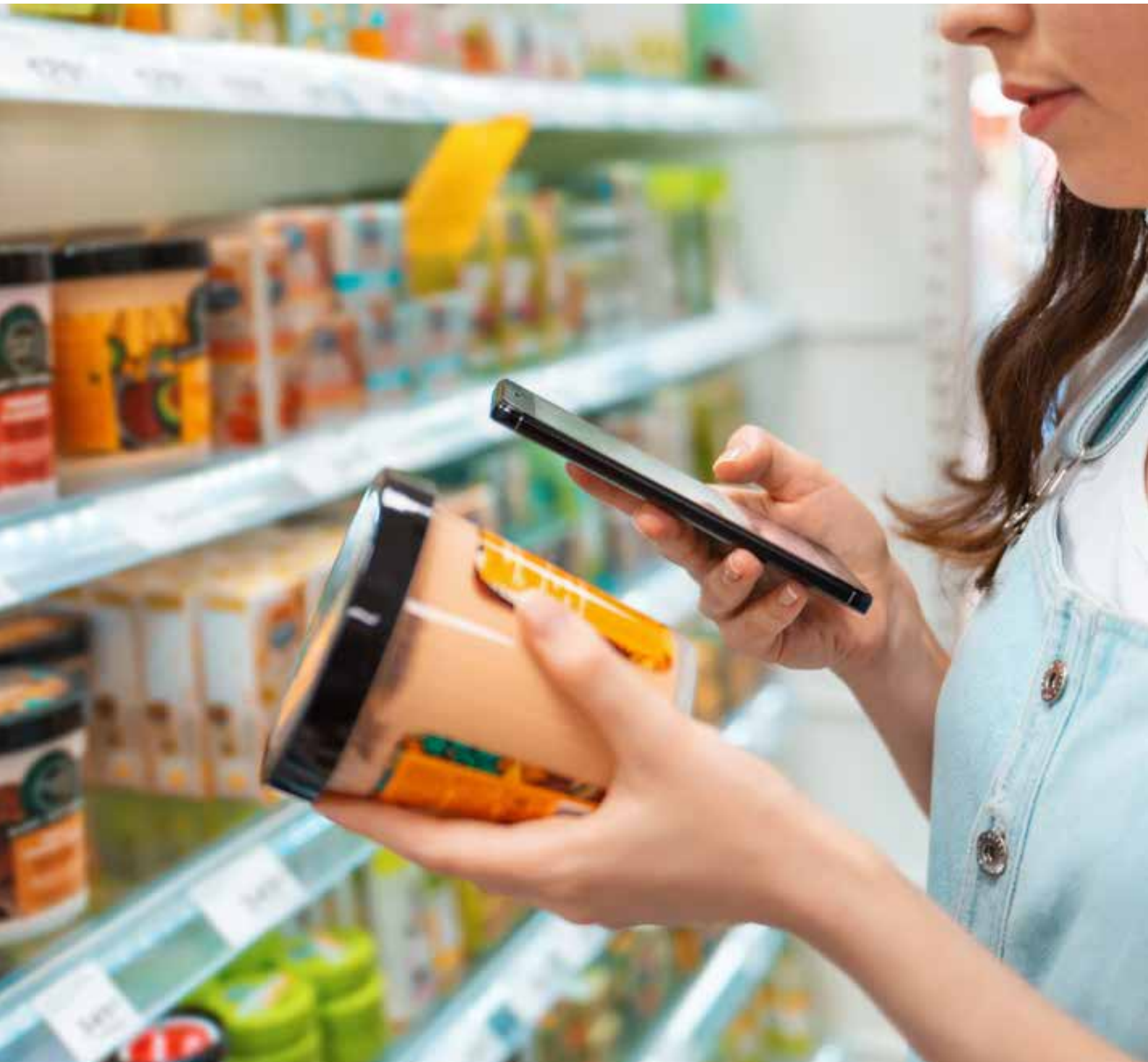


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lastinghealth 

# EDC Insights No.1 - Phthalates

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## What are Phthalates? [thal-ate-s]

**Phthalates are a large group of chemicals and are synthetic esters of phthalic acid. They are widely used as softeners and solvents to give softness or add flexibility to plastics that would otherwise be hard or brittle.**

### Most common chemicals

Bis(2-ethylhexyl) phthalate (DEHP) is the most widely used phthalate. It was prohibited from wide usage in the UK in 2005, but it is still permitted to recycle PVC containing DEHP in the EU.

