

Office of Chemical Safety and Pollution Prevention

## Risk Evaluation for Methylene Chloride (Dichloromethane, DCM)

Systematic Review Supplemental File:

Data Quality Evaluation of Environmental Release and Occupational Exposure Data

CASRN: 75-09-2



October 2019

This document is a compilation of tables for the data extraction and evaluation for Methylene Chloride (Dichloromethane, DCM). Each table shows the data point or set or information element that was extracted and evaluated from a data source in accordance with Appendix D of the Application of Systematic Review in TSCA Risk Evaluations. If the source contains more than one data set or information element, the review provides an overall confidence score for each data set or information element that is found in the source. Therefore, it is possible that a source may have more than one overall quality/confidence score.

#### Table of Contents

	Page
Releases to the Environment	3
Occupational Exposure	57
Facility	365

#### **Explanatory Notes**

These explanatory notes provide context to understand the short comments in the data evaluation tables.

Domain	Metric	Description of Comments Field				
Reliability	Methodology	Indicates the sampling/analytical methodology, estimation method, or type of publication				
Representativeness	Geographic Scope	Indicates the country of the study, publication, or underlying data				
_	Applicability	Indicates whether the data are for a condition of use within scope of the Risk Evaluation				
	Temporal Representativeness	Provides the year of study, publication, or underlying data				
	Sample Size	Describes the distribution of the sample or underlying data				
Accessibility / Clarity	Metadata Completeness	Describes the completeness of the metadata				
Variability and Uncertainty	Metadata Completeness	Indicates if study or publication addresses variability and uncertainty of the data or information				

Releases to the Environment

Source Citation: Type of Data Source Here ID	2014. Toxic release inventory: Dichloro-methane. Releases to the Environment; Environmental Release Data; 3860461								
EXTRACTION	3000401								
Parameter			Data						
Life Cycle Stage: E Release Source: A Environmental Media: A Release Estimation Method: F Annual Release Quantity (kg/yr): 1 fi 1 l			Disposal All Annual release estimates for UI, landfills, fugitive air, surface water. Reported 135,396 lb/yr to Class I Wells; 16,212 lb/yr to RCRA Subtitle C land- fills, 54 lb/yr to other on-site landfills; 1,346,811 lb/yr to fugitive air; 1,607,512 lb/yr from point sources; 24,567 lb/yr to surface water; 2,677 lb/yr to other land disposal.						
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	EPA Source			
Domain 2: Repres	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High High High	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	1 2 2 1	US Overal releases 2014 Direcly reported data to EPA			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Data provided by site on an annual basis only			
Domain 4: Variak	Dility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup>†</sup>		Medium		1.7					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Chemistry Industry Association of, Canada. 2017. All substances emissions for 2012 and projections for 2015. Releases to the Environment; Environmental Release Data; 3982361							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Environmental M Release Estimatio Annual Release Q Number of Sites:	edia: on Method: Quantity (kg	/yr):	Processing not specified Estimated 0 tonnes/yr 1					
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	not specified		
Domain 2: Benres	sentative							
Domain 2. Repres	Metric 2:	Geographic Scope	Medium	× 1	2	Canada		
	Metric 3:	Applicability	Medium	$\times 2$	4	Warehouse		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2012		
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Unacceptable	× 1	4	no media of release		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	n <sup>†</sup>	Unacceptable		4	Metric Mean Score: 2.3.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Chemistry Industry Association of, Canada. 2017. All substances emissions for 2011 and projections for 2014. Releases to the Environment; Environmental Release Data; 3982362								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:	1.		Processing/Use	9					
Environmental M Bolosso Estimatio	edia: n Mothodi		not specified Estimated						
Annual Release O	)uantity (kg	/vr)·	0.02 tonnes/vr						
Number of Sites:	autority (Rg,	( ) 1).	3						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Boliab	ility								
Domain 1. Renau	Metric 1:	Methodology	Low	$\times 1$	3	not specified			
Domain 2: Repres	Sentative Motrie 2:	Coographia Seene	Madium	× 1	0	Course la			
	Metric 2:	Applicability	Medium	$\times 1$ $\times 2$	2 1	Canada Warahousa: industrial site(s)			
	Metric 4:	Temporal Representativeness	High	$ \times 2 \times 2 $	2	2011			
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data			
Domain 3: Access	sibility/Clar	ity	TT (11	1	4				
	Metric 6:	Metadata Completeness	Unacceptable	× 1	4	no media of release			
Domain 4: Variab	oility and Ur	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Unacceptable		4	Metric Mean Score: 2.3.			

