



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 lakes¹⁴⁻³¹. 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

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