126-73-8 Tri-n-butyl phosphate (TNBP)

Toxicity

The European Chemicals Agency (ECHA) has classified TNBP as a category 2 cancer hazard and a suspected carcinogen.\(^1\) TNBP was classified as a confirmed animal carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH).\(^2\)

Multiple studies have observed urinary bladder hyperplasia in rats fed TNBP over longer periods of time.\(^3,4\) *In vitro* tests have found that TNBP, or its metabolite DNBP, do not influence estrogen receptors, but DNBP has shown to act as an antagonist for androgen and glucocorticoid nuclear receptors.\(^4,5,6\)

Exposure

TNBP is primarily used as a plasticizer for cellulose esters, lacquers, plastics and vinyl resins and as an additive in fire-resistant aircraft fluids. TNBP has also been detected in floor wax, finish, paints and glues.\(^2,4,7\)

Air quality studies in Europe detected TNBP indoor and outdoor air, and in dust at childcare facilities and in homes.\(^8,9,10\) Studies have detected TNBP in commercial, household or car dust samples in the U.S., Canada, Asia and Switzerland.\(^11-13\)

TNBP has been detected in U.S., Canadian and Spanish drinking water, surface water and waste effluent, Italian drinking water and in aquatic organisms of Swedish lakes.\(^14-31\) TNBP has been detected in soil, surface and sea water in Japan.\(^32,33\) TNBP has been detected in outdoor air in Maryland, along the Niagara River, the Great Lakes Basin and in Finland.\(^34-36\) TNBP was detected in female herring gull tissue and eggs.\(^37\)

FDA total diet studies from 1980-1982 detected TNBP in various foods including, grain, fruits, vegetables, gelatin, baby food, and cereal and corn products.\(^38-40\)

TNBP has been detected through biomonitoring in blood and urine in China, Germany, and in Northern California.\(^41,43\) It has also been detected in breast milk in Sweden and in multiple locations in Asia.\(^15,44\)
References


