

STPP Reach Consortium
1st March 2010

Summary
of IUCLID and CSR
of submitted
joint registration dossier
for
Sodium Tri Poly Phosphate

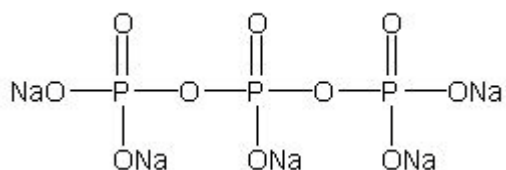
REACH IT Joint submission name:
Pentasodium Triphosphate_JS

Substance sameness

The submitted dossier covers the following substance

EC number:	231-838-7 237-004-9
EC name:	Pentasodium triphosphate Triphosphoric acid, sodium salt
CAS number (EC inventory):	7758-29-4 13573-18-7 15091-98-2
CAS number:	7758-29-4 13573-18-7 15091-98-2
CAS name:	Sodium tri polyphosphate Sodium tri polyphosphate hexahydrate
IUPAC name:	Pentasodium triphosphate
Annex I index number	
Molecular formula:	$\text{Na}_5\text{P}_3\text{O}_{10}$ $\text{H}_{5-x}\text{P}_3\text{O}_{10}\text{Na}_x$ (where x is approximately 5) $6\text{H}_2\text{O}\cdot\text{Na}_5\text{P}_3\text{O}_{10}$
Molecular weight range:	367.862 – 475.8

Structural formula:



Composition of the substance

The Joint Registration Dossier addresses the pure substance.

However, the Joint Registration Dossier, and in particular the Classification and Labelling proposals and hazard assessment, assume that substance as placed on the market conforms to:

- Substance >90% purity
- All impurities > 1% are other inorganic phosphates or other related inorganic substances, similar to the Registered substance, and which do not significantly affect its toxicological and ecotoxicological properties
- All hazardous impurities are < 0.1%

All of the above are % dry weight, after excluding water.

Granulometry

The Joint Registration Dossier, and in particular the inhalation endpoints are valid for the substance with a respirable content of 35-36% and the following range of granulometry characteristics:

- >5.5µm 64 – 81%
- 3.5 – 5.5µm 2.5 – 10.4%
- 2.0 – 3.5µm 11.4 – 13%
- 0.3 – 2.0µm 5.1 – 6.5%
- <0.3µm 0.0 – 5.2%

Summary of STPP Consortium's STPP IUCLID5 dossier February 2010

Endpoint		IUCLID conclusions	Author	Year	
	Results	X = KEY study S = Supporting study WoE = Weight of Evidence NA = No Access			
4.1 Appearance/physical state/colour		Solid, powder, white at 20°C and 1013 hPa			
			X	Woolley	2008
			S	Lewis	1993
			S	Watt	1997
			S	Cascieri	1986
4.2 Melting point/freezing point		622°C (decomposes at 620°C)			
	622°C		WoE	Lewis	1993
	622°C		WoE	Greenfield	1975
	622°C		WoE	Lide	2009
	622°C		WoE	Schrödter	2007
4.3 Boiling point		Decomposes, so testing for boiling point not required			
4.4 Density		Relative density 2.55 (at 21.0 ± 0.5°C).			
	Relative density 2.55 at 21.0 ± 0.5°C		X	Woolley	2008
	2.62 and 2.57 / 2.12 for hydrate.		S	Greenfield	1975
4.5 Particle size			X	Jackson	1988
4.6 Vapour pressure		Not required			
4.7 Partition coefficient		Not applicable			
4.8 Water solubility		ca. 14.5 - 14.7 g / 100 ml (25°C)			
	148 g/L at 20.0 ± 0.5°C		X	Fox	2009
	20g/100 ml at 20°C, 86.5g/100 ml at 100°C		S	Budavari	1996
	Solubility curve as a function of temperature		S	Van Wazer	1958
	14.5 g / 100 ml (25°C), 32.5 g / 100 ml (100°C)		S	Lide	2009
	Water solubility at range of temperatures: 12.96 wt. % Na ₅ P ₃ O ₁₀ (25°C)		S	Linke	1965
	Solubility hexahydrate: 14.7 g Na ₅ P ₃ O ₁₀ / 100 g H ₂ O (20°C)		S	Ullmanns	1979
	14 g / 100 g (20°C), 14.5 g / 100 cc (25°C), 16 g / 100 g (40°C), 32.5 g / 100 cc (100°C)		S	Isnard	1991
	12.7 — 16.4 % wt/wt at 20°C		S	Greenfield	1975
4.9 Solubility in organic solvents/fat solubility		Not required under REACH			
4.10 Surface tension		Not applicable			
4.11 Flash point		Not required			
4.12 Auto flammability		Not applicable			
4.13 Flammability		Not applicable			
4.14 Explosiveness		Not applicable			
4.15 Oxidising properties		Not applicable			

