

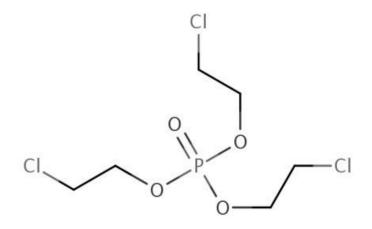
December 2023 Office of Chemical Safety and Pollution Prevention

# Draft Risk Evaluation for Tris(2-chloroethyl) phosphate (TCEP)

# **Systematic Review Supplemental File:**

Data Quality Evaluation and Data Extraction Information for Physical and Chemical Properties

# CASRN: 115-96-8



December 2023

This supplemental file contains information regarding the data extraction and evaluation results for data sources that were considered for the Supplement to the Risk Evaluation for Tris(2-chloroethyl) phosphate (TCEP) and that underwent systematic review. EPA used the TSCA systematic review process described in the *Draft Systematic Review Protocol Supporting TSCA Risk Evaluations for Chemical Substances* (also referred to as the '2021 Draft Systematic Review Protocol'). The systematic review steps are further described in Appendix C of the Supplement to the Risk Evaluation for Tris(2-chloroethyl) phosphate (TCEP). EPA conducted data extractions and data quality evaluations based on author-reported descriptions and results; additional analyses (*e.g.*, statistical analyses) potentially conducted by EPA are not contained in this supplemental file. Additionally, the overall quality determination (OQD) for each reference represents the data as a whole for each study, and not for individual metric domains within a study.

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6967359	Okeme, J. O., Rodgers, T. F. M., Parnis, J. M., Diamond, M. L., Bidleman, T. F., Jantunen, L. M. (2020). Gas chromatographic estimation of vapor pressures and octanol-air partition coefficients of semivolatile organic compounds of emerging concern. Journal of Chemical and Engineering Data 65(5):2467-2475.	147
10064224	Yaman, B., Dumanoglu, Y., Odabasi, M. (2020). Measurement and modeling the phase partitioning of organophosphate esters using their temperature-dependent octanol-air partition coefficients and vapor pressures. Environmental Science & Technology 54(13):8133-8143.	148
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Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:		Fable 1: Chemicals of Concern and Associa	ted Chemical I	nformation. PACs.
OECD Harmonized Template:	Physical Form	or State		
HERO ID:	3981013			
			EXTRACTIO	N
Parameter		Data		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; not specified; not specified		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,		NR; NR; NR; NR Notes: NR		
Results Value	-	liquid		
Results Details		not specified		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance			-	
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review; specific source not reported.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	tv Determi	nation	High	

\* Related References: primary reference not specified but include CRC (2009), HSDB (no date), Merck (2006), SAX (2012)

Study Citation: OECD Harmonized	ECB, (2009). E Physical Form of	uropean Union risk assessment report: Trist or State	(2-chloroethyl	) phosphate, TCEP. 213.
Template: HERO ID:	3809216			
		I	EXTRACTIO	N
Parameter		Data		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; experimental; None		
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; Liquid; NR Notes: NR		
Results Value		Liquid		
Results Details		at 20 °C		
		]	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	ty Determi	nation	High	

Study Citation: OECD Harmonized	IPCS, (1998). F Physical Form of	Flame retardants: Tris(chloropropyl) phospor State	phate and tris(2-	chloroethyl) phosphate.
Template: HERO ID:	79051			
			EXTRACTIO	N
Parameter		Data		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	no; not specified; NA		
Solvent, Reactivity, Storage	e, and Stability	NA; NA; NA; NA		
Radiolabel, Source, State, a	and Purity	NA; NA; liquid; NA Notes: NA		
Results Value		colorless to pale yellow liquid		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown sec- ondary source without peer-review and references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	Low	

Study Citation: OECD Harmonized Template:	U.S. EPA, (201 Physical Form of		Formulation and	Initial Assessment. Chlorinated Phosphate Ester Cluster Flame Retardants.
HERO ID:	4565574			
			EXTRACTIO	N
Parameter		Data		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	Not Reported; Not Reported; Not Reported	ed	
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	None; NR; liquid; NR Notes: slight odor		
Results Value		liquid		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	High	

Study Citation: OECD Harmonized	NLM, (2015). H Physical Form	PubChem: Hazardous Substance Data Bank: or State	Tris(2-chloro	bethyl) phosphate, 115-96-8.
Template:	-,			
HERO ID:	5926126			
		E	XTRACTIO	N
Parameter		Data		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
Results Value		liquid		
Results Details		Not Reported		
		E	VALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

\* Related References: Lewis, R.J. Sr. 2007. Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY. P. 1288.

Study Citation: OECD Harmonized		PubChem: Hazardous Substance Data Bank	: Tris(2-chloro	ethyl) phosphate, 115-96-8.
Template:	Physical Form	or State		
HERO ID:	5926126			
		1	EXTRACTIO	N
Parameter		Data		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
Results Details		clear, transparent liquid		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	(Method Objectivity) Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

\* Related References: Lewis, R.J. Sr. 2007. Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY. P. 1288.

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Physical Form or State

HERO ID: 5926126 Table: 2 of 2

Study Citation:		PubChem: Hazardous Substance Data Ba	ank: Tris(2-chloro	bethyl) phosphate, 115-96-8.
OECD Harmonized Template:	Physical Form of	or State		
HERO ID:	5926126			
	5720120			N
Parameter		Data	EXTRACTIO	N
rarameter		Data		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate	2	
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
Results Details		low odor		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabi	lity			
	Metric 3:	Reliability/Unbiased	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 4:	(Method Objectivity) Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
	-			
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	High	

\* Related References: Weil, E.D. 2001. Flame retardants, phosphorus. Kirk-Othmer Encyclopedia of Chemical Technology. New York, NY: John Wiley and Sons, Inc.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	DOE, (2016). T Melting Point	able 1: Chemicals of Concern and Association	ated Chemical I	nformation. PACs.
HERO ID:	3981013			
			EXTRACTIO	N
Parameter		Data		
Melting Point		-55 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; not specified; none		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Results Details Methods		not reported		
Standard Deviation Results	3	not reported		
Results Details		not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review; specific source not reported.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	High	

\* Related References: primary reference not specified but include CRC (2009), HSDB (no date), Merck (2006), SAX (2012)

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	ECB, (2009). E Melting Point	uropean Union risk assessment report: Tr	is(2-chloroethyl	) phosphate, TCEP. 213.
HERO ID:	3809216			
			EXTRACTIO	N
Parameter		Data		
Melting Point		< -70 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	No; Experimental; not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Results Details Methods		Not reported		
Standard Deviation Results	3	Not reported		
Results Details		Not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	ty Determi	nation	High	

\* Related References: Primary source Akzo Nobel 2000.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	Environment Ca Melting Point	anada, (2009). Screening Assessment for t	the Challenge: E	thanol, 2-chloro-, phosphate (3:1) (Tris(2-chloroethyl) phosphate [TCEP]).
Template: HERO ID:	5160070			
			EXTRACTIO	N
Parameter		Data		
Melting Point		-5560 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Results Details Methods		NR		
Standard Deviation Results	8	NR		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	High	

\* Related References: Cites: European Chemicals Bureau, IUCLID dataset 2000 (HEROID 5235795)

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	NLM, (2015). I Melting Point	PubChem: Hazardous Substance Data Bank	: Tris(2-chloro	ethyl) phosphate, 115-96-8.
Template:				
HERO ID:	5926126			
		]	EXTRACTIO	N
Parameter		Data		
Melting Point		-55 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and O	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR		
Results Details Methods		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
		]	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available, peer-reviewed database that provides references to a recognized data collection.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	High	

\* Related References: Toscano, W.A., Coleman, K.P. 2012. Esters of Carbonic and Orthocarbonic Acid, Organic Phosphorous, Monocarboxylic Halogenated Acids, Haloalcohols, and Organic Silicon. Patty's Toxicology. 6th Ed. New York, NY: John Wiley & Sons, Inc.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	OECD, (2012). SIDS initial assessment profiles agreed in the course of the OECD HPV chemicals programme from 1993 to 2011. Melting Point					
Template: HERO ID:	9641572					
			EXTRACTION			
Parameter		Data				
Melting Point		< -70 °C				
CASRN and Test Material		115-96-8; tris(2-chloroethylphosphate)				
Confidentiality, Type, and		None; Experimental; NR				
Solvent, Reactivity, Storage	•	NR; NR; NR; NR				
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR				
Results Details Methods		NR				
Standard Deviation Results	6	Not Reported				
Results Details		Not Reported				
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 1: Substance						
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.		
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g. if the physical state is described as a liquid, the substance should have a melting point below 25 °C and a boiling point above 25 °C) or behaviors.		
Domain 2: Test Reliabil	ity					
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome		
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.		
Domain 3: Other						
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.		
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.		
<b>Overall Quali</b>	tv Determi	nation	Medium			

\* Related References: No citation reported.

Tris(2-chloroethyl) phosphate (TCEP)

HERO ID: 5926273 Table: 1 of 2
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Study Citation: OECD Harmonized	RSC, (2019). C Melting Point	ChemSpider: Tris(2-chloroethyl) phosphate.		
Template:	c			
HERO ID:	5926273			
			EXTRACTION	
Parameter		Data		
Melting Point		-51 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Results Details Methods		Not Reported		
Standard Deviation Results	8	Not Reported		
Results Details		Not Reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	Data is from a publicly available secondary source with references to non-peer reviewed sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	Medium	

\* Related References: LabNetwork

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	RSC, (2019). C Melting Point	hemSpider: Tris(2-chloroethyl) phosphate		
Template:	e			
HERO ID:	5926273			
			EXTRACTION	
Parameter		Data		
Melting Point		-51 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and		None; Experimental; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Results Details Methods		Not Reported		
Standard Deviation Results	8	Not Reported		
Results Details		Not Reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	Data is from a publicly available secondary source with references to non-peer reviewed sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	Medium	

\* Related References: Parchem-fine & specialty chemicals

Study Citation:	Toscano, W. A., Coleman, K. P. (2012). Esters of carbonic and orthocarbonic acid, organic phosphorous, monocarboxylic halogenated acids, haloalcohols,						
OECD Harmonized	and organic silicon. 353-424. Melting Point						
Template:	-						
HERO ID:	5332876						
			EXTRACTIO	N			
Parameter		Data					
Melting Point		= -55 - °C					
CASRN and Test Material		115-98-6; Tris(2-chloroethyl) phosphate					
Confidentiality, Type, and	Guideline	None; not specified; Not reported					
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR					
Radiolabel, Source, State, and Purity		NR; NR; NR; NR Notes: NR					
Results Details Methods		Not reported					
Standard Deviation Results	5	Not reported					
Results Details		Melting point = $-55 ^{\circ}C$					
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased			
		(Method Objectivity)		towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.			
Domain 3: Other							
	Metric 5:	Databases	High	The information is from a data collection prepared by experts in the field.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			
<b>Overall Quali</b>	tv Determi	nation	High				

5574	Data	EXTRACTIO	
5574		EXTRACTIO	N
		EXTRACTIO.	
			1
	-55 °C		
	115-96-8; Tris(2-chloroethyl) phosphate		
ine	none; Not Reported; Not Reported		
Stability	NR; NR; NR; NR		
rity	None; NR; NR; NR		
	Not Reported		
	Not Reported		
	Not Reported		
		EVALUATIO	 N
	Metric	Rating	Comments
tric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
tric 2:	Appropriateness	High	Rating of this factor is not applicable to this kind of information.
tric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
tric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
tric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
tric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
	tric 1: tric 2: tric 3: tric 4: tric 5: tric 6:	rity None; NR; NR; NR Not Reported Not Reported Not Reported Metric tric 1: Representativeness tric 2: Appropriateness tric 3: Reliability/Unbiased (Method Objectivity) tric 4: Reliability/Analytical Method	rity None; NR; NR; NR Not Reported Not Reported Not Reported Not Reported Metric Rating tric 1: Representativeness High tric 2: Appropriateness High tric 3: Reliability/Unbiased Medium (Method Objectivity) tric 4: Reliability/Analytical Method Medium tric 5: Databases High

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (2015 Melting Point	5). Flame retardants used in flexible poly	yurethane foam: A	An alternatives assessment update.
Template:	e			
HERO ID:	5113326			
			EXTRACTIO	N
Parameter		Data		
Melting Point		= -58 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate	e	
Confidentiality, Type, and Guideline none; Experimental; method DIN 51583, A			3, ASTM D 97-66	
Solvent, Reactivity, Storage, and Stability NR; NR; NR; NR		NR; NR; NR; NR		
Radiolabel, Source, State, a		NR; NR; NR; NR Notes: NR		
Results Details Methods	•	not reported		
Standard Deviation Results not reported				
Results Details		not reported		
			EVALUATIO	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific ques- tion, and the methodology''s objective is clear.
	Metric 4:	Reliability/Analytical Method	High	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	High	

\* Related References: Source cited: OECD-SIDS, 2006

# PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

#### Melting Point

HERO ID: 5113326 Table: 2 of 4

Study Citation: OECD Harmonized Template:	U.S. EPA, (201: Melting Point	5). Flame retardants used in flexible poly	vurethane foam: A	An alternatives assessment update.
HERO ID:	5113326			
			EXTRACTIO	N
Parameter		Data		
Melting Point		< -70 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate	•	
Confidentiality, Type, and	Guideline	none; Experimental; not reported; pour p	point	
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Results Details Methods		not reported		
Standard Deviation Results	1	not reported		
Results Details		not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	High	

\* Related References: Cited sources - NICNAS, 2001; OECD-SIDS, 2006; EU, 2009

# PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

Melting Point

HERO ID: 5113326 Table: 3 of 4

Study Citation: OECD Harmonized Template:	U.S. EPA, (201 Melting Point	5). Flame retardants used in flexible polyu	rethane foam: A	An alternatives assessment update.
HERO ID:	5113326			
			EXTRACTIO	N
Parameter		Data		
Melting Point		= -55 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and O	Guideline	none; Experimental; not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Results Details Methods		not reported		
Standard Deviation Results	1	not reported		
Results Details		not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	High	

\* Related References: Sources cited: IARC, 1990; EC, 2000; ATSDR, 2012

# PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

#### Melting Point

HERO ID: 5113326 Table: 4 of 4

Study Citation: OECD Harmonized Template:	U.S. EPA, (2013 Melting Point	5). Flame retardants used in flexible polyu	rethane foam: A	An alternatives assessment update.
HERO ID:	5113326			
			EXTRACTIO	N
Parameter		Data		
Melting Point		ca60 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	none; Experimental; not reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Results Details Methods		not reported		
Standard Deviation Results	1	not reported		
Results Details		not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	High	

 $^{\star}$  Related References: Cited source - EC (2000) IUCLID dataset

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (201 Melting Point	9). Chemistry Dashboard Information for T	Tris(2-chloroeth	yl) phosphate. 115-96-8
Template:				
HERO ID:	5926157			
		]	EXTRACTIO	N
Parameter		Data		
Melting Point		-35 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Results Details Methods		Not Reported		
Standard Deviation Results	5	Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available database that provides references to the original, peer- reviewed source.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	tv Determi	nation	High	

\* Related References: PhysProp

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#### Melting Point

HERO ID: 5926157 Table: 2 of 2

Study Citation: OECD Harmonized	U.S. EPA, (2019 Melting Point	9). Chemistry Dashboard Information for 7	Fris(2-chloroethyl) pl	hosphate. 115-96-8
Template:				
HERO ID:	5926157			
			EXTRACTION	
Parameter		Data		
Melting Point		-55 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and		None; Experimental; Not Reported		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
Results Details Methods		Not Reported		
Standard Deviation Results	8	Not Reported		
Results Details		Not Reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	Data is from a publicly available secondary source with references to non-peer reviewed sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	tv Determi	nation	Medium	

