What are some examples of common everyday exposures to phthalates and tips to avoid exposure?

Microwaving food using plastic products.

Tip: Use only "microwave safe" containers and phthalate-free containers and plastic wrap when microwaving food and/or drinks. Phthalates can leach from food storage containers and food wrap into foods (particularly those foods that are oily or that have a high fat content) on contact and when heated.

Sucking or chewing soft plastic/vinyl products.

Tip: Use only plastic/vinyl toys and toothbrushes labeled "phthalate- free." If unsure, call the manufacturer. In 1998 the US Consumer Product Safety Commission (CPSC) requested phthalates be removed from soft rattles, pacifiers, bottle nipples, and teethers.

Personal care products and vinyl clothing.

Tip: Read labels. If unsure, call the manufacturer.

Medical situations.

Tip: PVC is used in a wide range of medical devices, such as intravenous (IV) tubing, blood bags, and catheters. Ask your healthcare provider to use phthalate-free tubing and medical bags especially for procedures such as blood transfusions and dialysis.

What negative health effects have phthalates been shown to have in laboratory animals?

Very few studies have examined the health effects of phthalates on humans. In lab animals, phthalate exposure has been found to be associated with numerous reproductive health and developmental problems such as:

- Early onset of puberty.
- Interfering with the male reproductive tract development.
- Interfering with the natural functioning of the hormone system.
- Causing reproductive and genital defects.
- Lower testosterone levels in adolescent males.
- Lower sperm count in adult males.

Phthalates are weak endocrine disruptors and androgen blocking chemicals. This means that when absorbed into the body phthalates can either mimic or block female hormones, or in males, suppress the hormones involved in male sexual development.

Phthalates cross the placenta.

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4340 Redwood Highway, Suite C400
San Rafael, California 94903
415.507.1949 • www.zerobreastcancer.org

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Phthalates
(THAL-ates)
The Everywhere Chemical

What are phthalates?

Phthalates are a family of man-made chemical compounds developed in the last century to be used in the manufacture of plastics, solvents, and personal care products. They are colorless, odorless, oily liquids that do not evaporate easily and do not chemically bind to the material they are added to.

How am I exposed to phthalates?

Ingestion, inhalation, skin absorption, and intravenous injection are all potential pathways of exposure. The ever-present use of phthalates as an additive to PVC (polyvinyl chloride) products to make them flexible and to personal care products to make fragrances last longer in the past 50 years has resulted in widespread general population exposure.

Phthalates are readily absorbed into the human body and are converted quickly to their respective metabolites. Unlike some chemicals, they tend to pass out of the body quickly in urine and feces. Phthalates can interact with each other and increase the exposure effect.

How do phthalates enter the environment?

Phthalates can be released from a product by heat, agitation, and prolonged storage. The release can occur during all the stages of the product lifecycle - from production, through use, to disposal.

Which population of humans is at a greater health risk to phthalate exposure?

Children under the age of three are more at risk from phthalates because of their developing, smaller body size and ever-present exposure to children's products manufactured using multiple types of phthalate compounds. Young children use their mouths to explore, and consequently, can be exposed to higher levels by sucking on products made of phthalate-containing plastics.

What can I do to avoid exposure?

Read labels. Avoid using products that contain phthalates. Support companies committed to producing phthalate-free products.

How do I identify phthalates in products?

There is no easy way to tell if a product has added phthalates. Phthalates can be identified on labels by a three or four letter acronym that defines their chemical structures. Labels rarely state "contains phthalates".

There are a multitude of phthalate compounds. Which phthalate compound is added to a product depends in part on their molecular weight (MW). Phthalates with a higher molecular weight (HMW) are very slightly soluble in water; phthalates with a lower molecular weight (LMW) are reasonably soluble in water.

The **8** most widely used phthalate compounds and their *metabolites* are:

- BBP: butyl benzyl phthalate (LMW) *, **, ***
  MBzP: mono benzyl phthalate
- DBP: di-*n*-butyl phthalate (LMW) *, **, ***
  MBP: mono-n-butyl phthalate
  MiBP: mono-isobutyl phthalate
  Most common phthalate added to nail polish.
- DEHP: di-(2-ethylhexyl) phthalate (HMW) *, **, ***
  MEHP: mono-(2-ethylhexyl) phthalate
  Most widely-added phthalate to polyvinyl chloride (PVC) to make products flexible.
- DEP: diethyl phthalate (LMW)
  MEP: monoethyl phthalate
  Most common phthalate added to personal care products to enhance fragrance.
- DiDP: di-isodecyl phthalate (HMW) *, **, ***
- DiNP: di-isononyll phthalate (HMW) *, **, ***
  Most common phthalate added as a softener in the manufacture of toys and childcare products, such as bath toys, drinking straws, and rubber ducks.
- DnHP: di-*n*- hexyl phthalate *
- DnOP: di-*n*-octyl phthalate (LMW) **, ***

* Listed in California's Proposition 65 as a reproductive and developmental toxicant.

** Listed in California's AB1108 (Ma and Huffman). The bill, if passed, will ban use in the manufacture of any toy or childcare article intended for use by a child under three years of age.

*** European Union banned as a phthalate softener in the manufacture of toys and childcare articles.

Read Labels to avoid phthalates.

The most common products using phthalate compounds are:

PVC Products

Phthalates are frequently added to PVC (vinyl) products to soften and make more flexible. If a plastic product is flexible, it probably contains phthalates unless the label specifically says it does not.

Personal Care Products

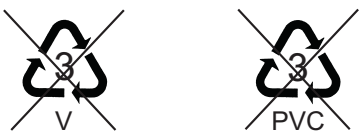
Phthalates are often added to personal care products, such as nail polish, perfumes, deodorants, hair gels, shampoos, soaps, hair sprays, and body lotions, to help lubricate other substances in the formula and to carry fragrances. Phthalates must be listed among the ingredients on product labels, unless they are added as a part of the "fragrance." Under current law, they can then simply be labeled "fragrance," even though they may make up 20% or more of the product.

Many companies have voluntarily removed phthalates from their products. A company will usually label its product "phthalate-free." If unsure, call the company. If you can't get information from the manufacturer, look for alternatives.

How can I recognize plastic toys and containers containing phthalates?

All plastics are not the same. One easy way to recognize plastic toys, clothing, bottles, food and beverage storage containers, and/or food wrap that may contain **phthalate** compounds is to look for the **number 3** inside the universal **recycling** symbol usually molded into the plastic on the bottom of the product.

Avoid products **with** the **number 3** within the arrows and the letters **"V"** or **"PVC"** below the arrows.



Choose products with the numbers **1, 2, 4 and 5** within the arrows. Many companies use phthalate-free substances such as polypropylene (PP), recycling code 5, to manufacture plastic products.