4.17 Stability in organic solvents etc		Not applicable			
4.18 Storage stability and reactivity to container material		Not required under REACH			
4.19 Stability: thermal, sunlight, metals		Not required under REACH			
4.20 pH		Not required under REACH			
4.21 Dissociation constant		9.52 - 9.55 at 25°C			
	pKa 9.52 and 9.55 @25°C ; 9.61 and 9.62 @ 40°C		X	Wolhoff	1959
	60-86% dissociation in 0.02 - 0.0002 mole/L, increased dissociation in presence of Ca++ ions		S	Batra	1965
4.22 Viscosity		Not applicable			
5.1.2 Hydrolysis		Hydrolysis data is available in pure solutions, surface water samples, sewage, soils, sediments. Half life in surface waters 2-8 days ; in sewage of 3-7 hours ; in soil 0.5-3 days.			
	Near complete hydrolysis in lake water, sterilised lake water, sterile culture in 100 - 300 hours		S	Clesceri	1965
	Half life of 28-270 days in sterile solution depending on pH, temperature		X	Zinder	1984
	Approx half of condensed phosphate entering a trickling filter sewage treatment plant was hydrolysed to orthophosphate		S	Finstein	1967
	Rate of hydrolysis in distilled water and natural surface water samples 0.02 - 0.5 mgP/l depending on temperature, Ca and Mg ions, biological activity		S	Shannon	1966
	Little hydrolysis in washing machine and dishwasher. Half life of 3 and 7 hours in raw sewage at 20°C and 15°C with polyphosphate undetectable after 24 hours.		S	Halliwell	2001
	Half life of 0.4 - 19 days in unfiltered surface water samples at 29°C, 1 -72 days in filtered samples - that is slower hydrolysis in filtered samples / hydrolysis is related to biological activity.		S	Engelbrecht	1959
	Half life of 1.8 days in soils, complete hydrolysis after 4 days.		S	Blanchar	1969a
	Half life of <0.5 - 3 days in soils, complete hydrolysis after 7 days.		S	Blanchar	1969b
	Hydrolysis rates slower at 70°C than at 100°C, slower with 1% sodium hydroxide than in pure water		S	Bell	1947
	Half life in sediment samples at 25°C: 1.2-2.5 days in first 8 days, and 2-4.3 days for 16 days		S	Blanchar	1976
	Hydrolysis by corn roots increases with temperature (up to 50°C enzyme function limit), is optimal at pH 5-6, and is significantly reduced for sterilised roots.		S	Dick	1986
	Rate constants for hydrolysis of tripolyphosphate were 2.5E-2 mmoles/hour and 5.42 E-3 mmoles/hour by corn and soybean roots respectively		S	Subbarao	1977

