Safe Markets website to learn more about how consumers and businesses can avoid phthalates: <http://safemarkets.org/toxic-chemicals-in-products/vinyl-the-poison-plastic/about>

ENDNOTES

¹ The following information compiled by Bev Thorpe (Clean Production Action) is taken from these two main sources. Please go to both source documents for the original citations.

1) Phthalates and Their Alternatives: Health and Environmental Concerns. 2011. Lowell Center for Sustainable Production accessed at <http://www.sustainableproduction.org/downloads/PhthalateAlternatives-January2011.pdf> and

2) Children's Phthalate Intakes and Resultant Cumulative Exposures Estimated from Urine Compared with Estimates from Dust Ingestion, Inhalation and Dermal Absorption in Their Homes and Daycare Centres . April 23, 2013. Accessible at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0062442#pone.0062442-Jurewicz1>

² Six of the commonly used phthalates in consumer products are di-(2-ethylhexyl) phthalate (DEHP), diisononyl phthalate (DINP), dibutyl phthalate (DBP), diisodecyl phthalate (DIDP), di-n-octyl phthalate (DnOP), and benzyl butyl phthalate (BBP or BzBP).

³ <http://www.cpsc.gov/en/Business--Manufacturing/Business-Education/Business-Guidance/Phthalates-Information/>

⁴ Health Care Without Harm has many resources for PVC-free products <https://noharm.org/>