\* Related References: Jean-Claude Bradley Open Melting Point Dataset

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	DOE, (2016). T Boiling Point	able 1: Chemicals of Concern and Associa	ated Chemical I	nformation. PACs.
Template: HERO ID:	3981013			
			EXTRACTIO	N
Parameter		Data		
Boiling Point		330 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	none; not specified; not specified		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	•	NR; NR; NR; NR Notes: NR		
Standard Deviation Results		not reported		
Results Details		@ 760 mm Hg		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review; specific source not reported.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	High	

\* Related References: primary reference not specified but include CRC (2009), HSDB (no date), Merck (2006), SAX (2012)

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized		uropean Union risk assessment report: Tris	(2-chloroethyl)	phosphate, TCEP. 213.
Template:	Boiling Point			
HERO ID:	3809216			
			EXTRACTIO	N
Parameter		Data	EATRACIIO	
		Data		
Boiling Point		320 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a		NR; NR; NR; NR Notes: NR		
Standard Deviation Results	-	not reported		
Results Details		Decomposition temperature at 1013 hPa.		
			EVALUATIO	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
2	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
2 511111 5. 64161	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	tv Determi	nation	High	

\* Related References: Primary source Akzo Nobel 2000

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	Environment Ca Boiling Point	anada, (2009). Screening Assessment for the	e Challenge: E	Ethanol, 2-chloro-, phosphate (3:1) (Tris(2-chloroethyl) phosphate [TCEP]).
HERO ID:	5160070			
		F	XTRACTIO	N
Parameter		Data		
Boiling Point		145 - 202 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and O	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Standard Deviation Results	3	NR		
Results Details		66 - 1333 Pa		
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analytical method is unknown but is likely to be appropriate based on the data"s inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	High	

\* Related References: Cites: European Chemicals Bureau, IUCLID dataset 2000 (HEROID 5235795)

Study Citation: OECD Harmonized	Haynes, W. M. Boiling Point	(2014). Tris(2-chloroethyl) phosphate. 3-54	2.	
Template: HERO ID:	5349311			
		E	XTRACTIO	N
Parameter		Data		
Boiling Point		330 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a		NR; NR; NR; NR		
Standard Deviation Results	•	Not Reported		
Results Details		Not Reported		
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabili	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
2 sinain 5. Oulor	Metric 5:	Databases	High	Data is from a peer-reviewed data collection.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	y Determi	nation	High	

Study Citation: OECD Harmonized	IPCS, (1998). F Boiling Point	lame retardants: Tris(chloropropyl) phosp	hate and tris(2-o	chloroethyl) phosphate.
Template: HERO ID:	79051			
			EXTRACTIO	Ň
Parameter		Data		
Boiling Point		351 °C		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; not specified; NA		
Solvent, Reactivity, Storage		NA; NA; NA; NA		
Radiolabel, Source, State, a		NA; NA; liquid; NA Notes: NA		
Standard Deviation Results	-	Not Reported		
Results Details		at 760 mm Hg		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance			<u> </u>	
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown sec- ondary source without peer-review and references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	ty Determi	nation	Low	

Tris(2-chloroethyl) phosphate (TCEP)

HERO ID: 592612	26 Table: 1 of 1

Study Citation:	NLM, (2015). PubChem: Hazardous Substance Data Bank: Tris(2-chloroethyl) phosphate, 115-96-8.					
OECD Harmonized Template:	Boiling Point					
HERO ID:	5926126					
		F	XTRACTIO	N		
Parameter		Data				
Boiling Point		330 °C				
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate				
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported NR;				
Solvent, Reactivity, Storage		NR; NR; NR				
Radiolabel, Source, State, a		NR; NR; NR; NR				
Standard Deviation Results		Not Reported				
Results Details		Not Reported				
		Ι	EVALUATIO	Ň		
Domain		Metric	Rating	Comments		
Domain 1: Substance						
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.		
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.		
Domain 2: Test Reliabil	ity					
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.		
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data"s inclu- sion in a peer-reviewed/recognized database or other secondary source.		
Domain 3: Other						
	Metric 5:	Databases	High	Data is from a publicly available, peer-reviewed database that provides references to a recognized data collection.		
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.		
Overall Qualit	tv Determi	nation	High			

\* Related References: Haynes, W.M. (Ed.) CRC Handbook of Chemistry and Physics. 95th Edition. CRC Press LLC, Boca Raton. P. 3-542.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	RSC, (2019). C Boiling Point	hemSpider: Tris(2-chloroethyl) phosphate	2.	
Template:	Doning I onit			
HERO ID:	5926273			
			EXTRACTION	
Parameter		Data		
Boiling Point		192 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported NR;		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Standard Deviation Results	6	Not Reported		
Results Details		at 10 torr		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used
Domain 3: Other				
	Metric 5:	Databases	Medium	Data is from a publicly available secondary source with references to non-peer reviewed sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	Medium	

\* Related References: Parchem-fine & specialty chemicals

Study Citation:		, Fuhrmann, F., Uhde, E. (2003). Flame ret ducts) from polyurethane. Indoor Air 13(1		r environment - Part II: release of VOCs (triethylphosphate and halogenated
OECD Harmonized	Boiling Point	ducts) from poryuremane. Indoor All 15(1	).49-52.	
Template:	C			
HERO ID:	4663142			
			EXTRACTION	
Parameter		Data		
Boiling Point		351 °C		
CASRN and Test Material	l	not reported; Tris(2-chloroethyl) phosphat	e	
Confidentiality, Type, and Guideline none; not specified;		none; not specified; not specified		
Solvent, Reactivity, Storag	NR; NR; NR; NR			
Radiolabel, Source, State, and Purity NR; Sigma-Aldrich, Deisenhofen,			ny; NR; GC quality No	tes: NR
Standard Deviation Result	ts	not reported		
Results Details		not reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabi	lity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)	Ţ	towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Low	The data are from an unknown source.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Tris(2-chloroethyl) phosphate (TCEP)

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Study Citation:			and orthocarbo	Toscano, W. A., Coleman, K. P. (2012). Esters of carbonic and orthocarbonic acid, organic phosphorous, monocarboxylic halogenated acids, haloalcohols, and organic silicon. 353-424.			
OECD Harmonized	Boiling Point	Jn. 353-424.					
Template:	Doning Form						
HERO ID:	5332876						
		I	EXTRACTIO	N			
Parameter		Data					
Boiling Point		= 330 - °C					
CASRN and Test Material		115-98-6; Tris(2-chloroethyl) phosphate					
Confidentiality, Type, and	Guideline	None; not specified; Not reported					
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR					
Radiolabel, Source, State, and Purity Standard Deviation Results		NR; NR; NR; NR Notes: NR					
		Not reported					
Results Details		Boiling point = $330$ °C					
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data"s inclu- sion in a peer-reviewed/recognized database or other secondary source.			
Domain 3: Other							
	Metric 5:	Databases	High	The information is from a data collection prepared by experts in the field.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			
Overall Qualit	tv Determin	nation	High				

HERO ID: 4565574 Table: 1 of 1
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Study Citation: OECD Harmonized	U.S. EPA, (201 Boiling Point	5). TSCA Work Plan Chemical Problem	Formulation and	Initial Assessment. Chlorinated Phosphate Ester Cluster Flame Retardants.
Template: HERO ID:	4565574			
			EXTRACTIO	N
Parameter		Data		
Boiling Point		> 200 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate	e	
Confidentiality, Type, and	Guideline	None; not specified; Not Reported		
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR; decomposition noted		
Radiolabel, Source, State,	and Purity	None; NR; liquid; NR		
Standard Deviation Results	s	Not Reported		
Results Details		Stability of C-Cl bond loss HCl begins 2	200 °C	
			EVALUATION	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	Medium	Measured data are consistent with the subject chemical substance structural features however, a cutoff value was reported and pressure information would be useful for data interpretation.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	ty Determi	nation	High	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:	U.S. EPA. (201	5). Flame retardants used in flexible poly	urethane foam: A	An alternatives assessment update.
OECD Harmonized	Boiling Point	e). I faine feareants asea in fiexible poly	arealune rounn. 7	in alternatives assessment aparto.
Template:	g i olik			
HERO ID:	5113326			
			EXTRACTIO	N
Parameter		Data	EATRACIIO	n .
		Dutu		
Boiling Point		202 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	None; Experimental; not reported		
		NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR Notes: NR		
Standard Deviation Results		Not reported		
Results Details		at 10 mmHg Measured by ASTM D1160	) method at a reduc	red pressure
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabili	ity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
	Madula A.	(Method Objectivity)	TT: _1	towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	v Dotormi	nation	High	

\* Related References: Cited sources - EC, 2000

## PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

### **Boiling Point**

HERO ID: 5113326 Table: 2 of 5

Study Citation: OECD Harmonized	U.S. EPA, (201: Boiling Point	5). Flame retardants used in flexible polyure	thane foam: A	an alternatives assessment update.
Template:	-			
HERO ID:	5113326			
		E	XTRACTIO	N
Parameter		Data		
Boiling Point		= 330 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; not reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Standard Deviation Results	3	Not reported		
Results Details		Not reported		
		ŀ	VALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	High	

\* Related References: Cited sources - IARC, 1990; Lide, 2008; ATSDR, 2012

## PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

### **Boiling Point**

HERO ID: 5113326 Table: 3 of 5

Study Citation: OECD Harmonized	U.S. EPA, (201: Boiling Point	5). Flame retardants used in flexible polyure	thane foam: A	An alternatives assessment update.
Template:	Boiling Point			
HERO ID:	5113326			
		Е	XTRACTIO	N
Parameter		Data		
Boiling Point		= 320 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; not reported		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,		NR; NR; NR; 99.5% Notes: NR		
Standard Deviation Results		Not reported		
Results Details		decomposes		
		ŀ	EVALUATIO	Ň
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	High	

\* Related References: Cited source - EU (2009)

## PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

## **Boiling** Point

HERO ID: 5113326 Table: 4 of 5

Study Citation: OECD Harmonized	U.S. EPA, (201 Boiling Point	5). Flame retardants used in flexible polyu	rethane foam: A	An alternatives assessment update.
Template:	Bonnig Point			
HERO ID:	5113326			
	5115520			N,
Damamatan			EXTRACTIO	N
Parameter		Data		
Boiling Point		= 145 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and		None; Experimental; not reported		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,		NR; NR; NR; NR Notes: NR		
Standard Deviation Results	•	Not reported		
Results Details		at 0 mmHg; Value reported as 145 °C at 0.	.66 hPa	
			EVALUATIO	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
	Metric 4:	(Method Objectivity) Reliability/Analytical Mathod	Medium	towards a particular product or outcome.
	wieuric 4:	Reliability/Analytical Method	wiedium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
			TT+ 1	
<b>Overall Quali</b>	ty Determi	nation	High	

\* Related References: Cited sources - EC, 2000; NICNAS, 2001

## PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

### **Boiling** Point

HERO ID: 5113326 Table: 5 of 5

Study Citation: OECD Harmonized	U.S. EPA, (201) Boiling Point	5). Flame retardants used in flexible poly	urethane foam: A	An alternatives assessment update.
Template: HERO ID:	5113326			
			EXTRACTIO	Ň
Parameter		Data		
Boiling Point		>= 220 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; not reported		
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR		
Radiolabel, Source, State, and Purity		NR; NR; NR; NR Notes: NR		
Standard Deviation Results		Not reported		
Results Details		Rapid decomposition occurs above 220 ° dichloroethane.	C. Thermal decom	position products are carbon monoxide, hydrogen chloride, 2-chloroethane and
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>			High	

\* Related References: Cited sources - IPCS, 1998

Tris(2-chloroethyl) phosphate (TCEP)

HERO	ID: 59261:	57 Table:	1 of 1

Study Citation: OECD Harmonized	U.S. EPA, (2019 Boiling Point	9). Chemistry Dashboard Information for '	Tris(2-chloroeth	yl) phosphate. 115-96-8
Template: HERO ID:	5926157			
			EXTRACTIO	N
Parameter		Data		
Boiling Point		330 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and O	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available database that provides references to the original, peer- reviewed source.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	High	

\* Related References: PhysProp

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:	DOE, (2016). T	Table 1: Chemicals of Concern and Assoc	iated Chemical I	nformation. PACs.
OECD Harmonized	Density			
Template:	2			
HERO ID:	3981013			
			EXTRACTIO	N
Parameter		Data		
Density		1.39 - g/cm3		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C		none; not specified; not specified		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, and Purity		NR; NR; NR; NR Notes: NR		
Density Type		specific gravity (density of a substance d	ivided by the densi	ity of water)
System		not specified		
Duration		25 °C		
Standard Deviation Results		not reported		
Results Details		not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance			8	
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
			8	
Domain 2: Test Reliabili	ity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are
			U	peer-reviewed by experts in the field, are broadly available to the public for review;
				specific source not reported.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	High	

\* Related References: primary reference not specified but include CRC (2009), HSDB (no date), Merck (2006), SAX (2012)

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	ECB, (2009). E Density	uropean Union risk assessment report: Tris(2	2-chloroethyl) phos	phate, TCEP. 213.
Template:				
HERO ID:	3809216			
		E	XTRACTION	
Parameter		Data		
Density		1.4193 - g/cm3		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; NR		
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR Notes: NR		
Density Type		density		
System		Not reported		
Duration		25 °C		
Standard Deviation Results	5	NR		
Results Details		Not Reported		
		E	VALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	tv Determi	nation	Medium	

\* Related References: Primary Source: Akzo Nobel 2000

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	Environment C Density	anada, (2009). Screening Assessment for the	e Challenge: E	thanol, 2-chloro-, phosphate (3:1) (Tris(2-chloroethyl) phosphate [TCEP]).
HERO ID:	5160070			
		E	XTRACTIO	N
Parameter		Data		
Density		1.420 - g/cm3		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	None; Experimental; NR		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR Notes: NR		
Density Type		Density		
System		Not reported		
Duration		20 - 25 °C		
Standard Deviation Results		NR		
Results Details		Reported as 1420 kg/m3		
		F	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the phy sical state is described as a liquid, the substance should have a melting point below 25 °C and a boiling point above 25 °C) or behaviors.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analytical method is unknown but is likely to be appropriate based on the data"s inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	High	

\* Related References: Cites: European Chemicals Bureau, IUCLID dataset 2000 (HEROID 5235795)

Study Citation: OECD Harmonized	IPCS, (1998). H Density	Flame retardants: Tris(chloropropyl) phosp	hate and tris(2-o	chloroethyl) phosphate.
Template:	-			
HERO ID:	79051			
			EXTRACTIO	N
Parameter		Data		
Density		1.425 not reported		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	none; not specified; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	None; NR; liquid; NR		
Density Type		specific gravity		
System		Not Reported		
Duration		20 °C		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
			EVALUATIO	Ň
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown sec- ondary source without peer-review and references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit			Low	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:			and orthocarbo	onic acid, organic phosphorous, monocarboxylic halogenated acids, haloalcohols,
OECD Harmonized	and organic silic Density	con. <i>353-42</i> 4.		
Template:	2			
HERO ID:	5332876			
			EXTRACTIO	N
Parameter		Data		
Density		= 1.39 - not specified		
CASRN and Test Material		115-98-6; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	none; not specified; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR Notes: NR		
Density Type		density		
System		Not reported		
Duration		Not reported		
Standard Deviation Results		Not reported		
Results Details		Not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabili	ity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information is from a data collection prepared by experts in the field.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

# **Overall Quality Determination**

High

Study Citation: OECD Harmonized Tomplato:	U.S. EPA, (201: Density	5). TSCA Work Plan Chemical Problem Fo	rmulation and	Initial Assessment. Chlorinated Phosphate Ester Cluster Flame Retardants.
Template: HERO ID:	4565574			
		Ι	EXTRACTIO	N
Parameter		Data		
Density		1.425 g/cm3		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; Not Reported; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	None; NR; liquid; NR		
Density Type		density		
System		Not Reported		
Duration		25 °C		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
		]	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	v Determi	nation	High	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	Elsevier, (2019) Density	). Reaxys: physical-chemical property dat	ta for Tris(2-chlo	roethyl) phosphate. CAS Registry Number: 115-96-8			
Template: HERO ID:	5926432						
			EXTRACTIO	N			
Parameter		Data					
Density		1.42 - 1.4289 g/cm3					
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate					
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported					
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR					
Radiolabel, Source, State,	and Purity	NR; NR; NR					
Duration		20-25 °C					
Standard Deviation Results	3	Not Reported					
Results Details		20-25 °C; 10 values were reported in Rea measured at unreported temperatures.	xys; 7 values were	reported in the range of 1.42 to 1.4289 at 20-25 °C; 3 values were outside this range or			
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased			
		(Method Objectivity)		towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu-			

<b>Overall Qua</b>	lity Determ	ination	High	
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 5:	Databases	High	Data is from a secondary database with a references to the peer-reviewed original source.
Domain 3: Other				

\* Related References: Data range determined from multiple primary sources in REAXYS.