	A mathematical equation is developed to explain the reaction order of the hydrolysis in soil		S	De Jager	1998a
	Hydrolysis in water: Arrhenius equation E_a 5.57 kJ.mole ⁻¹		S	De Jager	1998b
	Rapid hydrolysis in neutral soils, slower in acid soils.		S	El-Reweiny	1976
	40-70% hydrolysis in soil in 120 hours at 5°C, 80-95% at 35°C		S	Chang	1977
	Hydrolysis is accelerated by presence of calcium or magnesium		S	Inman	2001
	Hydrolysis rates (x10 ⁻⁵ /min) in incubated soils: aerobic conditions 10-17 for first c. 2 days, then 1-5; anaerobic conditions 7-17 then 1-5.		S	Dick	1986
	Hydrolysis shown to increase in presence of cellular material from plants, algae, fungus, bacterium		S	Karl-Kroupa	1957
	Method for analysis of condensed phosphates in waste waters.		S	Halliwell	1996
	After a washing machine cycle: 23-30% of STPP is precipitated or hydrolysed. In ageing, hydrolysis constant of $K = 2.4 \times 10^{-2}$ /day		X	Galliot	1985
	Half life in river water: 240 days at 5°C, 55 days at 20°C		S	Smith	1956
	Seaweeds tested can hydrolyse tripolyphosphate		S	Eppley	1962
	First-order rate constants for STPP hydrolysis at different pH and temperature (60°C, 90°C)		S	Van Wazer	1955
	First-order rate constants for STPP hydrolysis at different pH and temperatures and effects of added cations.		S	Greenfield	1975
	Pyrophosphate and triphosphate apparently hydrolyse independently of each other		S	Crowther	1965
	This study shows that hydrolysis of STPP is biologically accelerated and concludes that relatively small amounts of condensed phosphates will enter surface waters where wastewater receives secondary treatment.		S	Heinke	1969
	Data in this study shows that, in seawater at pH 8, TPP presents a 48% hydrolysis after 7 days and 94% hydrolysis after 29 days.		S	Lake	1977
	This study shows evidences that tripolyphosphate is hydrolysed in the presence of kaolinite.		S	Lyons	1964
	Hydrolytic degradation of sodium tripolyphosphate in liquid detergent formulations		S	Bennet	1957
	Degradation in detergent slurries		S	Shen	1966
5.2 Biodegradation		Not applicable			

5.2.1 Biodegradation in water: screening tests		Not applicable			
5.2.2 Biodegradation in water and sediment: simulation tests					
	Five green algae species hydrolyse and assimilate STPP in sewage, with 7-59% uptake after 36 hours in a flow system.		S	Davis	1967
	Half life of 1.6 - 2.6 days in river sediments		S	Blanchar	1974
	Half life in river sediments of 1.6 - 2.2 days when added as STPP solution and 2.8 days when added as calcium precipitate.		S	Riego	1974
	Six blue-green algae species hydrolyse and assimilate STPP in sewage, with 3-97% uptake after 36 hours in flow system.		S	Davis	1968
5.2.2 Biodegradation in soil		Not applicable			
5.3 Bioaccumulation		Not applicable			
5.3.1 Bioaccumulation: aquatic / sediment					
	This study shows evidences that sodium tripolyphosphate (STPP), called TPP in this publication, is naturally eliminated in cod and beef muscle, and therefore it supports the low tendency of STPP to bioaccumulate		S	Sutton	1973
5.4 Transport and distribution		Not applicable			
5.4.1 Adsorption / desorption		Koc = 142.44 µg/g and Log Koc = 2.15			
	Test using oven-dried soil : Koc = 142.44 µg/g and Log Koc = 2.15		X	Blanchar	1969
	Almost all STPP adsorbed to different clays in 2 hours. 40-60% was ads		S	Lake	1977
5.6 Additional information on environmental fate and behaviour					
	Pan-European generic eutrophication risk assessment model		S	De Madariaga	2007 (1)
	Pan-European generic eutrophication risk assessment : model implementation		S	De Madariaga	2007 (2)
	phosphate fate in washing machines		S	Galliot	1985
	Review		S	Isnard	1991
	STPP stimulates release of extracellular polymeric substances from sewage sludge		S	Wawrzynczyk	2007
	Immobilisation of heavy metals: Use of STPP to reduce uranium contamination of groundwater		S	Wellman	2007
	Sequestration of calcium and magnesium by STPP		S	Irani	1962

