



FAQs: Phthalates & Polyvinyl Chloride (PVC)

What are phthalates?

Phthalates (pronounced THAL-ates) are a class of chemicals used to soften plastics, such as PVC (Polyvinyl Chloride), bind fragrances in products, and act as solvents and fixatives. Human exposure occurs through:

Inhalation- breathing in fragrances or fumes from solvents and fixatives

Ingestion- chewing on a plastic toy creates small openings in the plastic, providing an avenue for leaching of chemicals from the toy into a child's mouth

Absorption- lotion, perfumes, deodorants

Adverse health effects include hormone disruption, developmental and reproductive problems, asthma, preterm birth, low sperm count, undescended testes, premature puberty, and development of some cancers.

What is polyvinyl chloride (PVC)?

PVC plastic, commonly referred to as vinyl, is a very hazardous product. PVC is dangerous to human health and the environment throughout its entire life cycle, at the factory, in our homes, and in the trash. Our bodies are contaminated with the chemicals released during the PVC lifecycle, such as mercury, dioxins, and phthalates, which may pose irreversible life-long health threats. When produced or burned, PVC plastic releases dioxins, a group of the most potent synthetic chemicals ever tested, which can cause cancer and harm the immune and reproductive systems.

What makes the new car or shower curtain smell?

PVC is useless without the addition of many toxic additives, which can make the PVC product itself harmful to consumers. These chemicals can evaporate or leach out of PVC, posing health risks to children and consumers (off-gassing). The new car or shower curtain smell is that of chemicals off-gassing from the PVC. One EPA study found that vinyl shower curtains can cause elevated levels of dangerous air toxins, which can persist for more than a month.

What is an example of toxic additives to PVC?

One of the most common toxic additives is Di(2-ethylhexyl) phthalate (DEHP), a phthalate that is a suspected carcinogen and reproductive toxicant readily found in numerous PVC products. Children can be exposed to phthalates by chewing on vinyl toys. Some phthalates have been banned from some children's products and toys in the U.S. as of February 2009.

Can PVC containing materials be recycled?

PVC cannot be effectively recycled due to the many different toxic additives used to soften or stabilize PVC, which can contaminate the recycling batch. Most consumers do not know that a "3" in the recycle symbol indicates that the plastic is made of PVC, and therefore recycle those products, inadvertently rendering thousands of potentially recycled containers useless. In fact just one PVC bottle can contaminate a recycling load of 100,000 Polyethylene terephthalate (PET) bottles. Recycling of PVC is negligible, with estimates ranging from 0.1% to 3% of postconsumer PVC waste being recycled.

What are some consumer products with alternatives to PVC and phthalates?

Safer, cost-effective, alternatives, such as bio-based materials or safer plastics, are readily available for virtually every use. You can help build consumer demand for safer, healthier products by avoiding the purchase of PVC or phthalate-containing products.

- If you must use plastic, purchase toys, bottles, sippy cups, chew toys, and other children's items that are labeled "phthalate-free" or "PVC-free". Sometimes items containing PVC can be identified by the recycling code 3, "V" or "PVC". Those items should be avoided.
- Make sure to also avoid plastic items (especially baby bottles and sippy cups) made with [BPA \(Bisphenol A\)](#) or similar compounds such as BPS and BPF. BPA is found in hard plastic bottles or cups marked with the recycling code 7 or "PC".
- Choose plastic products made from polypropylene or polyethylene. If a baby bottle, make sure that they have clear silicone nipples.
- Other safer vinyl alternatives to PVC are EVA (ethylene vinyl acetate) and PEVA (polyethylene vinyl acetate).

- Use PVC-free plastic wrap (buy plastic wrap and bags made with polyethylene).
- Purchase phthalate-free beauty products.
- Beware of soft flexible plastic products that have a strong, distinct odor. Often these signal the presence of PVC.

Additional Resource(s) on Phthalates and PVC:

[ATSDR: Phthalates](#)

[ATSDR: Toxicological profile for vinyl chloride](#)

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