Study Citation: OECD Harmonized	Haynes, W. M. Density	(2014). Tris(2-chloroethyl) phosphate. 3-54	42.	
Template:	Density			
HERO ID:	5349311			
		T	EXTRACTIO	AT .
Parameter		Data	LATKACHU	N
		Data		
Density		1.39 g/cm3		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Duration		25 °C		
Standard Deviation Results	5	Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 2. Other				
Domain 3: Other	Metric 5:	Databases	High	Date is from a recognized most regioned date collection
	Metric 5: Metric 6:	Models	High N/A	Data is from a recognized, peer-reviewed data collection.
	wieuric o:	WIOUEIS	IN/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	tv Determi	nation	High	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	NLM, (2015). H Density	PubChem: Hazardous Substance Data Bank	: Tris(2-chloro	ethyl) phosphate, 115-96-8.
Template:	Density			
HERO ID:	5926126			
		I	EXTRACTIO	N
Parameter		Data		
Density		1.39 g/cm3		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Duration		25 °C		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
		]	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available, peer-reviewed database that provides references to a peer-reviewed data collection.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	v Determi	nation	High	

\* Related References: Haynes, W.M. (Ed.) CRC Handbook of Chemistry and Physics. 95th Edition. CRC Press LLC, Boca Raton. P. 3-542.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	NLM, (2020). l Density	PubChem database: compound summary	: tris(2-chloroeth	yl) phosphate.
Template: HERO ID:	6629833			
			EXTRACTIO	N
Parameter		Data		
Density		9.8		
CASRN and Test Material		115-96-8; TCEP		
Confidentiality, Type, and	Guideline	None; Experimental; Not specified		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
System		Not reported		
Duration		Not Reported		
Standard Deviation Results	8	Not reported		
Results Details		Relative vapor density (air = 1)		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific ques- tion, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer- reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali			High	

\* Related References: ILO International Chemical Safety Cards (ICSC). Tris(2-Chloroethyl) Phosphate). [Website]. https://www.ilo.org/dyn/icsc/ showcard.display?p\_version=2&p\_card\_id=1677

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: Brommer, S., Jantunen, L. M., Bidleman, T. F., Harrad, S., Diamond, M. L. (2014). Determination of vapor pressures for organophosphate esters. Journal of Chemical and Engineering Data 59(5):1441-1447.		
<b>OECD Harmonized</b>	Vapor Pressure	
Template:		
HERO ID:	2705112	
	EXTRACTION	
Parameter	Data	
Vapor Pressure	NA 4.8E-2 - NA NA Pa	
CASRN and Test Material	115-96-8; tris(2-chloroethyl)phosphate	
Confidentiality, Type, and C	Guideline NR; Experimental; Non-guideline; gas chromatography retention time method	
Solvent, Reactivity, Storage	e, and Stability isooctane; NR; NR	
Radiolabel, Source, State, a	nd Purity NR; Sigma Aldrich Seelze, Germany; NR; 97% purity Notes: NR	
Temperature	298.15	
System Subcooled liquid-phase vapor pressures using GC-RT; Approx. 2 ng Test substance in isooctane injected into DB-1 capillary of		
	0.25mmi.d., 0.25 "m film, J&W Scientific, USA) in Agilent 6890N GC-5973 MSD.	
Standard Deviation Results	standard uncertainty 0.2 (p298/Pa)	
Results Details	Also reported as log "1.32	

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliab	oility			
	Metric 3:	Reliability/Unbiased	High	Peer-reviewed journal article with results compared to other literature values.
		(Method Objectivity)		
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate based on the
				data's inclusion in a peer-reviewed journal.
Domain 3: Other				
	Metric 5:	Databases	N/A	This metric is not applicable to this type of study.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

\* Related References: NA

Study Citation: DECD Harmonized Femplate:	Dobry, A., Kelle Vapor Pressure	er, K. (1957). Vapor pressures of some ph	osphate and pho	sphonate esters. The Journal of Physical Chemistry 61(10):1448-1449.				
HERO ID:	5186315							
			EXTRACTIO	N				
Parameter		Data						
Vapor Pressure		0.0613 mm Hg						
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate						
Confidentiality, Type, and Guideline		None; Experimental; Non-guideline study	/					
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR						
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR						
Temperature		25 °C						
ystem Conventional isoteniscope with nitrogen a			atmosphere.					
Standard Deviation Results		Not reported	1					
Results Details		Thermal decomposition at 172 °C reporte	d					
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 1: Substance								
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.				
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.				
Domain 2: Test Reliabil	ity							
	Metric 3:	Reliability/Unbiased	High	The methodology for producing the information is designed to answer a specific ques-				
	Metric 4:	(Method Objectivity) Reliability/Analytical Method	High	tion and the objective is clear. Data are obtained by an accepted standard analytical method.				
Domain 3: Other								
	Metric 5:	Databases	High	The data is from a primary, peer-reviewed source.				
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.				

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	ECB, (2009). E Vapor Pressure	uropean Union risk assessment report: Tris(	2-chloroethyl	) phosphate, TCEP. 213.
Template:	vapor i ressure			
HERO ID:	3809216			
IIEKO ID.	3809210			
			EXTRACTIO	N
Parameter		Data		
Vapor Pressure		0.00114 - Pa		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Extrapolated; NR		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Temperature		20 °C		
System		NR		
Standard Deviation Results	5	NR		
Results Details		Not Reported		
		Ι	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	ty Determi	nation	High	

\* Related References: Primary Source: Akzo Nobel 2000

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Vapor Pressure

HERO ID: 3809216 Table: 2 of 2

Study Citation: OECD Harmonized		opean Union risk assessment report: Tris	(2-chloroethyl)	) phosphate, TCEP. 213.
Template:	Vapor Pressure			
HERO ID:	3809216			
HERO ID:	3809210			
			EXTRACTIO	N
Parameter		Data		
Vapor Pressure		43 - Pa		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and O	Guideline	None; Experimental; NR		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR Notes: NR		
Temperature		136.9 °C		
System		NR		
Standard Deviation Results		NR		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	v Determin	ation	High	

\* Related References: Primary Source: Akzo Nobel 2000

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	Environment Ca Vapor Pressure	nada, (2009). Screening Assessment for th	e Challenge: E	Ethanol, 2-chloro-, phosphate (3:1) (Tris(2-chloroethyl) phosphate [TCEP]).
Template: HERO ID:	5160070			
		]	EXTRACTIO	N
Parameter		Data		
Vapor Pressure		< 10 - Pa		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Temperature		20 °C		
System		NR		
Standard Deviation Results		NR		
Results Details		Not Reported		
		]	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	itv			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analyti- cal method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	ty Determi	nation	High	

\* Related References: Cites: European Chemicals Bureau, IUCLID dataset 2000 (HEROID 5235795)

Study Citation: OECD Harmonized Template:	IPCS, (1998). F Vapor Pressure	Flame retardants: Tris(chloropropyl) phos	phate and tris(2-	chloroethyl) phosphate.
HERO ID:	79051			
			EXTRACTIO	N
Parameter		Data		
Vapor Pressure		< 10 mm Hg		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and O	Guideline	none; not specified; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	None; NR; liquid; NR		
Temperature		25 °C		
System		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown sec- ondary source without peer-review and references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	Low	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:	National Institut	National Institute of Standards and Technology (NIST), (2022). NIST Chemistry WebBook. Tri(2-chloroethyl) phosphate (115-96-8). Standard Reference			
OECD Harmonized	Database No. 69 Vapor Pressure	Э.			
Template:					
HERO ID:	10225164				
		EXTRACTION			
Parameter		Data			
Vapor Pressure		Not Reported			
CASRN and Test Materia	1	115-96-8; Tris(2-chloroethyl) phosphate			
Confidentiality, Type, and	l Guideline	Not Reported; Not Reported; NR			
Solvent, Reactivity, Stora	ge, and Stability	NR; NR; NR			
Radiolabel, Source, State	, and Purity	NR; NR; NR Notes: NR			
Temperature		NR			
System		Calculated from the vapor pressure data reported by the method of least squares			
Standard Deviation Resul	ts	NR			
Results Details		" = 36.7 kJ/mol at 308K			

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliat	oility			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qual</b>	ity Determi	ination	High	

\* Related References: Citing Stephenson and Malanowski, 1987. HERO ID 10284658 Based on data from 293-445K (Dykyj, 1972)

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	NLM, (2015). F Vapor Pressure	PubChem: Hazardous Substance Data Ban	k: Tris(2-chloro	ethyl) phosphate, 115-96-8.
Template:				
HERO ID:	5926126			
			EXTRACTIO	N
Parameter		Data		
Vapor Pressure		6.13E-2 mm Hg		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
Temperature		25 °C		
System		Not Reported		
Standard Deviation Results	3	Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available, peer-reviewed database that provides references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	ty Determi	nation	High	

\* Related References: Dobry, A; Keller, R. 1957. J Phys Chem 61: 1448-9.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	NLM, (2020). F Vapor Pressure	ubChem database: compound summary: t	ris(2-chloroeth	yl) phosphate.
HERO ID:	6629833			
			EXTRACTIO	N
Parameter		Data		
Vapor Pressure		0.5 mm Hg		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and		None; Experimental; Not reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Temperature		293 °F (145 °C)		
System		Not reported		
Standard Deviation Results		Not reported		
Results Details		Not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
20main 5. Outor	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	High	

\* Related References: National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina. CAMEO Chemicals.

## PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

#### Vapor Pressure

HERO ID: 6629833 Table: 2 of 2

Study Citation: OECD Harmonized	NLM, (2020). P Vapor Pressure	ubChem database: compound summary: ta	ris(2-chloroeth	yl) phosphate.
Template: HERO ID:	6629833			
			EXTRACTIO	N
Parameter		Data		•
Vapor Pressure		0.06 mm Hg		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Temperature		Not reported		
System		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance			-	
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data"s inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
2 5	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	v Determi	nation	High	

\* Related References: Expected to be the same value as the one reported in HSDB; however, in a rounded format. EPA DSSTox. URL: https://comptox.epa.gov/dashboard/DTXSID5021411.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	OECD, (2012). Vapor Pressure	SIDS initial assessment profiles agreed in th	e course of the OE	ECD HPV chemicals programme from 1993 to 2011.
Template: HERO ID:	9641572			
		Ε	XTRACTION	
Parameter		Data		
Vapor Pressure		0.00114 - Pa		
CASRN and Test Material		115-96-8; tris(2-chloroethylphosphate)		
Confidentiality, Type, and	Guideline	None; Extrapolated; NR		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Temperature		20 °C		
System		NR		
Standard Deviation Results	8	Not Reported		
Results Details		Extrapolated from a measured value of 43 Pa	a at 137 °C	
		F	VALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g. if the physical state is described as a liquid, the substance should have a melting point below 25 $^{\circ}$ C and a boiling point above 25 $^{\circ}$ C) or behaviors.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

\* Related References: No citation reported.

Study Citation:	and octanol-air partition coefficients of semivolatile organic compounds of emerging concern. Journal of Chemical and Engineering Data 65(5):2467-247				
OECD Harmonized	Vapor Pressure				
Template:					
HERO ID:	6967359				
		EXTRACTION			
Parameter		Data			
Vapor Pressure		0.0372 - 0.0562 Pa			
CASRN and Test Material		115-96-8; tris(2-chloroethyl)phosphate			
Confidentiality, Type, and	Guideline	None; Experimental; Non-guideline: Gas chromatography retention time GC-RT method			
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR NR; Accustandard; NR; 100% Notes: TCEP			
Radiolabel, Source, State,	and Purity				
Temperature		estimated at 298 K; experimental: 333-363 K (59.85 - 89.85 °C)			
System Standard Deviation Results		GC-RT assumes the chromatographic retention time is inversely proportional and proportional to its temperature dependent liquid-phase vapor pressure			
		$\pm$ 0.18 (standard prediction uncertainty estimated at K = 298)			
Results Details		Calibrated Log10 Liquid-Phase Vapor Pressure = -1.25 (VP = 0.0562 Pa, ca. 4.2E-4 mm Hg); uncalibrated value Log10 Liquid-Phase Vapor			
		Pressure = -1.43 Pa (VP = $0.03715$ Pa, ca. 2.9E-4 mm Hg) (Average enthalpy of vaporization = $81.5 \pm 10$ kJ/mol; HCB used as a reference compound)			

Domain Domain 1: Substance Metric Metric		Metric Representativeness	Rating High	Comments Data are measured or estimated for the subject chemical substance.
Metrie		1	High	Data are measured or estimated for the subject chemical substance
		1	High	Data are measured or estimated for the subject chemical substance
Metric	c 2:	۸ · .		Data are measured or estimated for the subject chemical substance.
		Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliability				
Metrie	c 3:	Reliability/Unbiased	High	The methodology for producing the information is designed to answer a specific ques-
		(Method Objectivity)		tion, and the methodology"s objective is clear.
Metrie	c 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate.
Domain 3: Other				
Metrie	c 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
Metrie	c 6:	Models	High	The model had a defined, unambiguous endpoint; $r2 = 0.978$ .

