

**Chemical:** Triphenyl Phosphate

**CASRN:** 115-86-6

Version: Draft, July 2012

### Environmental Fate

PROPERTY/ENDPOINT		DATA	REFERENCE	DATA QUALITY
Persistence		<b>LOW:</b> The persistence of triphenyl phosphate is based on experimental data. Under aerobic conditions in a Japanese MITI ready biodegradability test (OECD Test Guidelines (TG) 301C), 90% biodegradation of triphenyl phosphate occurred after 28 days, and 93.8% triphenyl phosphate removal as dissolved organic carbon (DOC ) occurred over 20 days in an OECD 303A guideline study. TPP does not meet the criteria for very low persistence because the ready test values do not occur within a 10-day window. In loamy sand, a half-life of 37 days was observed under aerobic conditions. Triphenyl phosphate was determined to be inherently biodegradable in a river die-away test, after degrading 100% over 3 days in river water. Triphenyl phosphate may degrade under anaerobic conditions, with primary degradation of 31.1% after 3 days (89.7% after 40 days) in river sediment. However, it is not expected to significantly partition to sediment, and removal under anaerobic conditions is not anticipated to be an important fate process. Triphenyl phosphate will undergo hydrolysis under alkaline conditions, with half-lives of 3 days at pH 9; it is relatively stable to hydrolysis under neutral and acidic conditions, with half-lives of 28 days at pH 5 and 19 days at pH 7. Triphenyl phosphate is not expected to be susceptible to direct photolysis by sunlight, since it does not absorb light at wavelengths >290 nm. The atmospheric half-live of vapor-phase triphenyl phosphate is estimated to be 12 hours.		
Water	Aerobic Biodegradation	Inherently Biodegradable: Degraded 100% after 3 days in river water (River die-away test) (Measured)	OECD SIDS, 2002	Adequate, guideline study.
	Volatilization Half-life for Model River	13 days (Estimated)	EPI	
	Volatilization Half-life for Model Lake	150 days (Estimated)	EPI	
Soil	Aerobic Biodegradation	Ready Test: MITI-I (OECD TG 301C). 90% biodegradation detected after 28 days at 100 ppm in 30 ppm activated sludge (Measured)	MITI, 1998	Adequate, guideline study.

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		93.8% removal as DOC over 20 days (OECD 303A), using initial concentration of 5 mg/L with activated sludge. (Measured)	OECD SIDS, 2002	Adequate, guideline study.
	<b>Anaerobic Biodegradation</b>	Primary degradation: 31.1% removal after 3 days in river sediment; 89.7% removal after 40 days (Measured)	OECD SIDS, 2002	Adequate, guideline study.
	<b>Soil Biodegradation with Product Identification</b>			No data located.
	<b>Sediment/Water Biodegradation</b>	Primary degradation: 43.3% removal after 3 days in river sediment; 86.9% removal after 40 days (Measured)	OECD SIDS, 2002	Adequate, guideline study.
<b>Air</b>	<b>Atmospheric Half-life</b>	12 hours (Estimated)	EPI	
<b>Reactivity</b>	<b>Photolysis</b>	Not a significant fate process (Estimated)	Boethling and Mackay, 2000; Professional judgment	Triphenyl phosphate does not contain functional groups that would be expected to absorb light of wavelengths >290 nm.
	<b>Hydrolysis</b>	Half-lives at 25°C: >28 days at pH 5; 19 days at pH 7; 3 days at pH 9 (Measured)	OECD SIDS, 2002	Adequate, guideline study.
<b>Environmental Half-Life</b>		In loamy sand, observed half-lives of 37 days (aerobic) and 21 days (anaerobic) (Measured)	OECD SIDS, 2002	Adequate, guideline study.
		75 days (Estimated)	EPI, PBT Profiler	Half-life estimated for the predominant compartment, as determined by EPI and the PBT Profiler methodology.

Boethling, R., Mackay, D. *Handbook of Property Estimation Methods for Chemicals, Environmental Health Sciences*. Boca Raton: Lewis Publishers. **2000**.

EPI (*EPIWIN/EPISUITE*) *Estimations Programs Interface for Windows*, Version 4.0. U.S. Environmental Protection Agency: Washington D.C. <http://www.epa.gov/opptintr/exposure/>.

MITI. *Biodegradation and bioaccumulation data of existing chemicals based on the CSCL Japan*. Compiled under the supervision of Chemical Products Safety Division, Basic Industries Bureau, Ministry of International Trade & Industry, Japan; Chemicals Inspection & Testing Institute, Japan. Ed.; Japan Chemical Industry Ecology- Toxicology & Information Center: **1998**.

OECD SIDS (Organisation for Economic Cooperation and Development Screening Information Dataset). 2002. SIDS Initial Assessment Report for Triphenyl Phosphate. <http://www.chem.unep.ch/irptc/sids/OECDSIDS/115866.pdf>

PBT Profiler *Persistent (P), Bioaccumulative (B), and Toxic (T) Chemical (PBT)Profiler*, U.S. Environmental Protection Agency: Washington D.C. [www.pbtprofiler.net](http://www.pbtprofiler.net).