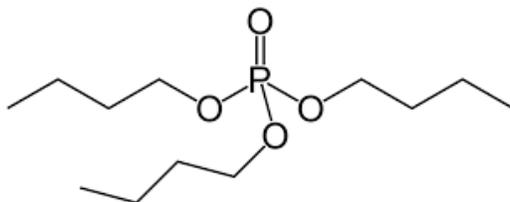


CAS 126-73-8

# Tri-n-butyl phosphate (TNBP)

(C<sub>4</sub>H<sub>9</sub>O)<sub>3</sub>PO



## Summary of Health Effects

TNBP causes cancer in animals and is suspected to cause cancer in humans.

## How is TNBP used?

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.<sup>1,2,3</sup>

## Toxicity: What are its health effects?

The European Chemicals Agency has classified TNBP as a category 2 cancer hazard and a suspected carcinogen.<sup>4</sup> TNBP was classified as a confirmed animal carcinogen by the American Conference of Governmental Industrial Hygienists.<sup>1</sup>

Multiple studies have shown urinary bladder hyperplasia in rats fed TNBP over longer periods of time.<sup>2,5</sup> *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.<sup>2,6,7</sup>

## Exposure: How can a person come in contact with it?

A person may come in contact with TNBP by breathing in contaminated air or dust, eating or drinking contaminated food or water, or from skin contact with consumer products containing TNBP.<sup>5</sup>

Air quality studies in Europe detected TNBP indoor and outdoor air, and in dust at child care facilities and in homes.<sup>8,9,10</sup> Studies have detected TNBP in commercial, household or car dust samples in the U.S., Canada, Asia and Switzerland.<sup>11,12,13</sup> 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.<sup>14-31</sup> TNBP has been detected in soil, surface and sea water in Japan.<sup>32,33</sup> TNBP has been detected in outdoor air in Maryland, along the Niagara River, the Great Lakes Basin and in Finland.<sup>34-36</sup>

TNBP was detected in female herring gull tissue and eggs.<sup>37</sup> U.S. Food and Drug Administration total diet studies from 1980-1982 detected TNBP in various foods including, grain, fruits, vegetables, gelatin, baby food, and cereal and corn products.<sup>38-40</sup> TNBP has been detected in urine through the U.S. National Health and

Nutrition Examination Survey and biomonitoring of blood and urine in China, Germany, and in Northern California.<sup>41-44</sup> It has

also been detected in breast milk in Sweden and in multiple locations in Asia.<sup>15,45</sup>

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