Tris(2-chloroethyl) phosphate (TCEP)

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Study Citation:	udy Citation: Toscano, W. A., Coleman, K. P. (2012). Esters of carbonic and orthocarbonic acid, organic phosphorous, monocarboxylic haloger and organic silicon. 353-424.			nic acid, organic phosphorous, monocarboxylic halogenated acids, haloalcohols,			
OECD Harmonized	Vapor Pressure						
Template:							
HERO ID:	5332876						
		I	EXTRACTIO	N			
Parameter		Data					
Vapor Pressure		0.5 mm Hg					
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate					
Confidentiality, Type, and C	Guideline	None; Experimental; Not reported					
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR					
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR					
Temperature		145 °C					
System		Not reported					
Standard Deviation Results		Not reported					
Results Details		Not reported					
		]	EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased			
	Metric 4:	(Method Objectivity) Reliability/Analytical Method	Medium	towards a particular product or outcome. Analytical method is unknown but is likely to be appropriate based on the data's inclu-			
	Meure 4.	Kenaomity/Analytical Wethou	Wiedfulli	sion in a peer-reviewed/recognized database or other secondary source.			
Domain 3: Other							
	Metric 5:	Databases	High	The information is from a data collection prepared by experts in the field.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (201) Vapor Pressure	5). TSCA Work Plan Chemical Problem F	ormulation and	Initial Assessment. Chlorinated Phosphate Ester Cluster Flame Retardants.
Template: HERO ID:	4565574			
			EXTRACTIO	N
Parameter		Data		
Vapor Pressure		1.14 E-3 Pa		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	no; not specified; NR		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	None; NR; liquid; NR		
Temperature		Not Reported		
System		Not Reported		
Standard Deviation Results	8	Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	ty Determi	nation	High	

\* Related References: Citing EU (European Union). 2008b. European Union Risk Assessment Report: Tris[2-Chloro-1- (Chloromethyl)Ethyl] Phosphate (TDCP) CAS No: 13674-87-8. Ireland and United Kingdom, Luxembourg. http://echa.europa.eu/documents/10162/6434698/orats\_final\_rar\_tris2-chloro1-chloromethyleth\_en.pdf

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (201 Vapor Pressure	5). Flame retardants used in flexible polyuret	hane foam: An alternatives	assessment update.			
Template:	•						
<b>HERO ID:</b> 5113326							
			EXTRACTION				
Parameter		Data					
Vapor Pressure		= 0.062 - mm Hg					
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate					
Confidentiality, Type, and Guideline		none; calculation; not reported					
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR					
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR					
Temperature		25 °C					
System Measured with a conventional is		Measured with a conventional isoteniscope u	sing a nitrogen atmosphere				
Standard Deviation Results	3	not reported					
Results Details		Value calculated from reported equation coefficient	fficients determined by experime	ental measurements and equation fitting.			
			EVALUATION				
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	Low	Reported value for the subject chemical substance is inconsistent with other available data.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical method.			
Domain 3: Other							
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			
<b>Overall Quali</b>	ty Determi	nation	Uninformative				

\* Related References: Cited source - ATSDR, 2012

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### Vapor Pressure

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Study Citation: OECD Harmonized	U.S. EPA, (201: Vapor Pressure	5). Flame retardants used in flexible polyu	rethane foam: A	An alternatives assessment update.	
Template: HERO ID:	5113326				
			EXTRACTIO	N	
Parameter		Data			
Vapor Pressure		< 0.075 mm Hg			
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate			
Confidentiality, Type, and	Guideline	none; extrapolated; ASTM D232 method			
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR			
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR			
Temperature		20 °C			
System		not reported			
Standard Deviation Results		not reported			
Results Details		Reported as <0.1 kPa at 20 °C; approximated from data at higher temperatures.			
			EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Substance					
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.	
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.	
Domain 2: Test Reliabil	ity				
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.	
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.	
Domain 3: Other					
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.	
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.	
Overall Qualit	tv Determi	nation	High		

\* Related References: Cited source - EC, 2000 Iuclid dataset

# PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

Vapor Pressure

HERO ID: 5113326 Table: 3 of 4

Study Citation: OECD Harmonized	U.S. EPA, (201 Vapor Pressure	5). Flame retardants used in flexible polyu	arethane foam: A	An alternatives assessment update.		
Template:						
HERO ID:	5113326					
			EXTRACTIO	N		
Parameter		Data				
Vapor Pressure		= 1.6E-5 - mm Hg				
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate				
Confidentiality, Type, and C	Guideline	none; extrapolated; not reported				
Solvent, Reactivity, Storage		NR; NR; NR; NR				
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR				
Temperature		25 °C				
System		not reported				
Standard Deviation Results		not reported		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Results Details		Values at higher temperatures measured by dynamic method; measured values reported as: 0.43 hPa at 136.9 °C; 0.99 hPa at 143.5 °C; 2.03 hPa at 158.6 °C; 5.00 hPa at 174.1 °C; 15.03 hPa at 196.2 °C.				
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Substance						
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.		
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.		
Domain 2: Test Reliabil	ity					
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.		
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.		
Domain 3: Other						
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.		
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.		
<b>Overall Qualit</b>	tv Determi	nation	High			

\* Related References: Cited source - EU (2009)

# PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

# Vapor Pressure

HERO ID: 5113326 Table: 4 of 4

Study Citation: OECD Harmonized	U.S. EPA, (2015 Vapor Pressure	5). Flame retardants used in flexible polyur	rethane foam: A	An alternatives assessment update.
Template:	rupor i ressure			
HERO ID:	5113326			
			EXTRACTIO	N
Parameter		Data		
Vapor Pressure		= 8.55E-6 - mm Hg		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and Guideline		none; extrapolated; not reported		
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR		
Radiolabel, Source, State, and Purity		NR; NR; NR; NR Notes: NR		
Temperature		20 °C		
System		not reported		
Standard Deviation Results		not reported		
1		Reported as 0.00114 Pa at 20 °C; extrapola	ated from a measu	rred value of 43 Pa at 137 °C.
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	w Dotormi	nation	High	

\* Related References: Cited source - OECD-SIDS, 2006; EU, 2009

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Vapor Pressure

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (2019 Vapor Pressure	9). Chemistry Dashboard Information for T	ris(2-chloroeth	yl) phosphate. 115-96-8
Template:	I			
HERO ID:	5926157			
		I	EXTRACTIO	N
Parameter		Data		
Vapor Pressure		0.0613 mm Hg		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Temperature		Not Reported		
System		Not Reported		
Standard Deviation Results	8	Not Reported		
Results Details		Not Reported		
		]	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available database that provides references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	ty Determi	nation	High	

\* Related References: PhysProp. Dobry, A and Keller, R 1957

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Vapor Pressure

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized		ssible application as flame retardant.	Doodeman, C. J. A.	M, Posthumus, R. (2005). Environmental risk limits for several phosphate		
Template: HERO ID:	5349334					
			EXTRACTION			
Parameter		Data				
Vapor Pressure		6.67 - Pa				
CASRN and Test Material	1	115-96-8; Tris(2-chloroethyl) phosphate				
Confidentiality, Type, and	Guideline	Not Reported; not specified; NR				
Solvent, Reactivity, Storag		Not Reported; Not Reported; Not Reported	d; Not Reported			
Radiolabel, Source, State,		Not Reported; Not Reported; Not Reported; Not Reported				
Temperature	-	Not Reported				
System		not reported				
Standard Deviation Result	ts	not reported				
Results Details		not reported				
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 1: Substance						
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.		
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.		
Domain 2: Test Reliabi	lity					
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.		
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.		

<b>Overall Qual</b>	<b>Overall Quality Determination</b>		Medium	
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
Domain 5. Other				

\* Related References: Citing Brodsky et al. (1997) HERO ID 2131375; not entered into Distiller.

Tris(2-chloroethyl) phosphate (TCEP)

Vapor Pressure

Study Citation:			Doodeman, C. J. A.	M, Posthumus, R. (2005). Environmental risk limits for several phosphate		
		ssible application as flame retardant.				
OECD Harmonized	Vapor Pressure					
Template:						
HERO ID:	5349334					
_			EXTRACTION			
Parameter		Data				
Vapor Pressure		3.7E-04 - Pa				
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate				
Confidentiality, Type, and	Guideline	Not Reported; not specified; NR				
Solvent, Reactivity, Storag	e, and Stability	Not Reported; Not Reported; Not Reported	d; Not Reported			
Radiolabel, Source, State, and Purity		Not Reported; Not Reported; Not Reported	-			
Temperature	·	20 °C	-			
System		not reported				
Standard Deviation Result	s	not reported				
Results Details		Reported as 2.7 at 90 °C; 0.25 at 70 °C; 0.0	82 at 60 °C; 0.017 at 4	16 oC 3.7 E-04 at 20 °C and extrapolated 7.9E-04 at 25 °C		
			EVALUATION			
Domain		Metric	Rating	Comments		
Domain 1: Substance						
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.		
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.		
Domain 2: Test Reliabi	lity					
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased		
		(Method Objectivity)		towards a particular product or outcome.		
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method wa used.		
Domain 3: Other						
Domain 5. Outor	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and		
				peor-reviewed by experts in the new, are broadily available to the public for review and		
				use OR includes references to the original sources.		

# **Overall Quality Determination**

Medium

\* Related References: Citing Bayer (1980) in GDCh (1987) not in HERO.

Tris(2-chloroethyl) phosphate (TCEP)

Vapor Pressure

HERO ID: 5349334 Table: 3 of 4

Study Citation:			Doodeman, C. J. A.,	M, Posthumus, R. (2005). Environmental risk limits for several phosphate
OECD Harmonized	Vapor Pressure	sible application as flame retardant.		
Template:	1			
HERO ID:	5349334			
			EXTRACTION	
Parameter		Data		
Vapor Pressure		67 - Pa		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and (	Guideline	Not Reported; not specified; NR		
Solvent, Reactivity, Storage		Not Reported; Not Reported; Not Reported	d; Not Reported	
Radiolabel, Source, State, a	•	Not Reported; Not Reported; Not Reported	-	
Temperature Not Reported				
System not reported				
Standard Deviation Results		not reported		
Results Details		Typo in report 67 at page 145. 25 °C; shou	Ild be 0.5 mm Hg at 14	5 °C
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	tv Determi	nation	Medium	

\* Related References: Citing Muir 1984, HERO ID 4198360.

Tris(2-chloroethyl) phosphate (TCEP)

Vapor Pressure

HERO ID: 5349334 Table: 4 of 4

Study Citation:			-Doodeman, C. J	. A., M, Posthumus, R. (2005). Environmental risk limits for several phosphate
OECD Harmonized	Vapor Pressure	sible application as flame retardant.		
Template:	Tressare			
HERO ID:	5349334			
			EXTRACTIO	N
Parameter		Data		
Vapor Pressure		8.22 - Pa		
I I I I I I I I I I I I I I I I I I I		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	Not Reported; calculation; isoteniscope		
Solvent, Reactivity, Storage, and Stability		Not Reported; Not Reported; Not Report	ed; Not Reported	
Radiolabel, Source, State, and Purity		Not Reported; Not Reported; Not Report	ed; Not Reported	
Temperature	·	25 °C		
System		not reported		
Standard Deviation Results		not reported		
Results Details		8.22 Pa (extrapolated; isoteniscope)		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	High	

\* Related References: Dobry & Keller (1957)

\_\_\_\_

Study Citation: Yaman, B., Dumanoglu, Y., Odabasi, M. (2020). Measurement and modeling the phase partitioning of organophosphate esters using their temperate dependent octanol-air partition coefficients and vapor pressures. Environmental Science & Technology 54(13):8133-8143.				
<b>OECD Harmonized</b>	Vapor Pressure			
Template:	-			
<b>HERO ID:</b> 10064224				
		EXTRACTION		
Parameter		Data		
Vapor Pressure		-1.32 log (Pa)		
CASRN and Test Material		Not Reported; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	none; experimental; gas chromatographic retention times method		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	None; NR; NR; NR		
Temperature 25 °C		25 °C		
System Solutions run at 5-8 temperatures and retention times compared to 3 reference compounds				
Standard Deviation Results		0.0032		
Results Details		reported as log PL (Pa) = $-1.32 \pm 0.0032$ ; surrogate TCEP-d12 = $-1.26 \pm 0.0041$ ; results were compared to 3 other studies.		

			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors.
Domain 2: Test Reliab	ility			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific ques- tion, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	ECB, (2009). E logKow	European Union risk assessment report: Tris	s(2-chloroethyl)	) phosphate, TCEP. 213.
HERO ID:	3809216			
			EXTRACTIO	N
Parameter		Data		
log k <sub>ow</sub>		1.78 -		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR Notes: NR		
Temperature		NR		
System		NR		
pH		NR		
Results Details Method		NR		
Standard Deviation Results		NR		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	High	

\* Related References: Primary Source: Hazelton Europe 1994

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	Ekpe, O. D., Ch logKow	100, G., Barceló, D., Oh, J. E. (2020). Chap	ter One - Introductio	n of emerging halogenated flame retardants in the environment. 881-39.
HERO ID:	8775306			
		]	EXTRACTION	
Parameter		Data		
log k <sub>ow</sub>		1.63 -		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	None; Not specified; NR		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a		NR; NR; NR; NR Notes: NR		
Temperature	-	25 °C		
System		NR		
рH		NR		
Results Details Method		NR		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25 $^{\circ}$ C and a boiling point above 25 $^{\circ}$ C) or behaviors.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analyti- cal method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	v Determi	nation	Medium	

\* Related References: Cites EPI Suite and secondary source I. Pantelaki, D. Voutsa, Organophosphate flame retardants (OPFRs): a review on analytical methods and occurrence in wastewater and aquatic environment, Sci. Total Environ. 649 (2019) 247"263. (HEROID unknown).

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	Elsevier, (2019) logKow	). Reaxys: physical-chemical property da	ta for Tris(2-chlo	roethyl) phosphate. CAS Registry Number: 115-96-8		
Template: HERO ID:	5926432					
			EXTRACTIO	N		
Parameter		Data		·		
log k <sub>ow</sub>		0.54 - 1.4				
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate				
Confidentiality, Type, and Guideline		None; Experimental; Not Reported				
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR				
Radiolabel, Source, State, and Purity		NR; NR; NR; NR				
Temperature		Not Reported				
System		Not Reported				
рН		Not Reported				
Results Details Method		Not Reported				
Standard Deviation Results		Not Reported				
Results Details		2 values were reported in Reaxys; Measured conditions were not reported.				
			EVALUATIO	N		
Domain		Metric	Rating	Comments		
Domain 1: Substance						
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.		
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.		
Domain 2: Test Reliabil	ity					
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.		
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.		
Domain 3: Other						
	Metric 5:	Databases	High	Data is from a secondary database with a references to the peer-reviewed original source.		
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.		
<b>Overall Qualit</b>	v Determi	nation	High			

\* Related References: Data range determined from multiple primary sources in REAXYS.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	Environment CalogKow	anada, (2009). Screening Assessment for th	e Challenge: E	Ethanol, 2-chloro-, phosphate (3:1) (Tris(2-chloroethyl) phosphate [TCEP]).
HERO ID:	5160070			
		Ι	EXTRACTIO	N
Parameter		Data		
log k <sub>ow</sub>		1.47 - 1.78		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; NR		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Temperature		20 °C		
System		NR		
pH		NR		
Results Details Method		NR		
Standard Deviation Results		NR		
Results Details		Not Reported		
		]	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analyti- cal method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
2 shain 5. Suidi	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	ty Determi	nation	High	

\* Related References: Cites: European Chemicals Bureau, IUCLID dataset 2000 (HEROID 5235795)

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	IPCS, (1998). H logKow	Flame retardants: Tris(chloropropyl) phosp	phate and tris(2-o	chloroethyl) phosphate.
Template:				
HERO ID:	79051			
			EXTRACTIO	N
Parameter		Data		
log k <sub>ow</sub>		1.7		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and Guideline		no; not specified; NA		
Solvent, Reactivity, Storage	e, and Stability	NA; NA; NA; NA		
Radiolabel, Source, State, and Purity		NA; NA; liquid; NA		
Temperature		Not Reported		
System		Not Reported		
рН		Not Reported		
Results Details Method		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance			8	
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	<b>t</b> x7			
Domain 2. Test Kellabil	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
	with 5.	(Method Objectivity)	wiediulli	towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
Domain 5. Other	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown sec- ondary source without peer-review and references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	y Determi	nation	Low	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	NLM, (2015). F logKow	PubChem: Hazardous Substance Data Ban	k: Tris(2-chloro	bethyl) phosphate, 115-96-8.
Template: HERO ID:	5926126			
			EXTRACTIO	N
Parameter		Data		
log k <sub>ow</sub>		1.78		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
Temperature		Not Reported		
System		Not Reported		
pH		Not Reported		
Results Details Method		Not Reported		
Standard Deviation Results	3	Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance			-	
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data"s inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
Domain 5. Other	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database that references a review document.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	ty Determi	nation	High	

\* Related References: European Chemicals Bureau. 2000. IUCLID Dataset, Tris (2-Chloroethyl) phosphate (2000-CD-Rom edition)

Tris(2-chloroethyl) phosphate (TCEP)

HERO ID: 5926126 Table: 2 of 2

Study Citation: OECD Harmonized	NLM, (2015). I logKow	PubChem: Hazardous Substance Data Bank:	Tris(2-chloro	ethyl) phosphate, 115-96-8.
Template:	e			
HERO ID:	5926126			
		F	XTRACTIO	N
Parameter		Data		
log k <sub>ow</sub>		1.43		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Temperature		Not Reported		
System		Not Reported		
pН		Not Reported		
Results Details Method		Not Reported		
Standard Deviation Results	3	Not Reported		
Results Details		Not Reported		
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available and peer-reviewed database that references a review document.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	High	