	Sequestration of calcium by STPP		S	Irani	1960
	Review		S	Van Wazer	1958
	Mobilisation of metals in surface waters: no significant mobilisation or uptake by chironomids		S	Barica	1973
	Mobilisation of metals in river waters: no significant mobilisation by STPP, lower than other chelating agents		S	Samanidou	1990
	Review of natural occurrence of polyphosphates		S	Kulaev	1983
	Natural occurrence of STPP in yeast		S	Kornberg	1955
	Natural bacterial enzyme from E. coli produces STPP from other biological phosphate compounds		S	Kornberg	1958
	Natural bacterial enzyme from C. tetanomorphum produces STPP from other biological phosphate compounds		S	Peterkofsky	1963
	Chelation of cadmium with STPP reduced its oral toxicity to mice. No toxicity from single dose of STPP		S	Andersen	1988
	This study shows evidences that tripolyphosphate is hydrolysed by biological enzymes and therefore it supports the low tendency of STPP to bioaccumulate		S	DeWald	1992
	STPP reduced uptake of cadmium dosed orally to mice.		S	Engström	1984
	This study shows evidences that tripolyphosphate is hydrolysed by biological enzymes and therefore it supports the low tendency of STPP to bioaccumulate.		S	Heppel	1962
	This study shows evidences that polyphosphates are hydrolysed by biological enzymes.		S	Lorenz	1994
	This study shows evidences that tripolyphosphate is hydrolysed by biological enzymes and therefore it supports the low tendency of STPP to bioaccumulate		S	Pepin	1986
	This study shows evidences that tripolyphosphate is hydrolysed by biological enzymes and therefore it supports the low tendency of STPP to bioaccumulate.		S	Reddy	1987
	the effect of household detergents on the alum coagulation of turbid waters and to a determination of the rate at which hydrolysis of the phosphate component may occur in waste waters and streams		S	Smith	1956
6.1.1 Short-term toxicity to fish		Acute toxicity to fish 1850 mg/l			
	Acute toxicity zebra fish (Danio rerio) 1850 mg/l at pH8		X	Dion	1985
	CL0 (highest tested concentration without effects) for trout = 500 mg/l		S	Kastner	1983

	TLm (median tolerance limits), up to 96 hours: 140 in soft and 1,300 in hard water (mg/l)		S	Henderson	1959
	Killifish (<i>Oryzias latipes</i>) LC50 > 1000 mg/l at 10°C, 20°C, 30°C for 24 and 48h		S	Tsuji	1986
6.1.2 Long-term toxicity to fish		NOED not established, LOEC = 5 mg/l			
	Teratogenic effects on zebra fish (<i>Danio rerio</i>) embryos at 96 hours. 8% mortality and 48% mortality at 5 mg/l	Not long term but placed here by IUCLID setup and REACH	S	Sinha	2000
6.1.3 Short-term toxicity to aquatic invertebrates		EC50 > 71 mg/l			
	70.7 mg/L < EC50 48 h < 101.3 mg/L (exposure concentrations)		S	Pandard	2004b
	48 h EC50: 892.0 mg/L (initial measured concentrations)		S	Pandard	2004a
	Acute <i>Daphnia</i> toxicity (24h) = 1150 mg/l		S	Dion	1985
	LC50 (48h) <i>Daphnia magna</i> > 100 mg/l		X	Vaishnav	1991
	CL0 (highest tested concentration without effects) for <i>Daphnia</i> = 1000 mg/l		S	Kastner	1983
	48h EC50 for Cladoceran <i>dubia</i> = 277 mg/l		S	Warne	1999
	No negative effect on <i>Lepadella patella</i> (rotifer) for 90 hours at 25 and 50 mg/l		S	Wurmbach	1966
6.1.4 Short-term toxicity to aquatic invertebrates		Not required			
6.1.5 Toxicity to aquatic algae and cyanobacteria		Effects shown in studies are considered to be related to nutrient depletion not toxicity			
	EC50 (90 hours) of 69 and 160 mg/l for freshwater alga (biomass, growth rate) but this be due to STPP complexing nutrients out of the growing medium		X	Hershcke	1985(1)
	EC50 (90 hours) of >900 mg/l for seawater alga (biomass, growth rate)		X	Hershcke	1985(2)
	EC50 for 3 species of freshwater algae: 25 - 120 mg/l		S	Yamane	1984
6.1.8 Toxicity to other aquatic organisms		Toxicity to shellfish may be due to interference with calcium phosphate shell chemistry			
	Freshwater snail and estuarine clam: increased mortality and reduced shell growth at 15 - 150 mg/l		S	Bernhardt	1985
	Oyster larvae LC50 = < 15 ppm.		S	Kunigelis	1987

