



Policy on the use of alkyltin

No Boots brand products or exclusives developed by Boots shall contain alkyltin compounds as a direct ingredient.

November 2008



Policy support document

The use of alkyltin

Background

The term alkyltin is used to describe a large and varied group of compounds. The group can be further divided depending on the number of alkyl groups attached directly to tin, so that the terms monoalkyltin, dialkyltin, trialkyl tin and tetra-alkyl tin are used to refer to these subgroups. Alkyltin compounds are part of a bigger group of substances known as organotin compounds, although the terms alkyltin and organotin are sometimes used interchangeably. The most common use of dialkyltin is as a heat stabiliser where they have been widely used in the production of PVC for over 40 years without apparent problems. Trialkyltin compounds have been used in wood treatment, and preservative, and tributyl tin was the main ingredient in anti-fouling paints used to coat the hulls of boats to prevent crustaceans from sticking to the hulls. It has also been used as an anti-fungal agent in textiles, wood pulp and papermill systems.

The issue

Tributyltin and triphenyltin have been associated with sex-change problems in some sea creatures, especially with the feminisation of whelks. Alkyltin compounds have been classed as toxic substancesⁱ and pressure groups want to ban their use, especially in the food chain and baby products. Industry seems to have dismissed fears of any major toxicity problems in retail products. The main environmental concern relates to the use of Tributyltin, as a biocide in paints used for treating the hulls of boats. These materials were bannedⁱⁱ for use for application in paints in 2002.

Other reports claimed that tributyl tin has been detected in the pulp of disposable nappiesⁱⁱⁱ. Manufacturers disputed this claim because there is no agreed test method and the results are seen as questionable.

Product development team action

This policy is implemented in GR 001 – General Requirements For Boots Brand Products.

Ensure that Boots brand products and exclusives developed by Boots comply with GR 001.

Implemented: March 2002 Completed: March 2003

Key questions

- **What products are be affected by this policy?**
The only products that Boots marketed that contained these materials were anti-microbial insoles, which have subsequently been reformulated. Other products that potentially contain these materials are products claiming an anti-bacterial action.
Boots is currently investigating the use of this material in packaging components.
- **What is the legal status of these chemicals?**
Some applications are restricted, mainly those involving the exposure to aquatic organisms^{iv}, but generally the use of alkyltin compounds is not regulated.

The International Maritime Organisation (IMO) agreed at its London Assembly in November 2001 that Tributyltin (TBT), a biocide used in the majority of the world's antifouling paints would be phased out between 2003 and 2008.



By **January 1, 2003**, all ships shall not apply or re-apply organotin compounds which act as biocides in anti-fouling systems.

By **January 1, 2008**, ships either shall not bear such compounds on their hulls or external parts or surfaces; or shall bear a coating that forms a barrier to such compounds leaching from the underlying non-compliant anti-fouling systems.

Commission directive 2002/62/ECⁱⁱ - 9th July 2002 formally implements the ban on organostannic paints for application or reapplication on all ships and sailing craft.

- **Are there suitable replacements for these materials?**
The use of alkyltin has declined, as new and improved materials become available. There are alternatives to alkyltin that offer comparable manufacturing properties at no extra cost.
- **What about products already in development?**
Our policy on alkyltin is contained in **GR 001 – General Requirements For Boots Brand Products** therefore Boots brand suppliers will be aware of the policy. If a product is found to contain alkyltin the product must be reformulated immediately.

Key technical information

Tributyltin TBT

Synonyms: Tin-san; Tributyltin chloride complex; Alumacoat; Bioclean; FloTin; Fungitrol; Ultrafresh; Vikol.

Formula: $C_{12}.H_{27}.Cl_3.Sn$

CAS: 56573-85-4

Dibutyl tin

Synonyms: Chlorid di-n-butylcinicity (CZECH); D.B.T.C.; Dibutyldichlorostannane; Dibutyldichlorotin; Dibutylstannium dichloride; Dibutyltin chloride; Dibutyltin dichloride; Di-n-butyltin dichloride; Dichlorodibutylstannane; Dichlorodibutyltin; Tin, dibutyl-, dichloride;

Formula: $C_8.H_{18}.Cl_2.Sn$

CAS: 683-18-1

Monobutyltin (MBT)

Synonym: Butylstannium trichloride; Monobutyltin trichloride; Tin, n-butyl-, trichloride;

Formula: $C_4.H_9.Cl_3.Sn$

CAS: 1118-46-3

Tetra-n-butyltin, TeBT

Formula: $C_{16}.H_{36}.Sn$

CAS: 1461-25-2

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ⁱ Kaloyanova, F.P. and El Batawi, M.A., Eds. Human Toxicology of Pesticides. CRC Press, Boca Raton, FL, 1991. 10-192

ⁱⁱ Commission Directive [2002/62/EC](#) 9th July 2002

ⁱⁱⁱ ENDS Daily 19 May - Greenpeace announced that tests it had commissioned showed the presence of the toxic and endocrine disrupting chemical in several brands of nappies sold in Germany.

^{iv} Commission Directive [1999/51/EC](#) 26 May 1999