\* Related References: NITE; Chemical Risk Information Platform (CHRIP). Biodegradation and Bioconcentration. Tokyo, Japan: Natl Inst Tech Eval. Available from, as of Oct 29, 2014: https://www.safe.nite.go.jp/english/db.html

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (201) logKow	5). TSCA Work Plan Chemical Problem For	rmulation and	Initial Assessment. Chlorinated Phosphate Ester Cluster Flame Retardants.
Template: HERO ID:	4565574			
	+30337+	т	EXTRACTIO	N
Parameter		Data		
log k <sub>ow</sub>		1.78		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	none; not specified; Not Reported		
Solvent, Reactivity, Storage	, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, and Purity		None; NR; liquid; NR		
Temperature		Not Reported		
System		Not Reported		
рН		Not Reported		
Results Details Method		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
Domain Domain 1: Substance		Metric	EVALUATIO Rating	N Comments
Domain 1. Substance	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
	Metric 2.	rippropriateness	Ingii	neusared data de consistent with the subject enclined s physical enclined properties.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	y Determi	nation	High	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	U.S. EPA, (201 logKow	5). Flame retardants used in flexible polyu	rethane foam: A	An alternatives assessment update.
HERO ID:	5113326			
			EXTRACTIO	N
Parameter		Data		
log k <sub>ow</sub>		= 1.7 -		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	none; experimental; not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Temperature		not reported		
System		not reported		
pН		not reported		
Results Details Method		not reported		
Standard Deviation Results		not reported		
Results Details		not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	t <b>v Determ</b> i	nation	High	

\* Related References: Sources cited - IPCS, 1998; NICNAS, 2001

logKow

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (201: logKow	5). Flame retardants used in flexible polyu	urethane foam: A	An alternatives assessment update.			
Template:	8						
HERO ID:	5113326						
			EXTRACTIO	N			
Parameter		Data					
log k <sub>ow</sub>		= 1.78 -					
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate					
Confidentiality, Type, and		none; experimental; Directive 84/449/EE	C., A.8, Partition c	coefficient, 1984 Method			
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR					
Radiolabel, Source, State, and Purity		NR; NR; NR; NR Notes: NR					
Temperature		20 °C					
System		not reported					
pH		not reported					
Results Details Method		not reported					
Standard Deviation Results	8	not reported					
Results Details		GLP study					
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased			
		(Method Objectivity)		towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.			
Domain 3: Other							
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			
Overall Quali	ty Determi	nation	High				

\* Related References: Sources cited - EC, 2000; EU, 2009; also entered under HERO ID 5926126

logKow

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (201: logKow	5). Flame retardants used in flexible poly	urethane foam: A	An alternatives assessment update.				
Template: HERO ID:	5113326							
IIERO ID.	5115520		EXTRACTIO	N				
Parameter		Data	EATRACTIO					
log k <sub>ow</sub>		= 1.47 -						
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate						
Confidentiality, Type, and Guideline		none; experimental; OECD Guide-line 1	07, Partition Coeffi	cient (n-octanol/water), Flask-shaking Method, 1981				
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR						
Radiolabel, Source, State, and Purity		NR; NR; NR; NR Notes: NR						
Temperature		not reported						
System		not reported						
pH		not reported						
Results Details Method		not reported						
Standard Deviation Results		not reported						
Results Details		not reported						
			EVALUATIO	N				
Domain		Metric	Rating	Comments				
Domain 1: Substance								
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.				
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.				
Domain 2: Test Reliabili	ity							
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased				
		(Method Objectivity)		towards a particular product or outcome.				
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.				
Domain 3: Other								
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.				
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.				
	y Determi		High					

\* Related References: Source cited - EC, 2000

logKow

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	U.S. EPA, (2015 logKow	5). Flame retardants used in flexible polyure	ethane foam: A	An alternatives assessment update.
HERO ID:	5113326			
			EXTRACTIO	N
Parameter		Data		
log k <sub>ow</sub>		= 1.44 -		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	none; experimental; not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
Temperature		not reported		
System		not reported		
pH		not reported		
Results Details Method		not reported		
Standard Deviation Results		not reported		
Results Details		not reported		
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources; however, original reference appears to be incorrect.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	v Determi	nation	High	

\* Related References: Sources cited - MITI, 1992a (as cited in ATSDR, 2012) MITI (1992a) 2,2-Bis (4'-hydroxy-3',5'-dibromophenyl) propane. In: Chemicals Inspection & Testing Institute, Japan, eds. Biodegradation and bioaccumulation data of existing chemicals based on the CSCL Japan. Tokyo: Japan Chemical Industry Ecology- Toxicology & Information Center. Ministry of International Trade & Industry, 4-14.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (201) logKow	9). Chemistry Dashboard Information for T	Fris(2-chloroeth	yl) phosphate. 115-96-8
Template: HERO ID:	5926157			
			EXTRACTIO	N
Parameter				
log k <sub>ow</sub>		1.44		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,		NR; NR; NR; NR		
Temperature		Not Reported		
System		Not Reported		
pH		Not Reported		
Results Details Method		Not Reported		
Standard Deviation Results	5	Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	itv			
2. 1000 1001	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available database that references peer-reviewed original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	ty Determi	nation	High	

\* Related References: PhysProp. Chemicals Inspection and Testing Institute. 1992

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:		Verbruggen, E. M. J., Rila, J. P., Traas, T. P., Posthuma-Doodeman, C. J. A., M, Posthumus, R. (2005). Environmental risk limits for several phosphate esters, with possible application as flame retardant.					
OECD Harmonized	logKow	ible application as name retardant.					
Template:							
HERO ID:	5349334						
		I	EXTRACTION				
Parameter		Data					
log k <sub>ow</sub>		0.54 -					
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate					
Confidentiality, Type, and C	Guideline	none; experimental; not reported					
Solvent, Reactivity, Storage	, and Stability	NR; NR; NR; NR					
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR Notes: NR					
Temperature		Not reported					
System		Not reported					
рН		Not reported					
Results Details Method		Not reported					
Standard Deviation Results		Not reported					
Results Details		Not reported					
		]	EVALUATION				
Domain		Metric	Rating	Comments			

Domain		Metric	Rating	Comments
Domain 1: Substance	;			
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Relia	bility			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method wa used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qua	lity Determ	ination	Medium	

\* Related References: Source cited: Brodsky et al. (1997) HERO ID 2131375

# Tris(2-chloroethyl) phosphate (TCEP)

logKow

HERO ID: 5349334 Table: 2 of 6

Study Citation: OECD Harmonized		M. J., Rila, J. P., Traas, T. P., Posthuma- sible application as flame retardant.	Doodeman, C. J	J. A., M, Posthumus, R. (2005). Environmental risk limits for several phosphate
Template: HERO ID:	5349334			
			EXTRACTIO	N
Parameter		Data		
log k <sub>ow</sub>		1.43 -		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; experimental; shake-flask		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,	•	NR; NR; NR; NR Notes: NR		
Temperature	2	Not reported		
System		Not reported		
pH		Not reported		
Results Details Method		Not reported		
Standard Deviation Result	5	Not reported		
Results Details		Not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific ques- tion, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
		nation	High	

\* Related References: Source cited: Sasaki et al. (1981); also entered under NLM HERO ID 5926126

### Tris(2-chloroethyl) phosphate (TCEP)

logKow

HERO ID: 5349334 Table: 3 of 6

Study Citation: OECD Harmonized		M. J., Rila, J. P., Traas, T. P., Posthuma- sible application as flame retardant.	Doodeman, C.	J. A., M, Posthumus, R. (2005). Environmental risk limits for several phosphate
Template: HERO ID:	5349334			
	3319331		EXTRACTIO	N
Parameter		Data		1
log k <sub>ow</sub>		1.44 -		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; experimental; not reported		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,		NR; NR; NR; NR Notes: NR		
Temperature		Not reported		
System		Not reported		
pH		Not reported		
Results Details Method		Not reported		
Standard Deviation Results	8	Not reported		
Results Details		Not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	ty Dotormi	nation	High	

\* Related References: Source cited: CITI (1992); also entered under HERO ID 5926157

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# Tris(2-chloroethyl) phosphate (TCEP)

December 2023 logKow

HERO ID: 5349334 Table: 4 of 6

Study Citation:			Doodeman, C. J. A.,N	M, Posthumus, R. (2005). Environmental risk limits for several phosphate
OECD Harmonized	esters, with pos logKow	sible application as flame retardant.		
Template:	logitow			
HERO ID:	5349334			
			EXTRACTION	
Parameter		Data		
log k <sub>ow</sub>		1.48 -		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; not specified; not reported		
Solvent, Reactivity, Storage, and Stability NR; NR; NR; NR				
Radiolabel, Source, State,	-	NR; NR; NR; NR Notes: NR		
Temperature	2	Not reported		
System		Not reported		
pH		Not reported		
Results Details Method		Not reported		
Standard Deviation Result	S	Not reported		
Results Details		Not reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabi	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	tv Determi	nation	Medium	

\* Related References: Source cited: Muir (1984)

logKow

# Tris(2-chloroethyl) phosphate (TCEP)

HERO ID: 5349334 Table: 5 of 6

Study Citation:	Verbruggen, E. M. J., Rila, J. P., Traas, T. P., Posthuma-Doodeman, C. J. A., M, Posthumus, R. (2005). Environmental risk limits for several phosphate							
OECD Harmonized	esters, with pos logKow	sible application as flame retardant.						
Template:	logitow							
HERO ID:	5349334							
			EXTRACTION					
Parameter		Data						
log k <sub>ow</sub>		1.7 -						
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate						
Confidentiality, Type, and	Guideline	none; not specified; not reported						
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR; NR						
Radiolabel, Source, State, and Purity		NR; NR; NR; NR Notes: NR						
Temperature		Not reported						
System		Not reported						
pН		Not reported						
Results Details Method		Not reported						
Standard Deviation Results	5	Not reported						
Results Details		Not reported						
			EVALUATION					
Domain		Metric	Rating	Comments				
Domain 1: Substance								
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.				
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.				
Domain 2: Test Reliabil	ity							
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.				
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.				
Domain 3: Other								
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.				
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.				
Overall Quali	tv Determi	nation	Medium					

\* Related References: Source cited: IPCS (1998) and Yoshioka et al. (1986)

PUBLIC RELEASE DRAFT - DO NOT CITE OR QUOTE

# Tris(2-chloroethyl) phosphate (TCEP)

December 2023 logKow

HERO ID: 5349334 Table: 6 of 6

Study Citation: OECD Harmonized		M. J., Rila, J. P., Traas, T. P., Posthuma-D sible application as flame retardant.	Doodeman, C. J	. A., M, Posthumus, R. (2005). Environmental risk limits for several phosphate
Template: HERO ID:	5349334			
		]	EXTRACTIO	N
Parameter		Data		
log k <sub>ow</sub>		1.78 -		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; experimental; shake-flask		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,		NR; NR; NR; NR Notes: NR		
Temperature	2	Not reported		
System		Not reported		
pH		Not reported		
Results Details Method		Not reported		
Standard Deviation Result	s	Not reported		
Results Details		Not reported		
			EVALUATIO	Ň
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabi	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific ques- tion, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali			High	

\* Related References: Source cited: Hazelton (1994b) in EuropeanCommission (2004c)

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	ECB, (2009). En Water Solubility	ropean Union risk assessment report: Tris	(2-chloroethyl)	) phosphate, TCEP. 213.
Template:				
HERO ID:	3809216			
		I	EXTRACTIO	N
Parameter		Data		
Water Solubility		7820 - mg/L		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Buideline	None; Experimental; NR		
Solvent, Reactivity, Storage	, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR Notes: NR		
Temperature		20 °C		
System		NR		
pН		NR		
Results Details Method		NR		
Standard Deviation Results		NR		
Results Details		Not Reported		
				NT
Domain		Metric	EVALUATIO Rating	Comments
Domain 1: Substance			-	
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabili	tv			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	High	

\* Related References: Primary Source: Hazelton Europe 1994

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	Environment Can Water Solubility	ada, (2009). Screening Assessment for t	he Challenge: E	Cthanol, 2-chloro-, phosphate (3:1) (Tris(2-chloroethyl) phosphate [TCEP]).
Template: HERO ID:	5160070			
			EXTRACTIO	N
Parameter		Data		
Water Solubility		7820 - mg/L		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	luideline	None; Experimental; NR		
Solvent, Reactivity, Storage	, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR Notes: NR		
Temperature		20 °C		
System		NR		
pH		NR		
Results Details Method		NR		
Standard Deviation Results		NR		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabili	ty			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analytical method is unknown but is likely to be appropriate based on the data"s inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
Domain 5. Ottor	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	v Dotormin	etion	High	

\* Related References: Cites: European Chemicals Bureau, IUCLID dataset 2000 (HEROID 5235795); previously extracted under a different HEROID.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	IPCS, (1998). F Water Solubility	Flame retardants: Tris(chloropropyl) phosp y	hate and tris(2-c	chloroethyl) phosphate.
HERO ID:	79051			
			EXTRACTIO	N
Parameter		Data		
Water Solubility		8000 mg/L		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	no; not specified; NA		
Solvent, Reactivity, Storage	e, and Stability	NR; NA; NR; NR		
Radiolabel, Source, State, a	and Purity	None; NR; liquid; NR		
Temperature		20 °C		
System		Not Reported		
pH		Not Reported		
Results Details Method		Not Reported		
Standard Deviation Results	5	Not Reported		
Results Details		slightly soluble in water, 8 g/L		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance			-	
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	itv			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown sec- ondary source without peer-review and references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
	ty Determi		Low	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	NLM, (2015). I Water Solubility	PubChem: Hazardous Substance Data Bank: y	Tris(2-chloro	ethyl) phosphate, 115-96-8.
HERO ID:	5926126			
		F	XTRACTIO	N
Parameter		Data		
Water Solubility		7820 mg/L		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
Temperature		20 °C		
System		Not Reported		
pН		Not reported		
Results Details Method		Not Reported		
Standard Deviation Results	8	Not Reported		
Results Details		Not Reported		
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available database that provides references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

\* Related References: European Chemicals Bureau. 2000. IUCLID Dataset, Tris (2-Chloroethyl) phosphate (2000-CD-Rom edition);

#### PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

HERO ID: 5926126 Table: 2 of 2

Study Citation: OECD Harmonized Femplate:	NLM, (2015). I Water Solubilit	PubChem: Hazardous Substance Data Bank: y	Tris(2-chloro	ethyl) phosphate, 115-96-8.
HERO ID:	5926126			
		E	EXTRACTIO	N
Parameter		Data		
Water Solubility		7000 mg/L		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
Temperature		Not Reported		
System		Not Reported		
pH		Not reported		
Results Details Method		Not Reported		
Standard Deviation Results	8	Not Reported		
Results Details		Not Reported		
		Ι	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available database that provides references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	4 D-4		High	

\* Related References: PhysProp. Muir, DCG 1984

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (2015 Water Solubility		ormulation and	Initial Assessment. Chlorinated Phosphate Ester Cluster Flame Retardants.
Template:				
HERO ID:	4565574			
			EXTRACTIO	N
Parameter		Data		
Water Solubility		7820 mg/L		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	none; not specified; Not Reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	None; NR; liquid; NR		
Temperature		Not Reported		
System		Not Reported		
pH		Not Reported		
Results Details Method		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
2 5	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	High	

Tris(2-chloroethyl) phosphate (TCEP)

