Phthalates: Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP), Di (2-ethyhexyl) phthalate (DEHP)

What are phthalates?

Phthalates are often used as plasticizers, which are chemicals typically added to plastics to make them more flexible and long-lasting. Phthalates are also found in personal care and other product types. Phthalates are chemicals that can affect the body's natural hormones and are considered "endocrine disruptors."

Phthalates can be found in items such as:

- Household products: detergent, raincoats made of plastic, garden hoses, packaging film, sealants, car care products, sheets made of plastic, and vinyl tile.
- Personal care products: shampoos, deodorant, lubricating oils, fragrances/perfumes, hair spray, and nail polish.
- Children's products: teethers, inflatable toys, and some children's products made before 2008. Federal restrictions limit the use of certain phthalates in children's products, but replacement phthalates, which are also potentially harmful, may still be used. Children's products made before 2008 from flexible polyvinyl chloride could contain elevated levels of the three phthalates listed by our Toxic Free Kids program.

Phthalates of concern for the Toxic Free Kids Program

Butyl benzyl phthalate (BBP): BBP can be found in personal care items, sealants, car care products, adhesives, and vinyl tiles.

Dibutyl phthalate (DBP): DBP can be found in paints, glue, insect repellents, hair spray, nail polish, and rocket fuel.

Di (2-ethyhexyl) phthalate (DEHP): DEHP can be used to make household products, such as plastic containers. It can also be used in production of medical devices with plastic tubing.

Who is most at risk of exposure and health risks?

- Infants and young children are most at risk because they are closer to the ground and are more likely to inadvertently breathe in and eat dust. Children's smaller body size and developing organs can place them at higher risk of having negative health consequences.
- Pregnant people and unborn children also are at risk. Phthalates can cross the placental barrier and pose developmental concerns for the unborn child.

How can pregnant people be exposed to phthalates?

- Breathing air contaminated with phthalates that are part of a product's fragrance or have leached (escaped) from products in the home.
- Drinking from plastic bottles made with phthalates.
- Using nail polish, perfume/cologne, soaps, shampoos, lotions, and other personal care products that contain phthalates.
- Eating foods stored or packaged in plastic containers produced with phthalates that can leach (escape) into foods when heated in a microwave.

How can infants and children be exposed to these phthalates?

- Children can be exposed to phthalates by eating and drinking food items that are stored, packaged or heated in a microwave in plastic containers.
- Other exposures can happen by breathing in air that is contaminated with phthalates. For example, scented candles and air fresheners could contain phthalates in their fragrance.
- Children are close to the ground and have more hand-to-mouth activity and can be exposed by chewing or sucking products made from plastic. Phthalates can leach (escape) from consumer products and get into dust. Younger children are more exposed to phthalates than adults because of crawling and inadvertently eating dust.

What can be done to reduce exposure to phthalates?

- Use fragrance-free personal care products, detergents, soaps, and cleansers, as phthalates can be a chemical component of fragrances.
- Vacuum your living spaces and clean out air ducts to reduce exposure to phthalates that may be in dust particles.
- Use items that are labeled “phthalate free,” including toys and personal care products.
- Use microwave-safe containers, such as glass bowls and plates, in the microwave instead of plastic ones that may contain phthalates.
- If possible, dispose of older (made before 2008) children’s plastic toys and products that may contain higher concentrations of BBP, DBP, and DEHP.
- Avoid flexible PVC (vinyl) plastics with the number 3 recycling code, as phthalates are often added to make them softer and more flexible.

What are the health concerns of phthalates?

Phthalates are potential health concerns because they are types of chemicals that can disrupt the endocrine system (which regulates hormones) by acting like a hormone or by changing the way hormones act. Animal studies have shown negative health effects from exposures to

phthalates. These effects pose a concern for human health and are important to consider, especially for children. Children are more vulnerable than adults, and their exposure may be higher because of frequent hand-to-mouth activity. This makes them more vulnerable to negative health consequences.

Some of the health effects found in animal studies include:

- Cancer from DEHP exposure in animal studies.
- Developmental toxic effects.
- Birth defects.
- Reproductive health issues.
- Worsening allergic diseases (e.g., asthma, eczema).
- Kidney issues.
- Blood sugar problems.
- Liver problems.

Addition resources

EPA | Butyl benzyl phthalate (BBP) (https://iris.epa.gov/ChemicalLanding/&substance_nmbr=293)

CPSC | Phthalates Business Guidance & Small Entity Compliance Guide (https://www.cpsc.gov/Business--Manufacturing/Business-Education/Business-Guidance/Phthalates-Information)

CDC | ToxFAQs™ for Di-n-butyl Phthalate (https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=858&toxid=167)

CDC | ToxFAQs™ for Di(2-ethylhexyl)phthalate (DEHP) (https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=377&toxid=65)

NIH | NTP center for the evaluation of risks to human reproduction reports on phthalates: addressing the data gaps (https://pubmed.ncbi.nlm.nih.gov/15013060/)

MDH | Phthalates (PDF) (https://www.health.state.mn.us/communities/environment/childenvhealth/docs/pclist/phthalates.pdf)

Minnesota Department of Health
Toxic Free Kids Program
651-201-4899
health.risk@state.mn.us
www.health.state.mn.us

05/24/2024

To obtain this information in a different format, call: 651-201-4899.