

# Insidious Oestrogens

By Sue Claridge

Oestrogen. None of us would exist without it. Probably more than anything else, this hormone defines us as women. It is the primary female sex hormone and is responsible for the normal, healthy growth of the female reproductive organs and for normal, healthy menstruation. Without it there would be no conception and there would be no pregnancy.

However, oestrogen has a dark side. Too much of it can lead to health problems. Some of these health problems are subtle or annoying rather than life threatening – weight gain, fatigue, fluid retention, loss of libido, headaches. But there is nothing subtle about breast cancer!

It is now widely accepted that life-time exposure to oestrogen influences the risk of breast cancer. Some treatments for breast cancer – Letrozole and Arimidex – specifically target and reduce post-menopausal oestrogen production.

According to *State of the Evidence* “the [US] National Toxicology Program now lists steroidal oestrogens (the natural chemical form of oestrogen) as known human carcinogens” and “The International Agency for Research on Cancer (IARC) has listed both steroidal and non-steroidal oestrogens as known human carcinogens since 1987.”

Unfortunately, not all oestrogen comes from within. In today’s environment much of the oestrogen that girls and women are exposed to comes from everyday modern life.

There are a plethora of compounds and chemicals that can either mimic or block the action of oestrogen. We don’t ingest them deliberately or with the intention of altering our internal chemistry, but these xenoestrogens are having an important and dangerous effect on our health.

They are insidious, entering our bodies without our knowledge; they are all around us, in our food, our personal products and cosmetics, in the plastics that wrap our food, the bottles we drink from. And they contribute to or cause infertility and other reproductive problems, thyroid dysfunction, weight gain, breast and prostate cancer and a host of other symptoms and illnesses.

Dr Theo Colburn, from the Endocrine Disruptor Exchange in the US, says that “because total oestrogen exposure is the single most important risk factor for breast cancer, oestrogenic chemicals, which would add to lifelong exposure, are an obvious suspect when searching for the cause of rising rates (of breast cancer) over the past half century.”

The literature and research to date indicates that this issue is as big, if not bigger than, active smoking and exposure to environmental tobacco smoke. What are these xenoestrogens, where are they found, and how can you avoid them in your daily life?

## Xenoestrogens –all around us

The table below lists some of the common xenoestrogens and the products in which they may be found.

Three of the most ubiquitous oestrogenic chemicals are bisphenol A, phthalates and parabens. We are exposed to these chemicals everyday, particularly through food packaging and storage, and cosmetics.

<b><i>Xenoestrogen</i></b>	<b><i>Where it is found</i></b>
bisphenol-A	plastic, food (as a preservative)
parabens	cosmetics and personal products
phthalates	vinyl flooring, detergents, automotive plastics, soap, shampoo, deodorants, fragrances, hair spray, nail polish, plastic bags, food packaging, garden hoses, inflatable toys, blood-storage bags, and intravenous medical tubing.
perfluorooctanoic acid (PFOA) (e.g. Teflon, goretex)	grease and water resistant coatings, e.g. non-stick cookware
dieldrin, endosulfan and DDT	insecticides
methoxychlor	pesticide
Polychlorinated biphenyls	lubricants, adhesives, paints
atrazine	weedkiller

## Bisphenol A (BPA)

Bisphenol A forms the polycarbonate plastic used in a wide variety of everyday items including baby bottles and sippy cups, food can linings, dental sealants and sports water bottles as well as many food containers and clear polycarbonate “glasses”. Recent studies show that bisphenol A leaches from intact polycarbonate products as well as from worn or damaged plastic.

The impact starts as early as in the womb: the authors of research published in the journal *Endocrinology* (2005) wrote that their studies “suggest that perinatal exposure to BPA in particular, and to oestrogens in general, may increase susceptibility to breast cancer.”

## Phthalates

Phthalates are used as plasticizers to make rigid plastics pliable, as solvents and in adhesives, waxes, inks, cosmetics, insecticides and drugs. They are found in vinyl flooring, detergents, automotive plastics, soap, shampoo, deodorants, fragrances, hair spray, nail polish, plastic bags, food packaging, garden hoses, inflatable toys, blood-storage bags, and intravenous medical tubing. Phthalates are even used to coat pills to make them easier to swallow or to control how they dissolve.