It was prohibited for use on electrical equipment in 2019 with 3 other phthalates, Di-n-butyl phthalate (DBP), Diisobutyl phthalate (DIBP), and Butyl-benzyl phthalate (BBP).

Phthalates were banned for all use in children's toys and baby products in 1999 and further restrictions became UK law in 2020.

Other common chemicals are Diethyl phthalate (DEP), Diisononyl phthalate (DINP), Dimethyl phthalate (DMP), Di-n-octyl phthalate (DNOP), and Mono-(2-ethylhexyl) phthalate (MEHP).

### Chemical properties

- **Phthalates do not chemically bind to the material they are added to, so they can leach easily into food, water, or surrounding air.**
- **They have a low solubility in water, so they persist in waterways and can make their way into soil.**
- **They have a high solubility in oil, so they are used as solvents.**
- **They have a low melting and a high boiling point, making them useful for heat transfer in items such as food packaging.**
- **Phthalates make up to 40% of some products.**



## Health risks of phthalates

### PREGNANCY AND FOETAL DEVELOPMENT

Phthalates can have the greatest impact at sensitive periods of development. During pregnancy, the placenta acts as a temporary endocrine 'gland' passing hormones and nutrients between mother and the developing foetus.

Very worrying, it's already been found that EDCs including phthalates can be passed across the placenta in the form of microplastics, many of which are manufactured using phthalates.

Phthalates are a difficult chemical group to avoid; they have been detected in some ultrasound gels, and exposure to phthalates during pregnancy have been associated with a **higher risk of premature birth**.

### CHILD DEVELOPMENT

Exposure to Bis(2-ethylhexyl) phthalate (DEHP) during pregnancy has been associated shortening of anogenital distance (AGD) in infant boys. AGD is the distance from the anus to the base of the penis, and an indicator of male reproductive health. **Exposure to phthalates in utero in the first trimester** was found to adversely affect AGD, with potential to adversely effect later sexual development in boys.

Phthalates have a negative impact on infant speech and language development. A study of 1200 mothers and infants found significant associations between exposure to dibutyl phthalate and butyl benzyl phthalates during pregnancy and **delays in the development of language in preschool children**.



### MALE FERTILITY

Leading scientist Shanna Swan published her book 'Count Down' in 2021 where she revealed that sperm counts in Western countries have dropped by 50% in the past four decades. Men are also at risk of lower sperm health and motility.

Watch her talk about it here: **[Shanna Swan | Count Down: The Future of the Human Race | Talks at Google](#)**

### BREAST CANCER

Phthalates are a known hormone disrupting chemicals placing women are at higher risk of hormone sensitive conditions such as breast cancer.

Phthalates can mimic the action and disrupt the normal distribution of oestrogen around the body, including breast tissue. Four phthalates that appear on the SVHC list are classed as endocrine disrupting chemicals - DEHP, DPB, DIPB, and BBP. They are associated with otherwise unexplained increases in breast cancer rates.

One study demonstrated that even at very low concentrations of BBP, DBP, and DEHP their presence displayed estrogenic activity and **interfered with the growth of breast cancer cells**.



## Where are phthalates found?

- Food – phthalates have been detected in fast foods
- Most food packaging involves phthalates, in some cases up to 50% of the chemical content.
- Cosmetics and toiletries including shampoos and body lotions - phthalates are used as gelling agents to soften other ingredients, making them easier to spread.
- Nail polish – phthalates are added to make polishes less likely to crack or split.
- Phthalates are used as solvents (or dissolving agents) to carry and preserve fragrances, making them a common ingredient in perfumes and aftershaves, as well as household scented products such as candles and air fresheners.
- Cosmetics such as mascara to add flexibility, where they are used as lubricants, and for their anti-crease and waterproofing properties.
- Hair sprays to allow control during styling without stiffness.
- Plastic coatings on waterproof clothing and shoes due to their resistance to water.
- Building materials such as electrical wiring, glues, flooring, wallpapers, and paints.
- Cars – the “new car” smell.