	Oyster, freshwater snail and (2) estuarine clams: increased mortality and reduced shell growth at 15 - 75 mg/l		S	Wilbur	1986
6.2 Sediment toxicity		Not required			
6.3.1 Toxicity to soil macroorganisms except arthropods		Equilibrium partitioning used in CSR			
6.3.2 Toxicity to terrestrial arthropods		Not required under REACH			
6.3.3 Toxicity to terrestrial plants		Equilibrium partitioning used in CSR			
6.3.4 Toxicity to soil microorganisms		Equilibrium partitioning used in CSR			
6.3.5 Toxicity to birds		Not required			
6.6 Additional ecotoxicological information					
	DL50 for amoebae > 300 mg/l. DL50 for toad tadpoles: Bufo = 450 mg/l and Xenopes 300 mg/l, but some effects at lower concentrations for all phosphates. No impact on cellulose decomposition microbes at tested concentrations.		S	Wurmbach	1966
7.1 Toxicokinetics, metabolism and distribution		STPP is hydrolysed to ortho- or pyro- phosphates			
7.1.1 Basic toxicokinetics					
	STPP injected intravenously in rabbits was hydrolysed and orthophosphate excreted		WoE	Gosselin	1952(a)
	STPP injected intravenously in rats was hydrolysed and orthophosphate excreted		WoE	Gosselin	1952(a)
	Natural presence of triphosphate in cells		WoE	Bo	1992
	Polyphosphates do not cross intestine wall but are hydrolysed to orthophosphates or pyrophosphate which can be absorbed.		WoE	Ebel	1958
	Excised rat intestine sections were able to substantially hydrolyse STPP in 60 minutes at 37°C		WoE	Ivey	1977
	Polyphosphates injected in rats and rabbits were hydrolysed		WoE	Gosselin	1955
7.2 Acute Toxicity		LD50 > 2000 mg/kg bw oral			
		LD50 > 4640 mg/kg bw dermal			
		LD50 > 390 mg/m3 air inhalation			
7.2.1 Acute toxicity: oral					
	Rat : LD50 > 2000 mg/kg bw		X	Watt	1997
	Rat: LD50 = 5010 mg/kg bw		S	Bullock	1971
	Rat: LD50 = 4100 mg/kg bw		S	Kastner	1983
	Rat: LD50 = 3120 and 3440 mg/kg bw		S	Younger	1953
	Rat: LD50 = 6500 mg/kg bw		S	Smyth	1969
	Rat: tests at 2000 - 3980 mg/kg bw. LD50 not derived.		S	Birch	1976