## Parabens

Parabens are widely used as preservatives in food and pharmaceutical preparations and in an

estimated 13,200 cosmetic formulations. Dr Philippa Darbre has conducted a considerable amount of research into the effects of parabens and has shown that they are absorbed through the skin (see BC or BO? The latest big stink in *Upfront* 53, pg 4). Dr Darbre has found parabens in breast tumour tissue, and in 2003 Dr Kris McGrath found a link between the use of deodorants and antiperspirants and the incidence of breast cancer.

## Sunscreens

Sunscreen also presents a significant peril. A team of Swiss researchers from the Institute of Pharmacology and Toxicology at the University of Zurich, led by Dr Margret Schlumpf, found that five out of six commonly used UVB and UVA radiation screens showed oestrogenic activity (see table on next page). These are found in concentrations of up to 10% in sunscreen products and are also added to other cosmetics for product stability and durability.

Our bodies have an inherent ability to break down and excrete excess oestrogen that we manufacture in our bodies. However, as Dr Colburn points out “many of the man-made compounds resist normal breakdown and accumulate in the body, exposing humans and animals to low-level but long-term exposure. This pattern of chronic hormone exposure is unprecedented in our evolutionary experience.”

Chemical sunscreen	Other names
Bp-3	2-hydroxy-4-methoxybenzophenone; oxybenzone, Eusolex 4360
homosalate	HMS; 2-hydroxybenzoic acid-3,3,5-trimethylcyclohexyl ester; Eusolex HMS
3-(4-methylbenzylidene) camphor	4-MBC; Eusolex 6300
octyl-dimethyl- <i>p</i> -aminobenzoic acid	OD-PABA; Eusolex 6007
octyl-methoxycinnamate	OMC; Octinoxate; Eusolex 2292

Typically, despite the volume of scientific evidence, both the plastics and cosmetics industries deny any harm from these substances. However, both the European Union and Japan have banned the use of these substances in certain items, in items like toys and baby bottles.

## Reduce Your Risk!

Because oestrogenic chemicals leach out of plastic and into our food, especially when heated, the way in which we store and cook our food is of particular importance. Cosmetics and personal care products that we put onto our skin are also another important source of xenoestrogens. Making some simple changes to the products you use and the way you store your food could make a big difference to the oestrogen load in your body.

### Reduce Your Oestrogen Load By Making Simple Changes

- ◆ Replace plastic food and beverage containers and kitchen utensils with glass, ceramic or metal where possible.
- ◆ Don't reheat your food in plastic containers or covered in plastic wrap.
- ◆ Use greaseproof or waxed paper instead of plastic wrap to cover and wrap your food, or wrap with paper before the plastic.
- ◆ Don't buy food in plastic or resin lined tins.
- ◆ Look for phthalate-free plastic toys and containers.
- ◆ Choose natural, chemical-free personal care items.
- ◆ Use glass baby bottles. If this is not possible use bottles and baby cups made from polyethylene plastic (1, 2 and 4 recycling symbols) or polypropylene (5) (Non-polycarbonate plastic bottles and cups are usually coloured, not clear.)
- ◆ Don't use non-stick and coated cooking utensils, bakeware and pans. Switch to stainless steel, glass and ceramic for the stove and oven.
- ◆ If you use polycarbonate plastics for food or drink, don't expose them to heat or harsh detergents. Don't put them in the microwave or dishwasher.
- ◆ Avoid polystyrene where possible. Its non-inflated form is used in some disposable plastic cups and bowls and in most opaque plastic cutlery.
- ◆ Buy food fresh and loose (meat, fruit, vegetables) as much as possible and even if it is placed in plastic for the trip home, transfer it to safe containers as quickly as possible.
- ◆ Buy natural or organic cosmetics and personal care products, including sunscreen. If this is not affordable or practical, use problem products sparingly, or make your own.
- ◆ Switch to organic and natural deodorants such as rock crystal.