	0.5. EIA, (2015)	<ol> <li>Flame retardants used in flexible polyure</li> </ol>	ethane foam: A	An alternatives assessment update.
OECD Harmonized	Water Solubility			-
Template:				
HERO ID:	5113326			
		E	EXTRACTIO	N
Parameter		Data		
Water Solubility		= 7943 - mg/L		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and G		none; experimental; not reported		
Solvent, Reactivity, Storage,		NR; NR; NR; NR		
Radiolabel, Source, State, ar	nd Purity	NR; NR; NR; NR Notes: NR		
Temperature		not reported		
System		not reported		
pH		not reported		
Results Details Method		not reported		
Standard Deviation Results		not reported		
Results Details		not reported		
		Η	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabilit	<b>tx</b> 7			
Domain 2. Test Kellaulin	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
	mente J.	(Method Objectivity)	meanin	towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was
			2011	used.
Domain 3: Other				
Domain 5: Other	Matria 5:	Databasas	TT: -1-	
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and
				use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quality</b>	y Determin	ation	High	

\* Related References: Cited source - EC, 2000

#### PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

HERO ID: 5113326 Table: 2 of 4

Study Citation: OECD Harmonized	U.S. EPA, (2015). Flame retardants used in flexible polyurethane foam: An alternatives assessment update. Water Solubility						
Template:	water boraoniej						
HERO ID:	5113326						
			EXTRACTIO	N			
Parameter		Data					
Water Solubility		= 7820 - mg/L					
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate					
Confidentiality, Type, and Guideline		none; experimental; Directive 84/449/EEC, A.6, Water Solubility method, 1984					
Solvent, Reactivity, Storage, and Stability		NR; NR; NR					
Radiolabel, Source, State, and Purity		NR; NR; NR Notes: NR					
Temperature		20 °C					
System		not reported					
pН		pH 4.7 - 6.1					
Results Details Method		not reported					
Standard Deviation Results		not reported					
Results Details		GLP study					
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased			
		(Method Objectivity)		towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.			
Domain 3: Other							
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			
<b>Overall Qualit</b>	ty Determi	nation	High				

\* Related References: Cited sources - EC, 2000 and EU, 2009; Also entered under HERO ID 5926126

#### PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

HERO ID: 5113326 Table: 3 of 4

Study Citation: OECD Harmonized	U.S. EPA, (2015). Flame retardants used in flexible polyurethane foam: An alternatives assessment update. Water Solubility							
Template:								
HERO ID:	5113326							
			EXTRACTIO	N				
Parameter		Data						
Water Solubility		ca. 5000 - mg/L						
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate						
Confidentiality, Type, and Guideline		none; experimental; Society of Automotive Engineers (SAE) method						
Solvent, Reactivity, Storage, and Stability		NR; NR; NR						
Radiolabel, Source, State, and Purity		NR; NR; NR Notes: NR						
Temperature			20 °C					
System		not reported						
pH		5.5 -7						
Results Details Method		not reported						
Standard Deviation Results		not reported						
Results Details		Reported as 5 g/L						
			EVALUATIO					
Domain		Metric	Rating	Comments				
Domain 1: Substance								
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.				
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.				
Domain 2: Test Reliabil	lity							
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased				
		(Method Objectivity)		towards a particular product or outcome.				
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate.				
Domain 3: Other								
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.				
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.				
<b>Overall Quali</b>	ty Determir	nation	High					

\* Related References: Cited source - EC, 2000

#### PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

HERO ID: 5113326 Table: 4 of 4

Study Citation: OECD Harmonized	U.S. EPA, (2015). Flame retardants used in flexible polyurethane foam: An alternatives assessment update. Water Solubility						
Template:	water Solubility	y .					
HERO ID:	5113326						
			EXTRACTIO	Ň			
Parameter		Data					
Water Solubility		= 7000 - mg/L					
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate					
Confidentiality, Type, and Guideline		none; experimental; not reported					
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR					
Radiolabel, Source, State, and Purity Temperature System		NR; NR; NR; NR Notes: NR					
		not reported					
		not reported					
pH		not reported					
Results Details Method		not reported					
Standard Deviation Results		not reported					
Results Details		not reported					
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.			
Domain 3: Other							
20.1411 5. 04101	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			
<b>Overall Qualit</b>	ty Determi	nation	High				

\* Related References: Cited source - ATSDR 2012 [primary: Muir DCG (1984) Phosphate esters. Handbook of Environmental Chemistry Anthropogenic Substances. Berlin, Germany: Springer-Berlag, 41-66.] Also entered under HERO ID 5926126 and 5926157

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	U.S. EPA, (2019) Water Solubility	9). Chemistry Dashboard Information for T	Tris(2-chloroeth	yl) phosphate. 115-96-8
Template: HERO ID:	5926157			
			EXTRACTIO	N
Parameter		Data		
Water Solubility		7000 mg/L		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	None; Experimental; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR		
Temperature		Not Reported		
System		Not Reported		
pН		NR		
Results Details Method		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical's physical/chemical properties.
Domain 2: Test Reliabili	ity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
Domain 5. Other	Metric 5:	Databases	High	Data is from a publicly available database that provides references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	y Determi	nation	High	

\* Related References: PhysProp. Muir, DCG 1984

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:			oodeman, C. J. A.,N	M, Posthumus, R. (2005). Environmental risk limits for several phosphate					
OECD Harmonized	Water Solubility	sible application as flame retardant.							
Template:	· · · · · · · · · · · · · · · ·								
HERO ID:	5349334	5349334							
		E	XTRACTION						
Parameter		Data							
Water Solubility		5000 - mg/L							
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate							
Confidentiality, Type, and		none; not specified; not specified							
Solvent, Reactivity, Storag	-	tris(2-chloroethyl) phosphate; NR; NR; NR							
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR Notes: NR							
Temperature		20 °C							
System		not reported							
pН		not reported							
Results Details Method		not reported							
Standard Deviation Results	8	not reported							
Results Details		not reported							
Damain			EVALUATION	Commente					
Domain Domain 1: Substance		Metric	Rating	Comments					
Domain 1. Substance	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.					
	Metric 2:	Appropriateness	High High	Measured data are consistent with the subject chemical substance.					
	Wieute 2.	Appropriateness	Ingn	Measured data are consistent with the subject chemical substance subctural reatures.					
Domain 2: Test Reliabil	2								
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.					
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.					
Domain 3: Other									
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.					
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.					
Overall Quali			N/A Medium	Rating of this factor is not applicable to this kind of information.					

\* Related References: Source cited: Hoechst AG (1986) in GDCh(1987)

## PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

HERO ID: 5349334 Table: 2 of 6

Study Citation:			Doodeman, C. J	Verbruggen, E. M. J., Rila, J. P., Traas, T. P., Posthuma-Doodeman, C. J. A., M, Posthumus, R. (2005). Environmental risk limits for several phosphate esters, with possible application as flame retardant.						
OECD Harmonized	Water Solubility									
Template:										
HERO ID:	5349334									
			EXTRACTIO	N						
Parameter		Data								
Water Solubility		6000 - mg/L								
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate								
Confidentiality, Type, and	Guideline	none; not specified; not specified								
Solvent, Reactivity, Storag		tris(2-chloroethyl) phosphate; NR; NR; N	R							
Radiolabel, Source, State,		NR; NR; NR; NR Notes: NR								
Temperature	•	not reported								
System		not reported								
pH		not reported								
Results Details Method		not reported								
Standard Deviation Result	s	not reported								
Results Details		not reported								
				•						
Domain		Metric	EVALUATION Rating	Comments						
Domain 1: Substance			8							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.						
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.						
Domain 2: Test Reliabil	lity									
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased						
		(Method Objectivity)		towards a particular product or outcome.						
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was						
				used.						
Domain 3: Other										
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.						
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.						
Overall Quali		nation	High							

\* Related References: Source cited: Brodsky et al. (1997) HERO ID 2131375

### PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

Study Citation: OECD Harmonized		sible application as flame retardant.	Doodeman, C	J. A., M, Posthumus, R. (2005). Environmental risk limits for several phosphate
Template: HERO ID:	5349334			
			EXTRACTIO	Ň
Parameter		Data		
Water Solubility		7820 - mg/L		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; not specified; not specified		
Solvent, Reactivity, Storag	e, and Stability	tris(2-chloroethyl) phosphate; NR; NR; NI	R	
Radiolabel, Source, State,		NR; NR; NR; NR Notes: NR		
Temperature		20 °C		
System		not reported		
pH		not reported		
Results Details Method		not reported		
Standard Deviation Results	3	not reported		
Results Details		not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	High	

\* Related References: Hazelton (1994a) in European Commission (2004c); Also entered under HERO ID 5926126 and 3970179

### PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

Study Citation:		M. J., Rila, J. P., Traas, T. P., Posthuma- sible application as flame retardant.	-Doodeman, C. J	J. A., M, Posthumus, R. (2005). Environmental risk limits for several phosphate
OECD Harmonized	Water Solubility	У		
Template: HERO ID:	5349334			
			EXTRACTIO	N
Parameter		Data		
Water Solubility		7000 - mg/L		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; not specified; not specified		
Solvent, Reactivity, Storag	e, and Stability	tris(2-chloroethyl) phosphate; NR; NR; N	٨R	
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR Notes: NR		
Temperature		20 °C		
System		not reported		
pН		not reported		
Results Details Method		not reported		
Standard Deviation Results	s	not reported		
Results Details		not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabi	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	High	

\* Related References: Source cited: Eldefrawi AT, Mansour NA, Brattsten LB, Ahrens VD, Lisk DJ. 1977. Further toxicological studies withcommercial and candidate flame retardant chemicals. Part II. Bull Environ Contam Toxicol 17: 720-726; Muir (1984); Also entered under HERO ID 5926157 and 5926126

## PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

HERO ID: 5349334 Table: 5 of 6

Study Citation:	Verbruggen, E. M. J., Rila, J. P., Traas, T. P., Posthuma-Doodeman, C. J. A., M, Posthumus, R. (2005). Environmental risk limits for several phosphate esters, with possible application as flame retardant.						
OECD Harmonized	esters, with pos Water Solubility						
Template: HERO ID:	5349334						
		E	XTRACTIO	N			
Parameter		Data					
Water Solubility		7900 - mg/L					
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate					
Confidentiality, Type, and	Guideline	none; not specified; not specified					
Solvent, Reactivity, Storage		tris(2-chloroethyl) phosphate; NR; NR; NR					
Radiolabel, Source, State, a		NR; NR; NR; NR Notes: NR					
Temperature	,	20 °C					
System		supersaturation over 20 °C, cooling, filtration	n				
pH		not reported					
Results Details Method		not reported					
Standard Deviation Results	8	not reported					
Results Details		not reported					
		я Я	VALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased			
		(Method Objectivity)		towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.			
Domain 3: Other							
Domain 5. Outer	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			
Overall Qualit	· • •		High				

\* Related References: Source cited: Yoshioka et al. (1986a)

## PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Water Solubility

HERO ID: 5349334 Table: 6 of 6

Study Citation:			odeman, C. J. A.,N	A, Posthumus, R. (2005). Environmental risk limits for several phosphate
OECD Harmonized	esters, with pos Water Solubility	sible application as flame retardant.		
Template:				
HERO ID:	5349334			
		E	XTRACTION	
Parameter		Data		
Water Solubility		8000 - mg/L		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	none; not specified; not specified		
Solvent, Reactivity, Storag	e, and Stability	tris(2-chloroethyl) phosphate; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR Notes: NR		
Temperature	-	20 °C		
System		not reported		
pH		not reported		
Results Details Method		not reported		
Standard Deviation Results	8	not reported		
Results Details		not reported		
		E	VALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
Zomum J. Ouler	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	tv Determi	nation	Medium	

\* Related References: Source cited: IPCS (1998)

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	ECB, (2009). Eu Flash Point	ropean Union risk assessment report: Tr	is(2-chloroethyl) phos	phate, TCEP. 213.
Template:	i iusii i oint			
HERO ID:	3809216			
			EXTRACTION	
Parameter		Data		
Flash Point		200 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and Confidentiality, and	Guideline	None; Experimental; NR		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
System		NR		
Standard Deviation Results		NR		
Results Details		at 1013 hPa		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	ty Determi	nation	Medium	

\* Related References: Primary Source: Courtaulds Chemicals 1996

Tris(2-chloroethyl) phosphate (TCEP)

HERO ID: 79051 Table: 1 of 1
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Study Citation: OECD Harmonized Template:	IPCS, (1998). F Flash Point	Flame retardants: Tris(chloropropyl) phosp	whate and tris(2-chloro	ethyl) phosphate.
HERO ID:	79051			
			EXTRACTION	
Parameter		Data		
Flash Point		202 C		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	No; not specified; Pensky Martin closed c	up	
Solvent, Reactivity, Storage		NA; NA; NA; NA		
Radiolabel, Source, State, a	and Purity	NA; NA; liquid; NA		
System		Pensky Martin closed cup		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific ques- tion, and the methodology"s objective is clear.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.
Domain 3: Other				
	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown sec- ondary source without peer-review and references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	ty Determi	nation	Medium	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	NLM, (2015). F Flash Point	PubChem: Hazardous Substance Data Ban	nk: Tris(2-chloro	ethyl) phosphate, 115-96-8.
Template: HERO ID:	5926126			
			EXTRACTIO	N
Parameter		Data		
Flash Point		216 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and O	Guideline	None; Experimental; Cleveland open cup		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
System		Not Reported		
Standard Deviation Results	5	Not reported		
Results Details		Not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	ty Determi	nation	High	

\* Related References: Lewis, R.J. Sr.; Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY 2007., p. 1288

#### Flash Point

HERO ID: 5926126 Table: 2 of 2

Study Citation: OECD Harmonized	NLM, (2015). F Flash Point	PubChem: Hazardous Substance Data Bank	: Tris(2-chloro	ethyl) phosphate, 115-96-8.
Template:	Plash Folin			
HERO ID:	5926126			
		1	EXTRACTIO	N
Parameter		Data		
Flash Point		232 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Closed Cup		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
System		Not Reported		
Standard Deviation Results		Not reported		
Results Details		450 °F		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use and includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	v Determi	nation	High	

\* Related References: Sigma-Aldrich; Material Safety Data Sheet for Tris(2-chloroethyl) Phosphate. Product Number: 119660, Version 4.7 (Revision Date 07/01/2014). Available from, as of October 8, 2014: http://www.sigmaaldrich.com/safety-center.html

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	NLM, (2020). P Flash Point	ubChem database: compound summary: tr	is(2-chloroethyl) ph	osphate.
HERO ID:	6629833			
	002/033		EXTRACTION	
Parameter		Data	EATRACTION	
Flash Point		450 °F		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; not specified; Not reported		
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
System		Not Reported		
Standard Deviation Results	6	Not reported		
Results Details		Data reported as 450 °F which is approximation	ately 232 °C	
		· · · · · · · · · · · · · · · · · · ·	EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	Data is from a publicly available secondary source with references to non-peer reviewed sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	ty Determi	nation	Medium	

\* Related References: CAMEO Chemicalshttps://cameochemicals.noaa.gov/chemical/19995

#### Flash Point

HERO ID: 6629833 Table: 2 of 2

Study Citation: OECD Harmonized	NLM, (2020). P Flash Point	ubChem database: compound summary:	tris(2-chloroethyl) pho	osphate.
Template:	((20022			
HERO ID:	6629833			
_			EXTRACTION	
Parameter		Data		
Flash Point		202 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Closed Cup		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a		NR; NR; NR; NR		
System	-	Not Reported		
Standard Deviation Results		Not reported		
Results Details		Not reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	Data is from a publicly available secondary source with references to non-peer reviewed sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	ty Determi	nation	Medium	

\* Related References: https://www.ilo.org/dyn/icsc/showcard.display?p\_version=2&p\_card\_id=1677

Tris(2-chloroethyl) phosphate (TCEP)

