



Do Phthalates Affect Thyroid Function in Young Girls?

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In 2017, scientists reported that there is a link between early childhood exposure to common household chemicals called phthalates and depressed thyroid function in girls at age 3. The research, published in the journal *Environment International* by researchers at Columbia University's Mailman School of Public Health, was the first to report on the link between phthalate exposure and thyroid function in children.

The research looked at five different phthalates and two thyroid hormones. [Lower levels](#) of free thyroxine (free T4) were associated with elevated levels of four of the five phthalates studied in 3-year-old girls. Interestingly, the link was limited to girls; boys were not affected.

According to the study's senior author Pam Factor-Litvak, professor of Epidemiology at the Mailman School:

The thyroid acts as the master controller of brain development. Thyroid hormones set the schedule, and if the timing is out of synch, there may be later consequences in the brain. The thyroid disruptions we see in this study...could explain some of the cognitive problems we see in children exposed to phthalates and we are currently investigating that. Even small exposures can make a big difference. Going forward, it's important to learn what phthalates do to harm children, as well as the route by which this harm is inflicted. Our overarching goal is to protect the health of future generations.

What Are Phthalates?

Phthalates are a class of chemicals that are considered endocrine disruptors. Endocrine disruptors are chemicals that interfere with the function of the endocrine glands, including the thyroid and the reproductive glands, among others. [Endocrine disruptors](#) are linked to reduced sperm counts and reduced [sperm motility](#) in men, and genital abnormalities in boys, as well as an increased risk of allergies and asthma, among other health effects.

Phthalates are sometimes called plasticizers and are added to plastics, especially polyvinyl chloride or PVC, to make them softer and more pliable. If you have ever noticed "new car smell" or the smell of a new plastic shower curtain, those are the phthalates you are smelling. Phthalates are also added to a variety of personal care and beauty products to make their fragrances and scents last longer.

The widespread use of phthalates for more than half a century has resulted in widespread exposure, via ingestion, inhalation, and absorption through the skin. Research shows that high levels of phthalates are found in the majority of Americans.

Products That Contain Phthalates

Phthalates are commonly found in the following products:

- Plastic and vinyl toys and bath toys
- Plastic sex toys
- Drinking straws

- Plastic food storage containers
- Vinyl products including flooring, wallpaper, building materials, shower curtains, lawn furniture, a certain plastic clothing items (i.e., raincoats and rain boots)
- Car interiors
- Plastic garden hoses
- Paints
- Some dairy products, and some meats and cheeses
- Some tap water
- Scented lotions
- Perfume, cologne, and aftershave
- Baby powder, shampoo, and lotions
- Deodorants, shampoos, hair gels, hairsprays, and nail polish

- Laundry detergent
- Air fresheners
- Insect repellants

How to Avoid Phthalates

There are a number of ways to reduce and minimize exposure to phthalates.

Avoid Products That List Any Phthalates As Ingredients

You will typically see phthalate in the name, but it may also be listed by its acronym. Common phthalates added to products include:

- BBP: butyl benzyl phthalate
- MBzP: mono benzyl phthalate
- DBP: di-n-butyl phthalate
- MBP: mono-n-butyl phthalate
- MiBP: mono-isobutyl phthalate
- DEHP: di-(2-ethylhexyl) phthalate
- MEHP: mono-(2-ethylhexyl) phthalate
- DEP: diethyl phthalate
- MEP: monoethyl phthalate
- DiDP: di-isodecyl phthalate
- DiNP: di-isononyll phthalate
- DnHP: di-n- hexyl phthalate
- DnOP: di-n-octyl phthalate

Avoid PVC Plastic

Unless a product is specifically labeled “phthalate-free,” avoid any soft plastic products, such as shower curtains.

Avoid Products That List “Fragrance” as an Ingredient

Legally, phthalates don’t need to be identified in some beauty products. The phthalates in those products can be simply labeled as “fragrance,” making it difficult to identify the specific ingredient. Unless a product is labeled “no synthetic fragrance” or

“phthalate-free,” or comes from a company with a phthalate-free policy, it’s best to avoid using it. An exception: products whose labeling indicates that any fragrance specifically comes from essential oils. The Tree-Hugger website has a [list of 12 companies that make natural, phthalate-free perfumes](#).

Choose Phthalate-Free Baby Products

For infant and children’s personal care products, choose a company that has a strict phthalate-free policy. Smart Mommy Healthy Baby has a good [list of companies that have safe baby and children’s products](#).

Choose Phthalate-free Personal Care and Beauty Products

For beauty care products and personal care products that include fragrances or scents, choose only those companies that have a strict phthalate-free policy. Some good resources for lists of companies that make phthalate-free beauty products include:

- [The Breast Cancer Action network](#) list of phthalate-free cosmetics
- [The Campaign for Safe Cosmetics](#)
- The [Environmental Working Group’s database of safe cosmetics](#)

Ask for PVC-Free Medical Supplies

If you need intravenous medication or use a catheter, be aware that these products frequently use PVC tubing. You can ask your healthcare practitioner to use phthalate-free tubing and medical bags.

Avoid Plastic Food Containers

Don’t use plastic food containers, and never microwave food in them, as heat releases chemicals more quickly into your food. If you are going to use plastic to store food, recycling codes 1, 2, or 5 are less likely to contain phthalates, and 3 and 7 are more likely to contain phthalates. This is especially important for storage of baby food, as well as baby bottles, sippy cups, and snack cups. When in doubt, choose glass or stainless steel. You can find a helpful list of [phthalate levels in various food storage products at Good Housekeeping’s website](#).

Use Newer Plastic Toys or Non-Plastic Toys

Older toys can still contain phthalates, but new toys are typically phthalate free. Throw away old toys for infants and children, and replace with newer toys or non-plastic toys.

Only Use Natural Air Fresheners

Most commercial air fresheners have phthalate, so only use natural air fresheners that get their scent from essential oils and other natural fragrances.

Choose Organic Dairy, Produce, and Meat

Organic foods are not exposed to pesticides, lowering the risk that they will have high phthalate levels.

A Word From Verywell

Avoiding phthalates should be a family affair to benefit everyone’s health. But if you have babies or young children, it is especially important. To that end, Columbia University’s Dr. Factor-Litvak has the most basic advice all parents of babies and young children should follow: “Parents with young children should avoid using products containing phthalates such as shampoos, nail polish, and vinyl flooring.”

Sources:

Morgenstern, R et al. “Phthalates and thyroid function in preschool age children: Sex specific associations.” *Environment International*, Volume 106, September 2017, DOI: 10.1016/j.envint.2017.05.007 <http://linkinghub.elsevier.com/retrieve/pii/S0160412017302143>

U.S. Food and Drug Administration. “Phthalates.” Online,. <https://www.fda.gov/cosmetics/productsingredients/ingredients/ucm128250.htm>