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:Osha, 1997. Occupational exposure to methylene chloride: Section 9 - IX. Environmental impact.Type of Data SourceReleases to the Environment; Reports for Data or Information Other than Exposure or Release Data;Hero ID3978297									
EXTRACTION									
Parameter		Data							
Life Cycle Stage:									
Life Cycle Description (Subc	ategory of Use):	Polyure	thane for	am man	ufacturing				
Release Source:		Polyure	thane for	am man	ufacturing				
Environmental Media:		air							
Release or Emission Factor:		1							
Release Estimation Method:		Estimat	ed						
EVALUATION									
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliability Metric 1:	Methodology	Low	$\times 1$	3	OSHA Preamble to Final Rules - Environmental Impact Sec-				
					tion				
Domain 2: Representative									
Metric 2:	Geographic Scope	High	$\times 1$	1	US				
Metric 3:	Applicability	High	$\times 2$	2	Polyurethane foam manufacturing				
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997				
Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data				
Domain 2. Accessibility (Clar	:4								
Domain 5: Accessionity/Clar Motrie 6:	Motadata Completeness	Low	$\sim 1$	2	anla includes release modie				
Wether 0.	Metadata Completeness	LOW	~ 1	0	only includes release media				
Domain 4: Variability and U	ncertainty								
Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty				
Overall Quality Determination	$\mathbf{n}^{\dagger}$	Low		2.3					

\* MWF = Metric Weighting Factor

Source Citation:Osha,. 1997. Occupational exposure to methylene chloride: Section 9 - IX. Environmental impact.Type of Data SourceReleases to the Environment; Reports for Data or Information Other than Exposure or Release Data;Hero ID3978297									
EXTRACTION									
Parameter		Data							
Life Cycle Stage:		Use							
Life Cycle Description (Subca	ategory of Use):	Paint S	tripping						
Release Source:		Paint S	tripping						
Environmental Media:		air							
Release or Emission Factor:		1							
Release Estimation Method:		Estimat	ed						
EVALUATION									
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliability Metric 1:	Methodology	Low	$\times 1$	3	OSHA Preamble to Final Rules - Environmental Impact Section				
Domain 2: Representative									
Metric 2:	Geographic Scope	High	× 1	1	US				
Metric 3:	Applicability	High	$\times 2$	2	Paint Stripping				
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997				
Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data				
Domoin 2. Accordibility/Clon	:								
Metric 6:	Metadata Completeness	Low	$\times 1$	3	only includes release media				
	Metadata Completeness	LOW	~ 1	0	only includes release media				
Domain 4: Variability and U	ncertainty								
Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty				
Overall Quality Determinatio	$\mathrm{n}^\dagger$	Low		2.3					

\* MWF = Metric Weighting Factor

Source Citation:Osha, 1997. Occupational exposure to methylene chloride: Section 9 - IX. Environmental impact.Type of Data SourceReleases to the Environment; Reports for Data or Information Other than Exposure or Release Data;Hero ID3978297									
EXTRACTION									
Parameter		Data							
Life Cycle Stage:		Process	ing						
Life Cycle Description (Subca	ategory of Use):	Solvent	Recover	у					
Release Source:		Solvent	Recover	у					
Environmental Media:		air							
Release or Emission Factor:		<1 perc	cent						
Release Estimation Method:		Estimat	ted						
EVALUATION									
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Poliability									
Metric 1:	Methodology	Low	$\times 1$	3	OSHA Preamble to Final Rules - Environmental Impact Section				
Domain 2: Representative									
Metric 2:	Geographic Scope	High	$\times 1$	1	US				
Metric 3:	Applicability	High	$\times 2$	2	Solvent Recovery				
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997				
Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data				
Domain 3: Accessibility/Clar	ity								
Metric 6:	Metadata Completeness	Low	$\times 1$	3	only includes release media				
Domain 4: Variability and U	ncertainty								
Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty				
Overall Quality Determination	$\mathbf{n}^{\dagger}$	Low		2.3					

