

Parabens in deodorants and antiperspirants linked to breast cancer

What are parabens?

Parabens are a group of chemicals widely used as preservatives in food and cosmetic and therapeutic products. Some parabens are also found at low levels in nature. Paraben is the common name for this class of chemical, however, they are also known by other names such as esters of p-hydroxybenzoic acid. A list of common parabens along with their synonyms and CAS Numbers is included below.

How are products containing parabens regulated in Australia?

Deodorants and antiperspirants are regulated as cosmetics by the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) within the Australian Government Department of Health and Ageing.

Australia has one of the more stringent regulatory systems in the world for cosmetic chemicals. There are mandatory labelling requirements for cosmetics under the Trade Practices Act 1974. Ingredients must be listed on product labels, in descending order calculated either by mass or volume. This enables consumers to identify ingredients to which they may be allergic or which may cause an adverse reaction and compare various cosmetic products. Cosmetic labels must also indicate specific hazards posed by ingredients, where applicable. For example, if the chemical is listed in a schedule of the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP), legal requirements for warning or safety statements apply. Concerned consumers can ascertain which cosmetic products contain parabens by reading the product label.

The cosmetics industry has advised that many deodorant and antiperspirant products do not contain parabens as preservatives as these formulations are essentially self-preserving.

What regulatory action is proposed in response to recent studies on parabens and breast cancer?

In 2004, a UK study established the presence of intact parabens in human breast tumours (Darbre et al. 2004). The study utilised a small sample (20), no healthy breast tissue (or other tissues from affected women) was analysed and the source(s) of the parabens found in the breast tumours and routes of exposure were not identified. Subsequent studies have confirmed the ability of parabens to be absorbed systemically from topical application – paraben levels were shown to increase in blood and urine of healthy young men following topical application of parabens in cream cosmetic formulation (Janjua et al. 2007). However, this research alone is insufficient to establish that these chemicals caused the breast tumours. There is a

need for further research to establish the significance of the presence of parabens in these tumours and to establish any link between parabens in underarm cosmetics and the development of breast cancer.

Data from published sources indicate that parabens demonstrate weak oestrogenic activity in some experimental animals and that enzymes present in skin cells and subcutaneous fat cells are capable of breaking down topically applied parabens.

Following analysis of all available data, NICNAS believes that further research is required before a causal link between parabens in cosmetic products and breast cancer can be established.

Parabens in cosmetic products are considered safe to use when the products are used as directed.

Common name	Synonyms	CAS Number
benzylparaben	Benzoic acid, 4-hydroxy-, phenylmethyl ester 4-Hydroxybenzoate de benzyle benzyl 4-hydroxybenzoate Benzyl-4-hydroxybenzoat 4-hidroxibenzoato de bencilo Benzyl p-hydroxybenzoate benzoate, 4-hydroxy-, benzyl 4-(Benzyloxycarbonyl)phenol 4-Hydroxybenzoic acid benzyl ester Benzoic acid, p-hydroxy-, benzyl ester p-Hydroxybenzoic acid benzyl ester	94-18-8
isobutylparaben	Benzoic acid, 4-hydroxy-, 2-methylpropyl ester 4-Hydroxybenzoate d'isobutyle isobutyl 4-hydroxybenzoate Isobutyl-4-hydroxybenzoat 4-hidroxibenzoato de isobutilo 2-Methylpropyl p-hydroxybenzoate Benzoic acid, p-hydroxy-, isobutyl ester iso-Butyl p-hydroxybenzoate Isobutyl p-hydroxybenzoate p-Hydroxybenzoic acid isobutyl ester	4247-02-3
Butylparaben	Benzoic acid, 4-hydroxy-, butyl ester 4-Hydroxybenzoate de butyle butyl 4-hydroxybenzoate Butyl-4-hydroxybenzoat 4-hidroxibenzoato de butilo 4-Hydroxybenzoic acid butyl ester 4-hydroxybenzoesaecure-butylester benzoate, 4-hydroxy-, butyl p-oxybutylbenzoate 4-(Butoxycarbonyl)phenol Aseptofom Butyl	94-26-8

Common name	Synonyms	CAS Number
n-Propylparaben	Benzoic acid, p-hydroxy-, butyl ester Butyl p-hydroxybenzoate n-Butyl 4-hydroxybenzoate n-Butyl p-hydroxybenzoate n-Butylparabenp-Hydroxybenzoic acid butyl ester Benzoic acid, 4-hydroxy-, propyl ester 4-Hydroxybenzoate de propyle propyl 4-hydroxybenzoate Propyl-4-hydroxybenzoat 4-hidroxibenzoato de propilo 4-Hydroxybenzoic acid propyl ester 4-hydroxybenzoesaure-propylester 4-hydroxybenzoic acid propylester propyl p-hydroxybenzoate propyl paraben benzoate, 4-hydroxy-, propyl	94-13-3
Ethylparaben	Benzoic acid, p-hydroxy-, propyl ester n-Propyl 4-hydroxybenzoate p-Hydroxybenzoic acid propyl ester p-Hydroxybenzoic acid, propyl ester p-Hydroxybenzoic propyl ester Benzoic acid, 4-hydroxy-, ethyl ester 4-Hydroxybenzoate d'ethyle ethyl 4-hydroxybenzoate Ethyl-4-hydroxybenzoat 4-hidroxibenzoato de etilo 4-hydroxybenzoesaure-aethylester benzoate, 4-hydroxy-, ethyl ethylparaben ethyl parasept 4-(Ethoxycarbonyl)phenol 4-Carbethoxyphenol 4-Hydroxybenzoic acid ethyl ester Benzoic acid, p-hydroxy-, ethyl ester Ethyl p-hydroxybenzoate p-(Ethoxycarbonyl)phenol p-Carbethoxyphenol p-Hydroxybenzoate ethyl ester p-Hydroxybenzoic acid ethyl ester	120-47-8
Methylparaben	Benzoic acid, 4-hydroxy-, methyl ester 4-Hydroxybenzoate de methyle methyl 4-hydroxybenzoate Methyl-4-hydroxybenzoat 4-Hidroxibenzoato de metilo 4-Hydroxybenzoic acid methyl ester 4-hydroxybenzoesaure-methylester benzoate	99-76-3

Common name	Synonyms	CAS Number
	, 4-hydroxy-, methyl methyl p-hydroxybenzoate p-hydroxybenzoic acid methyl ester methyl paraben methyl ester of p-hydroxy benzoic acid 4-(Carbomethoxy)phenol 4-(Methoxycarbonyl)phenol Benzoic acid, p-hydroxy-, methyl ester Methylben Methylparaben p-Carbomethoxyphenol p-Methoxycarbonylphenol	

Source: National Chemical Inventories disc

Reference: Janjua NR, Frederiksen H, Skakkebæk NE, Wulf HC and Andersson A (2007) Urinary excretion of phthalates and paraben after repeated whole-body topical application in humans. Intl J. Andrology, Vol 31 (2) pp 118-130.