	Rat: Tests at 2530 – 6940 mg/kg bw. LD50 4750 mg/kg bw		NA	Gaynor	1973
	Rat: Tests at 1130 – 4330 mg/kg bw. LD50 2300 mg/kg bw		NA	Gaynor	1975
	Rat: Tests at 4800 – 13200 mg/kg bw. LD50 6340 mg/kg bw		NA	Fulfs	1977
	Mouse: Tests at 2500 – 5000 mg/kg bw. LD50 3150 mg/kg bw		NA	Saydar	1953
	Rat: Tests at 1500 – 5000 mg/kg bw. LD50 3000 mg/kg bw		NA	Reller	1956
	Dog: Tests at 50 – 800 mg/kg bw.		NA	Hollander	1975
	No data		NA	Suedkamp	1970
	Mouse: Tests at 1000 – 4000 mg/kg bw LD50 3100 mg/kg bw		NA	Rubenkoenig	1982
7.2.2 Acute toxicity: inhalation					
	Rat 4 hours: LC50 > 390 mg/m ³ air		NA	Jackson	1988
7.2.3 Acute toxicity: dermal					
	Rabbit: LD50 24 hours: > 4640 mg/kg bw		X	Bullock	1971
7.2.4 Acute toxicity: other routes					
	Subcutaneous injection, Mouse: no effect at one dose 90 µmole/kg bw		S	Anderson	1982
	Interperitoneal injection, rat: LD50 = 135 mg/kg bw		S	Gosselin	1952(b)
	Review of interactions between cadmium toxicity and STPP and other chelating agents.		S	Anderson	1984
7.3 Irritation / corrosion			Not classified as skin or eye irritant		
7.3.1 Skin irritation / corrosion					
	Rabbit, 72 hours: no skin irritation		X	Freeman	1989
	Rabbit, 72 hours, abraded and non abraded skin. Slightly irritating (slight erythema or edema in a few cases)		S	Becker	1975
	Draize skin irritation rabbits. Overall mean 16, PDII 4. Moderately irritating.		S	Bullock	1971
	Rabbit, guinea pig, human, intact and abraded skin: Negligible irritation.		S	Nixon	1974
	Rabbit: no skin reaction below 5% concentration solution.		S	Roth	2002/1966
	Rabbit: negligible or slight irritation.		S	Nixon	1990
	Rabbit, intact and abraded skin: mean irritation scores 2.9, 3.6, 3.6. Not irritating.		S	Younger	1962
	Rabbit, intact and abraded skin Mild irritant		NA	Frank	1973

	Rabbit, intact and abraded skin Moderate irritant		NA	Benke	1977
	Rabbit, intact and abraded skin Mild irritant		NA	Frank	1973
7.3.2 Eye irritation					
	Rabbit. MMTS 0-12. mildly irritating if eye not washed afterwards, non-irritating if eye washed		X	Cascieri	1986
	Rabbit. Mean overall irritation: 2-9. Slightly irritating.		S	Becker	1975
	Rabbit. Conjunctivitis in 2 out of 6 rabbits. Not Irritating.		S	Bullock	1971
	Rabbit. No eye reactions observed. Not irritating at tested concentrations: 1% and 10%.		S	Roth	2002/1966
	Rabbit: eye irritation fully reversible in 5 days for solution application, not fully reversible in 7 days for powder application (slight redness and trace edema remained)		S	Younger	1962
	Rabbit. Slightly irritating		NA	Benke	1977
7.4 Sensitisation		Not a skin sensitiser			
	LLNA test mouse. Not sensitiser.		X	Bradshaw	2008
	Modified Buehler test The results showed that the test substance did not induce skin sensitisation		S	P&G (WTDS 50865)	1999
	Human patch test There was no evidence of skin sensitisation in any of the subjects who completed the test.		S	P&G (WTDS 43272 41312, 42252, 42514)	1968, 1997, 1998, 1999
7.5 Repeated dose toxicity		NOAEL 225 mg/kg/day bw			
7.5.1 Repeated dose toxicity: oral					
	Rat, 28 day oral. No mortality. Body weight and kidney weight changes at 10% STPP in diet. Kidney inflammation at 2% and 10% in diet.		X	Hodge	1956
	Dogs 1 month oral dose, 5 months observation. NOAEL 100 mg/kg/day bw		X	Hodge	1956
	Rat: 2 year chronic oral toxicity study. Expert Report submitted with IUCLID. NOEL derived = at highest dose = 0.5% in diet = 225 mg/kg/day.		X	Hodge	1959
Subchronic 90-day oral toxicity study		Not required			
Repeated dose Toxicity : inhalation (28 day)					
	Guinea pig, rat and monkey NOAEL Guinea pig 12.6 µg/L NOAEL Rat and monkey >342.8 µg/L No hystopathology		NA	Hiddemen	1972
	Due to the effect observed in the study by Hiddemen and the lack of hystopathological data, a 90 day study has been proposed.				
7.6 Genetic toxicity		No evidence of genetic toxicity in vivo or in vitro			