HERO ID:	5926273	Table:	1	of 1

Study Citation: OECD Harmonized	RSC, (2019). C Flash Point	ChemSpider: Tris(2-chloroethyl) phosphate		
Template: HERO ID:	5926273			
			EXTRACTION	
Parameter		Data		
Flash Point		222 °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR		
System		Not Reported		
Standard Deviation Results	8	Not reported		
Results Details		Not Reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	Data is from a publicly available secondary source with references to non-peer reviewed sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	Medium	

\* Related References: LabNetwork

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:	Citation: Toscano, W. A., Coleman, K. P. (2012). Esters of carbonic and orthocarbonic acid, organic phosphorous, monocarboxylic halogenated acids, haloalcohol and organic silicon. 353-424.				
OECD Harmonized	Flash Point	011. 555-424.			
Template:					
HERO ID:	5332876				
		E	XTRACTIO	Ň	
Parameter		Data			
Flash Point		232 °C			
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate			
Confidentiality, Type, and C	Guideline	None; Experimental; Not reported			
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR			
Radiolabel, Source, State, and Purity		NR; NR; NR; NR			
System		Not reported			
Standard Deviation Results		Not reported			
Results Details		Not reported			
		I	EVALUATIO	N	
Domain		Metric	Rating	Comments	
Domain 1: Substance					
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.	
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.	
Domain 2: Test Reliabil	ity				
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased	
		(Method Objectivity)		towards a particular product or outcome.	
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.	
Domain 3: Other					
	Metric 5:	Databases	High	Data is from a data collection that is prepared by experts in the field.	
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.	
Overall Qualit	v Determi	nation	High		

Tris(2-chloroethyl) phosphate (TCEP)

HERO ID: 5113326	Table: 1 of 4

Study Citation: OECD Harmonized	U.S. EPA, (201 Flash Point	5). Flame retardants used in flexible poly	urethane foam: A	An alternatives assessment update.
Template: HERO ID:	5113326			
	5115520		EXTRACTIO	N
Parameter		Data	LATRACIIO	IN
Flash Point		= 200 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	Not Reported; Experimental; ASTM D9	3 method	
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR Notes: NR		
System		not reported		
Standard Deviation Results	s	not reported		
Results Details		sample appears to catch fire at approx. 20	00 °C, but does not	show a distinct flash point as defined by the test method
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
	36.1.4	(Method Objectivity)	TT: 1	towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	tv Determi	nation	High	
C, Stull Yuull	J Determin			

\* Related References: Source cited - EC, 2000 and EU, 2009

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

Flash Point

Tris(2-chloroethyl) phosphate (TCEP)

HERO ID: 5113326 Table: 2 of 4

Study Citation: OECD Harmonized	U.S. EPA, (201 Flash Point	5). Flame retardants used in flexible polyure	thane foam: A	An alternatives assessment update.
Template:	Plash Folin			
HERO ID:	5113326			
	5115520			
<b>D</b>			EXTRACTIO	N
Parameter		Data		
Flash Point		= 252 - °C		
CASRN and Test Material		= 252 - °C 115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	Not Reported; Experimental; open cup		
Solvent, Reactivity, Storag		NR; NR; NR; NR		
Radiolabel, Source, State,		NR; NR; NR; NR Notes: NR		
System	and r unity	not reported		
Standard Deviation Results	\$	not reported		
Results Details	-	non-GLP		
		I	EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
Domain 5: Other	Metric 5:	Databases	High	The information or date is from a recognized date collection/repository where date are
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	ty Determi	nation	High	

\* Related References: Source cited - EC, 2000

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:		5). Flame retardants used in flexible poly	urethane foam: A	An alternatives assessment update.
OECD Harmonized Template:	Flash Point			
HERO ID:	5113326			
	5115520			
<b>D</b> (			EXTRACTIO	N
Parameter		Data		
Flash Point		= 216 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	Not Reported; Experimental; not reporte		
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR Notes: NR		
System		not reported		
Standard Deviation Result	s	not reported		
Results Details		not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabi	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Quali	ty Determi	nation	High	

Flash Point

\* Related References: Source cited - ATSDR 2012

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:		5). Flame retardants used in flexible poly	urethane foam: A	An alternatives assessment update.
OECD Harmonized Template:	Flash Point			
HERO ID:	5113326			
	5115520			••
D		Dete	EXTRACTIO	N
Parameter		Data		
Flash Point		= 225 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	Not Reported; Experimental; DIN 51758	method, closed cu	1p
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		•
Radiolabel, Source, State, a		NR; NR; NR; NR Notes: NR		
System	·	not reported		
Standard Deviation Results		not reported		
Results Details		not reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	v Dotormi	nation	High	

\* Related References: Source cited - EC, 2000

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Autoflammability

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	ECB, (2009). E Autoflammabili	European Union risk assessment report: Tri ity	s(2-chloroethyl) pho	osphate, TCEP. 213.
HERO ID:	3809216			
			EXTRACTION	
Parameter		Data		
Auto-flammability		480 - °C		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	None; Experimental; NR		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR Notes: NR		
System		NR		
Standard Deviation Results		NR		
Results Details		NR		
Results Value		NR		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabili	ity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use OR includes references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

# **Overall Quality Determination**

Medium

\* Related References: Hoechst AG 1994

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Autoflammability

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	NLM, (2020). I Autoflammabili	PubChem database: compound summary ity	v: tris(2-chloroethyl) pho	osphate.
Template: HERO ID:	6629833			
			EXTRACTION	
Parameter		Data		
Auto-flammability		480 °C		
CASRN and Test Material		115-96-8; TCEP		
Confidentiality, Type, and	Guideline	None; Experimental; Not specified		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
System		Not reported		
Standard Deviation Results	5	Not reported		
Results Details		Not Reported		
Results Value		Not Reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	ty Determi	nation	Medium	

\* Related References: ILO International Chemical Safety Cards (ICSC)

# PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

Autoflammability

HERO ID: 6629833 Table: 2 of 2

Study Citation: OECD Harmonized		PubChem database: compound summar	y: tris(2-chloroethyl) ph	osphate.
	Autoflammabili	lty		
Template: HERO ID:	6629833			
HERO ID:	0029855			
			EXTRACTION	
Parameter		Data		
Auto-flammability		1115 °F		
CASRN and Test Material		115-96-8; TCEP		
Confidentiality, Type, and Confidentiality, and Confidentiality	Guideline	None; Experimental; Not specified		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a		NR; NR; NR; NR		
System	·	Not reported		
Standard Deviation Results		Not reported		
Results Details		Not Reported		
Results Value		Not Reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Medium	The data are from a source that is known but is missing elements required for High designation such as peer-review, public availability, or the inclusion of references to original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit			Medium	Taking of any factor to not approache to any find of internation

\* Related References: National Toxicology Program, Institute of Environmental Health Sciences, National Institutes of Health (NTP). 1992. National Toxicology Program Chemical Repository Database. Research Triangle Park, North Carolina.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	Elsevier, (2019) Viscosity	). Reaxys: physical-chemical property data	for Tris(2-chlo	proethyl) phosphate. CAS Registry Number: 115-96-8
Template:	(1500510)			
HERO ID:	5926432			
		J	EXTRACTIO	N
Parameter		Data		
Viscosity		35.7 - 42.9		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a	•	NR; NR; NR; NR		
Temperature	·	20 - 25 °C		
Test Conditions		Not Reported		
Standard Deviation Results	3	Not Reported		
Results Details		2 values were reported: 0.357 P at 25 $^{\circ}\mathrm{C}$ and	d 0.429 P at 20 °	С.
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a secondary database with a references to the peer-reviewed original source.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	High	

\* Related References: Burger; Wagner; Journal of Chemical and Engineering Data; vol. 3; (1958); p. 310; Jones et al.; Journal of the Chemical Society; (1946); p. 826

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	IPCS, (1998). F Viscosity	lame retardants: Tris(chloropropyl) phosp	hate and tris(2-	chloroethyl) phosphate.
Template: HERO ID:	79051			
			EXTRACTIO	N
Parameter		Data		
Viscosity		34		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	no; not specified; NA		
Solvent, Reactivity, Storage	e, and Stability	NA; NA; NA; NA		
Radiolabel, Source, State, and Purity		NA; NA; liquid; NA		
Temperature		25 °C		
Test Conditions		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown sec- ondary source without peer-review and references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	v Determi	nation	Low	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	NLM, (2015). F Viscosity	PubChem: Hazardous Substance Data Bank	k: Tris(2-chloro	bethyl) phosphate, 115-96-8.
Template:				
HERO ID:	5926126			
			EXTRACTIO	N
Parameter		Data		
Viscosity		45		
-		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, and Purity		NR; NR; NR; NR		
Temperature 20 °C		20 °C		
Test Conditions		Not Reported		
Standard Deviation Results	8	Not Reported		
Results Details		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data"s inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available, peer-reviewed database that provides references to a recognized data collection.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	tv Determi	nation	High	

\* Related References: IARC. 1990. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Geneva: World Health Organization, International Agency for Research on Cancer. p. V48 110.

Tris(2-chloroethyl) phosphate (TCEP)

Data 1.4707 - 1.4786 115-96-8; Tris(2-chloroethyl) phosphate None; Experimental; Not reported NR; NR; NR; NR NR; NR; NR	EXTRACTIO	N				
1.4707 - 1.4786 115-96-8; Tris(2-chloroethyl) phosphate None; Experimental; Not reported NR; NR; NR; NR NR; NR; NR	EXTRACTIO	Ν				
1.4707 - 1.4786 115-96-8; Tris(2-chloroethyl) phosphate None; Experimental; Not reported NR; NR; NR; NR NR; NR; NR						
115-96-8; Tris(2-chloroethyl) phosphate None; Experimental; Not reported NR; NR; NR; NR NR; NR; NR						
None; Experimental; Not reported NR; NR; NR; NR NR; NR; NR; NR						
NR; NR; NR; NR NR; NR; NR; NR						
NR; NR; NR; NR						
20-25 °C						
Not Reported						
Not Reported						
	20-25 °C; 13 values were reported in Reaxys; 12 values were reported in the range of 1.4707 to 1.4786 at 20-25 °C; 1 value was measured at non-					
standard temperature.						
Not Reported Not Reported						
	EVALUATIO	N				
Metric	Rating	Comments				
Representativeness	High	Data are measured or estimated for the subject chemical substance.				
Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.				
Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased				
(Method Objectivity)		towards a particular product or outcome.				
Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data"s inclu- sion in a peer-reviewed/recognized database or other secondary source.				
Databases	High	Data is from a secondary database with a references to the peer-reviewed original source.				
Models	N/A	Rating of this factor is not applicable to this kind of information.				
		Models N/A				

\* Related References: Data range determined from multiple primary sources in REAXYS.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	Haynes, W. M. Refractive Index	(2014). Tris(2-chloroethyl) phosphate. 3-5 x	42.	
Template:				
HERO ID:	5349311			
			EXTRACTIO	N
Parameter		Data		
Refractive Index		1.4721		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Buideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR		
Radiolabel, Source, State, and Purity		NR; NR; NR; NR		
Temperature		20 °C		
System		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
-		Not Reported		
Parameter		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabili	tv			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
2 sinain 5. Oulor	Metric 5:	Databases	High	Data is from a recognized, peer-reviewed data collection.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	y Determi	nation	High	

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized Template:	IPCS, (1998). Flame retardants: Tris(chloropropyl) phosphate and tris(2-chloroethyl) phosphate. Refractive Index						
HERO ID:	79051						
			EXTRACTIO	N			
Parameter		Data					
Refractive Index		1.4721					
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate					
Confidentiality, Type, and Guideline		no; Not Reported; NA					
Solvent, Reactivity, Storage, and Stability		NA; NA; NA; NA					
Radiolabel, Source, State, and Purity		NA; NA; liquid; NA					
Temperature		20 °C					
System		NA					
Standard Deviation Results	3	Not Reported					
Results Details		Not Reported					
Results Details Methods		Not Reported					
Parameter		Not Reported					
			EVALUATIO	N			
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased			
		(Method Objectivity)		towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.			
Domain 3: Other							
	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown sec- ondary source without peer-review and references to the original sources.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			

# **Overall Quality Determination**

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	NLM, (2015). H Refractive Index	PubChem: Hazardous Substance Data Ban x	k: Tris(2-chloro	bethyl) phosphate, 115-96-8.
Template: HERO ID:				
	5926126		EXTRACTIO	N
Parameter		Data	2	
Refractive Index		1.4721		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and G	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Temperature		20 °C		
System		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
Results Details Methods		Not Reported		
Parameter		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased
		(Method Objectivity)		towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	Analytical method is unknown but is likely to be appropriate based on the data's inclu- sion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	High	Data is from a publicly available, peer-reviewed database that provides references to a recognized data collection.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit			N/A High	-

\* Related References: Haynes, W.M. (Ed.) CRC Handbook of Chemistry and Physics. 95th Edition. CRC Press LLC, Boca Raton. P. 3-542.

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	RSC, (2019). Che Refractive Index	emSpider: Tris(2-chloroethyl) phosphate	ð.	
Template:				
HERO ID:	5926273			
			EXTRACTION	
Parameter		Data		
Refractive Index		1.472		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	None; Experimental; Not reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, a	and Purity	NR; NR; NR; NR		
Temperature		Not Reported		
System		Not Reported		
Standard Deviation Results	Standard Deviation Results Not Reported			
Results Details		Not Reported		
Results Details Methods		Not Reported		
Parameter		Not Reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
Domain 5: Other	Metric 5:	Databases	Medium	Data is from a publicly available secondary source with references to non-peer reviewed sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Qualit</b>	ty Determin	ation	Medium	

\* Related References: Parchem-fine & specialty chemicals

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Henry's Law

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	Ekpe, O. D., Ch Henry's Law	000, G., Barceló, D., Oh, J. E. (2020). Chapt	ter One - Introductio	on of emerging halogenated flame retardants in the environment. 881-39.
Template: HERO ID:	8775306			
		I	EXTRACTION	
Parameter		Data		
Henry's Law		1.67E-7 - atm m^ 3/mol		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Not specified; NR		
Solvent, Reactivity, Storage, and Stability		NR; NR; NR; NR		
Radiolabel, Source, State, a		NR; NR; NR; NR Notes: NR		
Temperature	-	25 °C		
pH		NR		
System		NR		
Standard Deviation Results		Not Reported		
Results Details Not Reporte		Not Reported		
Results Details Methods		NR		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance			Turing	
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g. if the physical state is described as a liquid, the substance should have a melting point below $25^{\circ}$ C and a boiling point above $25^{\circ}$ C) or behaviors.
Domain 2: Test Reliabil	itv			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analytic cal method is unknown but is likely to be appropriate based on the data''s inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

# **Overall Quality Determination**

Medium

\* Related References: Cites EPI Suite and secondary source I. Pantelaki, D. Voutsa, Organophosphate flame retardants (OPFRs): a review on analytical methods and occurrence in wastewater and aquatic environment, Sci. Total Environ. 649 (2019) 247"263. (HEROID unknown).