\* MWF = Metric Weighting Factor

Source Citation:Osha, 1997. Occupational exposure to methylene chloride: Section 9 - IX. Environmental impact.Type of Data SourceReleases to the Environment; Reports for Data or Information Other than Exposure or Release Data;Hero ID3978297									
EXTRACTION									
Parameter		Data							
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Release Estimation Method:		Manufa Manufa Air <1 perc Estimat	cture cture of f cture of f cent cent	DCM DCM					
EVALUATION									
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliability Metric 1:	Methodology	Low	× 1	3	OSHA Preamble to Final Rules - Environmental Impact Sec- tion				
Domain 2: Representative									
Metric 2:	Geographic Scope	High	$\times 1$	1	US				
Metric 3:	Applicability	High	$\times 2$	2	Manufacture of DCM				
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997				
Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data				
Domain 3: Accessibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	only includes release media				
Domain 4: Variability and Uncertainty Metric 7: Metadata Completeness		Low	$\times 1$	3	No discussion of variability or uncertainty				
Overall Quality Determination	$\mathbf{n}^{\dagger}$	Low		2.3					

\* MWF = Metric Weighting Factor

Source Citation:Osha, 1991. Proposed rules: Occupational exposure to methylene chloride.Type of Data SourceReleases to the Environment; Reports for Data or Information Other than Exposure or Release Data;Hero ID3982430									
EXTRACTION									
Parameter	Data								
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Release Estimation Method:				Use Polyurethane Foam Blowing Polyurethane Foam Blowing air 1 Estimated					
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	OSHA - Proposed Rules			
Domain 2: Repre	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Polyurethane Foam Blowing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997			
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data			
Domain 3: Access	ibility/Clari Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	only includes release media			
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3				

Source Citation:Osha, 1991. Proposed rules: Occupational exposure to methylene chloride.Type of Data SourceReleases to the Environment; Reports for Data or Information Other than Exposure or Release Data; 3982430								
EXTRACTION								
Parameter			Data					
			**					
Life Cycle Stage:			Use					
Life Cycle Descrip	ption (Subca	ategory of Use):	Aerosol	S				
Release Source:	- 11 - 1		Aerosol	s				
Environmental M	edia:		air	n dunin a	no oleina	n 100 noncent release during consumer use		
Release of Emissi Release Estimatic	on Factor:		Eatimat	n during	раскіна	g; 100 percent release during consumer use		
Release Estimatic	m method:		Estimat	eu				
EVALUATION								
Domain		Motric	Boting	MWF*	Scoro	Comments		
		Wethe	Itatilig	IVI VV I	Score	Comments		
Domain 1. Reliab	ility							
Domain 1. Honab	Metric 1:	Methodology	Low	$\times 1$	3	OSHA - Proposed Rules		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Aerosols		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997		
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data		
Domain 3: Access	sibility/Clar	ity	Ŧ	-	0			
	Metric 6:	Metadata Completeness	Low	× 1	3	only includes release media		
Domain 4. Variat	vility and Ur	acortainty						
Domain 4. Vallat	Metric 7.	Metadata Completeness	Low	× 1	3	No discussion of variability or uncortainty		
	metric 7.	metadata Completeness	LOW	~ 1	บ	The discussion of variability of uncertainty		
Orignall Orighter P	atomoinat:-		Low		0.2			
Overall Quality L	eterminatio	n'	LOW		2.3			

Source Citation:Osha, 1991. Proposed rules: Occupational exposure to methylene chloride.Type of Data SourceReleases to the Environment; Reports for Data or Information Other than Exposure or Release Data; 3982430										
EXTRACTION										
Parameter			Data							
Life Cycle Stage:				Use Delucerto Decin						
Release Source:	Stion (Suber	tegory of obc).	Polycar	bonate R	lesin					
Environmental M	edia:		air	5011000 1	000111					
Release or Emissi	on Factor:		7,000,00	00 lb/yr 1	released					
Release Estimatio	n Method:		Estimat	ed						
EVALUATION										
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments				
Domain 1: Reliab	ility									
	Metric 1:	Methodology	Low	$\times 1$	3	OSHA - Proposed Rules				
Domain 2: Benrey	contativo									
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Polycarbonate Resin				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997				
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data				
Domain 3: Access	sibility/Clari	ity								
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	only includes release media				
Domain 4. Variah	ility and Ur	acertainty								
Domain 4. Variat	Metric 7.	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty				
			DOW	~ 1	0	The discussion of variability of uncertainty				
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Low		2.3					