	S. tiphimurium: no effect at up to 10 mg/plate.		S	Ishidate	1984
	S. tiphimurium, E. coli: no effect at up to 5 mg/plate.		X	Shimizu	1985
	Hamster lung fibroblasts: negative without metabolic activation for 3 test concentrations (not specified).		X	Ishidate	1984
	In vitro mammalian chromosome aberration: negative without metabolic activation.		S	Ishidate	1988
	Human embryonic lung culture chromosome aberration: no effect at up to 10 µg/ml		S	Weir	1975
	STPP inhibited human NK- and CTL-mediated cyto-toxicity		S	Baijpal	1993
8.4.3 In vitro gene mutation study in mammalian cells		Not required			
7.6.2 Genetic toxicity in vivo					
	Rat in vivo, chromosome aberration, bone marrow cells acute (1 dose) 2500 mg/kg and subacute (5 days) 1000 mg/kg/day. No significant effect.		X	Weir	1975
	Rats orally dosed as above. Non mutagenic for 2 intraperitoneally injected indicator organisms.		S	Weir	1975
	Rats mated after oral doses as above. No significant trends indicative of dominant lethality.		S	Weir	1975
7.7 Carcinogenicity					
	Rat: 2 year chronic oral toxicity study. Expert Report submitted with IUCLID. No increase in tumours and no evidence of carcinogenic effect at highest dose = 0.5% in diet = 225 mg/kg/day.		X	Hodge	1956
	Rat: 2 year chronic oral toxicity study. No increase in tumours and no evidence of carcinogenic effect at highest dose = 10% in diet		S	Hodge	1960
	Rat: 2 year chronic oral toxicity study. No increase in tumours and no evidence of carcinogenic effect at highest dose = 50 000ppm in diet		S	Hodge	1960
7.8 Toxicity to reproduction		NOAEL = 141 000 mg/kg bw /day			
	Rat: 2 year chronic oral toxicity study. Expert Report submitted with IUCLID. No adverse effects on fertility, reproductive performance, offspring viability, offspring survival and offspring body weight at 0.5% in diet = 225		X	Hodge	1956

	mg/kg/day				
	Rat: 2 year chronic oral toxicity study. No adverse effects on fertility, reproductive performance, offspring viability, offspring survival and offspring body weight at 0.5% in diet		X	Hodge	1960
	Rat: 2 year chronic oral toxicity study. No adverse effects on fertility, reproductive performance, offspring viability, offspring survival and offspring body weight at 0.05% in diet		X	Hodge	1960
7.8.2 Developmental toxicity / teratogenicity		Not required			
	Rabbit: NOEC teratogenicity: 250 mg/kg bw/day		X	Morgareidge	1973(a)
	Mouse: NOEC teratogenicity: 238 mg/kg bw/day		X	Morgareidge	1973(b)
	Rat NOEC teratogenicity: 170 mg/kg bw/day		X	Morgareidge	1973(b)
	Hamster: NOEC teratogenicity: 141 mg/kg bw/day		X	Morgareidge	1973(b)
7.9.3 Specific investigations: other studies					
	STPP shown to be an effective emetic (inducing vomiting) in dogs		S	Weaver	1969
7.10.4 Sensitisation data (humans)					
	Skin patch test, humans: no sensitisation		S	Motolese	1993
7.12 Additional toxicological information					
	Antimicrobial effect: STPP showed to slow bacterial growth and sugar metabolism (<i>Streptococcus mutans</i>) and reduce tooth carie development and plaque deposition in hamsters.		S	Shibata	1981
	Antimicrobial effect: STPP inhibited growth sporulation and spore germination of <i>Clostridium perfringens</i> (food poisoning bacteria)		S	Akhtar	2008
	Bacterial growth inhibition		S	Firstenberg-Eden	1981
8 Analytical methods					
	Analytical method for measuring ortho-, pyro- and tripolyphosphate in waste waters		S	Halliwell	1996
	Analytical method for measuring ortho-, pyro- and tripolyphosphate in waste waters		S	Jolley	1998