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Henry's Law

Tris(2-chloroethyl) phosphate (TCEP)

HERO	ID:	79051	Table:	1 of 1

Study Citation: OECD Harmonized	IPCS, (1998). F Henry's Law	lame retardants: Tris(chloropropyl) phosp	phate and tris(2-o	chloroethyl) phosphate.
Template:	110111 9 5 2411			
HERO ID:	79051			
			EXTRACTIO	N
Parameter		Data		
Henry's Law		3.29 × 10-6		
CASRN and Test Material		115-96-8; tris(2-chloroethyl) phosphate		
Confidentiality, Type, and O	Guideline	no; not specified; NA		
Solvent, Reactivity, Storage	e, and Stability	NA; NA; NA; NA		
Radiolabel, Source, State, a	and Purity	NA; NA; liquid; NA		
Temperature		Not Reported		
pН		Not Reported		
System		Not Reported		
Standard Deviation Results		Not Reported		
Results Details		Not Reported		
Results Details Methods		Not Reported		
			EVALUATIO	N
Domain		Metric	Rating	Comments
Domain 1: Substance			-	
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	ity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	Low	The data are from a primary source without expert peer-review or an unknown sec- ondary source without peer-review and references to the original sources.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	v Determi	nation	Low	

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Henry's Law

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:	M, Posthumus, R. (2005). Environmental risk limits for several phosphate			
OECD Harmonized Template:	esters, with pos Henry's Law	sible application as flame retardant.		
HERO ID:	5349334			
			EXTRACTION	
Parameter		Data		
Henry's Law		8.07E-03 Pa. m3/mol		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and		none; not reported; Not Reported		
Solvent, Reactivity, Storage		NR; NR; NR; NR		
Radiolabel, Source, State, and Purity		NR; NR; NR; NR Notes: NR		
Temperature		25 °C		
pH		not reported		
System		not reported		
Standard Deviation Results	5	not reported		
Results Details		not reported		
Results Details Methods		not reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	tv Determi	nation	Medium	

\* Related References: IPCS (1998)

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

Tris(2-chloroethyl) phosphate (TCEP)

Henry's Law

HERO ID: 5349334 Table: 2 of 3

Study Citation:	esters, with pos	M. J., Rila, J. P., Traas, T. P., Posthuma- sible application as flame retardant.	Doodeman, C. J. A.,	M, Posthumus, R. (2005). Environmental risk limits for several phosphate			
OECD Harmonized	Henry's Law						
Template: HERO ID:	5349334						
	5517551		EXTRACTION				
Parameter		Data	EATRACTION				
Henry's Law		4.16E-05 Pa. m3/mol					
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate					
Confidentiality, Type, and	Guideline	none; not reported; not reported					
Solvent, Reactivity, Storag		NR; NR; NR					
Radiolabel, Source, State,		NR; NR; NR; NR Notes: NR					
Temperature	2	not reported					
pH		not reported					
System		not reported					
Standard Deviation Result	S	not reported					
Results Details		not reported					
Results Details Methods		not reported					
			EVALUATION				
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.			
Domain 2: Test Reliabi	lity						
2	Metric 3:	Reliability/Unbiased	Medium	There is no indication that the methodology for producing the information was biased			
		(Method Objectivity)		towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.			
Domain 3: Other							
	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use,			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			
Overall Quali			Medium				

\* Related References: European Commission (2004c)

PUBLIC RELEASE DRAFT - DO NOT CITE OR QUOTE December 2023

Tris(2-chloroethyl) phosphate (TCEP)

Henry's Law

HERO ID: 5349334 Table: 3 of 3

Study Citation:			Doodeman, C. J. A., N	M, Posthumus, R. (2005). Environmental risk limits for several phosphate
<b>OECD Harmonized</b> esters, with possible application as flame retarda Henry's Law				
Template:	Henry's Law			
HERO ID:	5349334			
	5549554			
D		Dete	EXTRACTION	
Parameter		Data		
Henry's Law		1.5E-05 Pa. m3/mol		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and C	Guideline	none; not reported; Not Reported		
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State, and Purity		NR; NR; NR; NR Notes: NR		
Temperature		20 °C		
pH		not reported		
System		not reported		
Standard Deviation Results		not reported		
Results Details		not reported		
Results Details Methods		not reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.
Domain 2: Test Reliabil	itv			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	(Method Objectivity) Reliability/Analytical Method	Low	The analytical method is unknown and there is no indication that a reliable method was used.
Domain 3: Other				
Domain 5. Other	Metric 5:	Databases	High	The information or data is from a recognized data collection/repository where data are peer-reviewed by experts in the field, are broadly available to the public for review and use,
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
Overall Qualit	v Determi	nation	Medium	

\* Related References: GDCh (Gesellschaft Deutscher Chemiker - Advisory Committee on Existing Chemicals of EnvironmentalRelevance (BUA)). 1987. Tris(2-chloroethyl) phosphate. Beratergremium F"r Umweltrelevante Altstoffe (BUA), Vol. 20. Weinheim, Germany: VCH.

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Other Properties

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation: OECD Harmonized	Ekpe, O. D., Ch Other Propertie	Ekpe, O. D., Choo, G., Barceló, D., Oh, J. E. (2020). Chapter One - Introduction of emerging halogenated flame retardants in the environment. 881-39. Other Properties					
Template:							
HERO ID:	8775306						
		I	EXTRACTION				
Parameter		Data					
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate					
Confidentiality, Type, and C	Guideline	None; Not specified; NR					
Solvent, Reactivity, Storage	e, and Stability	NR; NR; NR; NR					
Radiolabel, Source, State, a	nd Purity	NR; NR; NR; NR Notes: NR					
Results Value		Log Kaw = -3.871					
Results Details		at 25 °C					
Results Remarks		Not Reported					
		]	EVALUATION				
Domain		Metric	Rating	Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25 $^{\circ}$ C and a boiling point above 25 $^{\circ}$ C) or behaviors.			
Domain 2: Test Reliabil	ity						
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.			
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analyti- cal method is unknown but is likely to be appropriate based on the data's inclusion in a peer-reviewed/recognized database or other secondary source.			
Domain 3: Other							
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			
Overall Qualit	y Determi	nation	Medium				

\* Related References: Cites EPI Suite and secondary source I. Pantelaki, D. Voutsa, Organophosphate flame retardants (OPFRs): a review on analytical methods and occurrence in wastewater and aquatic environment, Sci. Total Environ. 649 (2019) 247"263. (HEROID unknown).

Study Citation: OECD Harmonized	Ekpe, O. D., Ch Other Propertie		pter One - Introduction	on of emerging halogenated flame retardants in the environment. 881-39.
Template:	Other Propertie	3		
HERO ID:	8775306			
			EXTRACTION	
Parameter		Data		
CASRN and Test Material		115-96-8; Tris(2-chloroethyl) phosphate		
Confidentiality, Type, and	Guideline	None; Not specified; NR		
Solvent, Reactivity, Storag	e, and Stability	NR; NR; NR; NR		
Radiolabel, Source, State,	and Purity	NR; NR; NR; NR Notes: NR		
Results Value		Log Koa = 5.311		
Results Details		at 25 °C		
Results Remarks		Not Reported		
			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features (e.g., presence of certain functional groups) or other physical/chemical properties (e.g., if the physical state is described as a liquid, the substance should have a melting point below 25 °C and a boiling point above 25 °C) or behaviors.
Domain 2: Test Reliabi	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	Medium	There is no indication that the methodology for producing the information was biased towards a particular product or outcome.
	Metric 4:	Reliability/Analytical Method	Medium	The analytical method is non-standard but is expected to be appropriate OR the analyti- cal method is unknown but is likely to be appropriate based on the data"s inclusion in a peer-reviewed/recognized database or other secondary source.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.

\* Related References: Cites EPI Suite and secondary source I. Pantelaki, D. Voutsa, Organophosphate flame retardants (OPFRs): a review on analytical methods and occurrence in wastewater and aquatic environment, Sci. Total Environ. 649 (2019) 247"263. (HEROID unknown).

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Miscellaneous

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:Okeme, J. O. (20 Technology 52(23)OECD HarmonizedMiscellaneous		018). Examining the gas-particle partitioning of organophosphate esters: How reliable are air measurements?. Environmental Science & 23):13834-13844.			
Template: HERO ID:	5165658				
	5105050	EXTRACTION			
Parameter		Data			
CASRN		115-96-8			
Confidentiality, Type, and	Guideline	No; calculation; NA			
Solvent, Reactivity, Storage		NR; NR; NR			
Radiolabel, Source, State, a	and Purity	NR; NR; NR Notes: NR			
Value		Not Reported			
Temperature		NA			
System		evaluation of measured and calculated data			
pH		NA			
Standard Deviation Results	2	NA			
	,	Authors state that studies of organic phosphate esters (OPEs) in air have likely mischaracterized the gas-particle partitioning of the more volatile			
Results Details		OPEs" and that the results are "most likely influenced, in part, by equilibrium sampling artifacts such as gas phase sorption to filters. Measured particle fractions reported in other sources ranged from 15 to $>99\%$ (Table S4). Estimated particle distribution were $<5\%$ using either Junge-Pankow model or Harner-Bidleman model or by the Arp pp-LFER model (approximate, based on figure S 1). Log K oa reported in HERO ID 6967359.			

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 1: Substance				
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.
	Metric 2:	Appropriateness	N/A	Rating of this factor is not applicable to this kind of information.
Domain 2: Test Reliabi	lity			
	Metric 3:	Reliability/Unbiased (Method Objectivity)	High	The methodology for producing the information is designed to answer a specific question, and the methodology's objective is clear.
	Metric 4:	Reliability/Analytical Method	N/A	Rating of this factor is not applicable to this kind of information.
Domain 3: Other				
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.
<b>Overall Quali</b>	ty Determ	ination	Medium	

PUBLIC RELEASE DRAFT - DO NOT CITE OR QUOTE December 2023 Miscellaneous

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:		O., Rodgers, T. F. M., Parnis, J. M., Diamond, M. L., Bidleman, T. F., Jantunen, L. M. (2020). Gas chromatographic estimation of vapor pressures ol-air partition coefficients of semivolatile organic compounds of emerging concern. Journal of Chemical and Engineering Data 65(5):2467-2475.							
<b>OECD Harmonized</b>	Miscellaneous	partition coefficients of semivoratile organic compounds of emerging concern. Journal of Chemical and Engineering Data 65(5):2407-2475.							
Template:									
HERO ID:	6967359								
			EXTRACTIO	N					
Parameter		Data							
CASRN		115-96-8							
CASKIN Confidentiality, Type, and	d Guideline		e: Gas chromatography	retention time GC-RT method					
		NR; NR; NR; NR	None; Experimental; Non-guideline: Gas chromatography retention time GC-RT method						
Solvent, Reactivity, Storage, and Stability Radiolabel, Source, State, and Purity		NR; Accustandard; NR; 100% Notes: NR							
Value	, and I unity	7.85 - 7.93 estimated at 298 K; experimental: 333-363 K (59.85-89.85 °C)							
Temperature		GC-RT assumes the chromatographic retention time is inversely proportional and proportional to its temperature dependent octanol-air partition coefficient (Koa) Not reported							
System									
pH									
Standard Deviation Resu	lts	$\pm 0.23$ (standard prediction uncertainty estimated at K = 298)							
Results Details		Log octanol-air partition coefficient (Koa) = $7.85$ (calibrated) and $7.93$ (uncalibrated)							
			EVALUATIO	N					
Domain		Metric	Rating	Comments					
Domain 1: Substance									
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.					
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features.					

Metric 4:

Metric 3:

Reliability/Unbiased

(Method Objectivity) Reliability/Analytical Method

Domain 2: Test Reliability

Domain 3: Other

Metric 5: Databases N/A Rating of this factor is not applicable to this kind of information. High Metric 6: Models The model had a defined, unambiguous endpoint; r2 = 0.983. **Overall Quality Determination** High

High

High

The methodology for producing the information is designed to answer a specific

ques-tion, and the methodology's objective is clear.

Data are obtained by accepted standard analytical methods.

PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023 Miscellaneous

Tris(2-chloroethyl) phosphate (TCEP)

Study Citation:	Yaman, B., Dumanoglu, Y., Odabasi, M. (2020). Measurement and modeling the phase partitioning of organophosphate esters using their temperature- dependent octanol-air partition coefficients and vapor pressures. Environmental Science & Technology 54(13):8133-8143.						
OECD Harmonized	Miscellaneous	ior-an partition coefficients and vapor pro	essures. Environi	$\frac{1}{1000} = \frac{1}{1000} = 1$			
Template:							
HERO ID:	10064224						
			EXTRACTIO	N			
Parameter		Data					
CASRN		Not Reported					
Confidentiality, Type, and C	Guideline	none; experimental; Log Koa generator	column -retention t	ime method			
Solvent, Reactivity, Storage		NR; NR; NR; NR					
Radiolabel, Source, State, a	-	None; NR; NR; NR					
Value		log Koa 7.91					
Temperature		25 °C					
System			Solutions run at chromatographic temperature range and retention times compared to 19 compounds				
pH		not applicable		······ · · · · · · · · · · · · · · · ·			
Standard Deviation Results		$\pm 0.35$					
Results Details		surrogate - TCEP-d12 log Koa = $7.86 \pm 0.35$ ; results compared to several modeling systems					
Domain		Metric	<b>EVALUATIO</b> Rating	N Comments			
Domain 1: Substance							
	Metric 1:	Representativeness	High	Data are measured or estimated for the subject chemical substance.			
	Metric 2:	Appropriateness	High	Measured data are consistent with the subject chemical substance structural features or other physical/chemical properties or behaviors.			
Domain 2: Test Reliabili	ity						
	Metric 3:	Reliability/Unbiased	High	The methodology for producing the information is designed to answer a specific ques-			
		(Method Objectivity)	C	tion, and the methodology's objective is clear.			
	Metric 4:	Reliability/Analytical Method	High	Data are obtained by accepted standard analytical methods, including, but not limited to OECD guidelines for physical-chemical properties or other developed standard.			
Domain 3: Other							
	Metric 5:	Databases	N/A	Rating of this factor is not applicable to this kind of information.			
	Metric 6:	Models	N/A	Rating of this factor is not applicable to this kind of information.			
				e e e e e e e e e e e e e e e e e e e			
<b>Overall Qualit</b>	Totomai	nation	High				

List of Abbreviations and Acronyms for Data Quality Evaluation and Extraction Tables	

Term	Definition	
ASTM	American Society for Testing and Materials	
ATSDR	Agency for Toxic Substances and Disease Registry	
atm	Atmospheres	
$atm \cdot m^3/mol$	Atmospheres - cubic meters per mole	
C	Celsius	
CASRN	Chemical Abstract Service registry number	
cP	Centipoise	
CRC	CRC Handbook of Chemistry and Physics	
DOE	U.S. Department of Energy	
ECB	European Chemicals Bureau	
EPA	Environmental Protection Agency	
F	Fahrenheit	
GC	Gas Chromatography	
g/cm <sup>3</sup>	Grams per cubic centimeter	
GLP	Good Laboratory Practice	
HLC	Henry's Law Constant	
HPV	High Production Volume	
HSDB	Hazard Substance Data Bank	
ILO	International Labour Organization	
IPCS	International Programme on Chemical Safety	
IUCLID	International Uniform Chemical Information Database	
K	Kelvin	
Koa	Octanol-Air partition coefficient	
Kow	Octanol-Water partition coefficient	
mg/L	Milligrams per Liter	
mol	Mole	
mmHg	Millimeters of Mercury	
MS	Mass Spectrometry	
N/A	Not Applicable	
NICNAS	National Industrial Chemicals Notification and Assessment Scheme	
NLM	National Library of Medicine	
NR	Not Reported	
OECD	Organisation for Economic Co-operation and Development	
Pa (hPa)	Pascals (hectopascals; 1 hPa = 100 Pa)	
pH	Negative base 10 Log of Hydrogen Ion (H+) Concentration in Aque-	
	ous Solution	
рКа	Negative base 10 Log of Acid Dissociation Constant (Ka)	
RIVM	National Institute for Public Health and the Environment (Dutch: Ri-	
	jksinstituut voor Volksgezondheid en Milieu)	
Continued on payt page		

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# PUBLIC RELEASE DRAFT – DO NOT CITE OR QUOTE December 2023

Tris(2-chloroethyl) phosphate (TCEP)

# List of Abbreviations and Acronyms for Data Quality Evaluation and Extraction Tables

······································	
Term	Definition
RSC	Royal Society of Chemistry
RT	Retention Time
SIDs	Screening Information Dataset
VP	Vapor Pressure
US or USA	United States of America
UV (UV-Vis)	Ultra Violet (UV-Visible)
WHO	World Health Organization

## ... continued from previous page