## Can phthalates be detected in the body?

Phthalates can be detected in urine or blood. We are in the process of developing a consumer test kit to help concerned individuals to identify the levels of phthalates and other endocrine disrupting chemicals in their bodies.

## Does the body store phthalates?

Some chemicals in this group pass through the body within a couple of days via the liver which removes toxins and other unwanted substances.

Sometimes the body stores toxins such as phthalates in fat tissue; this is known as Body Burden. The time it takes for the body to break down chemicals varies; some have short half-lives (the time it takes for its potency to reduce by a half) whilst others persist for much longer.

Toxins stored as a **Body Burden** can seriously harm the body’s natural ability to detoxify itself and disrupt the activity of the endocrine system.



## Can reduce your exposure to phthalates?

It's extremely hard to avoid this chemical group, but even slight changes can help to reduce your exposure to them if you are concerned.

### FOOD PREPARATION AND STORAGE



The best place to start is by re-thinking your food choices, storage, and cooking methods. Buying fewer pre-packaged foods will reduce the chances of the small particles that are released from packaging leaching into your food and liquids.

You can also remove food from its plastic packaging before cooking to prevent chemicals leaching during the heating process. Replace plastic storage and cooking containers with glass or metal. Old plastics are more likely to contain chemicals that may have since been restricted.

### DIET AND NUTRITION

Making small changes to your diet could have a positive effect, such as switching one meal a week to vegetable based; this could reduce your intake of fatty foods. A study in 2016 found that people with diets high in fatty foods had levels of **phthalates up to 40% higher**. There is also a growing body of evidence to suggest that exposure to **EDCs can cause obesity**.

Switch some of your food purchases to organic, especially fruit and vegetables which have high levels of EDCs if grown using chemicals.

Read the **Ideal Food Plan** prepared by doctors at Breakspear Medical Centre.

### FRAGRANCES AND VENTILATION

Phthalates are added to cleaning formulas to carry fragrance and keep it smelling fresh. Swapping to substitute cleaning products with fewer synthetic chemicals will reduce your exposure, or by using less product. Opening windows whilst cleaning is also advisable as it helps the airborne particles disperse more quickly.

Choose candles scented with natural oils rather than synthetic fragrances and look for products marked 'phthalate free' using more natural ingredients.

### HOUSEHOLD PLASTICS AND VEHICLES

Many of the surfaces in our homes have been adapted to meet our requirements using phthalates, in furnishings, electrical items, and our cars.

The best advice is to regularly wipe hard surfaces down and remove layers of dust by hoovering. Regularly ventilate rooms and new vehicles.

### FIND OUT MORE ABOUT WHAT'S IN THE PRODUCTS YOU BUY

Download an app to check the chemicals used in products for your personal or household use. We recommend **Yuka** which provides a helpful breakdown and rating of 1000's of products and recommends alternatives in some cases, and it's free to use.

## How are phthalates regulated?

### THE UK SVHC LIST

The Health and Safety Executive (HSE) enforces a list of **Substances of Very High Concern (SVHCs)** for substances known to have detrimental effects on human health. The list legally restricts how chemicals can be used and manufacturers must apply for permission to use them.

There are 303 chemicals on the UK SVHC Candidate list. Ten are phthalates, classed as SVHCs because they are known to be toxic for reproduction, or known to have endocrine disrupting properties in human health.

### GUIDANCE ON CHEMICAL SUBSTITUTIONS - THE SIN LIST

ChemSec, the International Chemical Secretariat, is an independent non-profit organisation that advocates for substitution of toxic chemicals to safer alternatives.

**ChemSec** operate the SIN list, based on the EU's REACH (Compliance Regulation) SVHC. It provides guidance for businesses to replace chemicals on the list with safer alternatives.

**There are 23 phthalates on the SIN list.**

### IF IT'S NOT ON THESE LISTS, DOES THAT MAKE IT SAFE?

No. The validation process to prove the toxic effect of each phthalate is long and extensive. When a chemical is banned, it is easy to substitute it with another with a similar chemical structure to carry out the same function. Phthalates are a large chemical group meaning that the validation process can take years; legislation can't keep up with the speed of chemical substitutes.



[Learn more about everyday chemicals and how they might be harming our health.](#)