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Releases to the Environment; Reports for Data or Information Other than Exposure or Release Data; 3982430									
EXTRACTION										
Parameter			Data							
Life Cycle Sterror			Drogogg	Decessing						
Life Cycle Stage:	otion (Suber	togory of Uso).	Pharma	ng						
Belease Source	Subca	tegory of Ose).	Pharma	centicals						
Environmental M	edia:		air	lecuticais						
Release or Emissi	on Factor:		43 perce	ent releas	sed and	57 percent recovered and processed for use				
Release Estimatio	on Method:		Estimat	ed		··· Foreign fo				
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliab	ility		т	-	0					
	Metric 1:	Methodology	Low	× 1	3	OSHA - Proposed Rules				
Domain 2: Benre	sentative									
Domain 2. Repres	Metric 2.	Geographic Scope	High	× 1	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Pharmaceuticals				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997				
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data				
		1				*				
Domain 3: Access	sibility/Clar	ity								
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	only includes release media				
Domain 4: Variab	oility and Ur	ncertainty								
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty				
Overall Quality I	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3					

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Releases to the Environment; Reports for Data or Information Other than Exposure or Release Data; 3982430							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor:			Use Paints and Coatings Paints and Coatings air 1					
Release Estimatic	n Method:		Estimat	ed				
EVALUATION								
Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	OSHA - Proposed Rules		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Paints and Coatings		
	Metric 4:	Temporal Representativeness	Low	× 2	6	1997		
	Metric 5:	Sample Size	Low	× 1	3	no sample size data		
Domain 3. Access	sibility/Clari	ty						
Domain 6. Treees.	Metric 6:	Metadata Completeness	Low	$\times 1$	3	only includes release media		
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality Determination <sup>†</sup>			Low		2.3			

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Releases to the Environment; Reports for Data or Information Other than Exposure or Release Data; 3982430									
EXTRACTION										
Parameter			Data							
Life Cycle Stage:			Use	Use						
Life Cycle Descrip	otion (Subca	ategory of Use):	Cellulos	se Triacet	ate and	I Film Base Production				
Release Source:	1.		Cellulos	se Triacet	ate and	I Film Base Production				
Environmental Me	edia:		air	0.11./						
Release or Emission	n Mathad		4,500,00	JU ID/yr						
Release Estimation Method. Estimated										
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	OSHA - Proposed Rules				
Domain 2: Repres	entative									
	Metric 2:	Geographic Scope	High	$\times 1$	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Cellulose Triacetate and Film Base Production				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997				
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data				
Domain 3: Access	ibility/Clar	ity								
Domain 5. Meeess	Metric 6:	Metadata Completeness	Low	$\times 1$	3	only includes release media				
Domain 4. Variab	ility and U-	acortainty								
Domain 4. Variab	Metric 7.	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty				
	MICUIIC 7.	metadata Completeness	TOW	~ 1	0	to discussion of variability of uncertainty				
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Low		2.3					

Source Citation:Osha, 1991. Proposed rules: Occupational exposure to methylene chloride.Type of Data SourceReleases to the Environment; Reports for Data or Information Other than Exposure or Release Data;Hero ID3982430									
EXTRACTION									
Parameter	D	Data							
Life Cycle Stage	IT	Use							
Life Cycle Description (Subcategory of Us	se). El	lectroni	ics						
Release Source:	El	lectroni	ics						
Environmental Media:	ai	ir							
Release or Emission Factor:	1								
Release Estimation Method:	Es	stimate	ed						
EVALUATION									
Domain	Metric Ra	ating	$MWF^{\star}$	Score	Comments				
Domain 1: Reliability Matria 1. Mathadala	ma T.		V 1	9					
	gy Lo	Ow	XI	ა	OSHA - Proposed Rules				
Domain 2: Representative									
Metric 2: Geographic	c Scope Hi	ligh	$\times 1$	1	US				
Metric 3: Applicabili	ity H	ligh	$\times 2$	2	Electronics				
Metric 4: Temporal 1	Representativeness Lo	ow	$\times 2$	6	1997				
Metric 5: Sample Siz	ze Lo	ow	$\times 1$	3	no sample size data				
Domain 3: Accessibility/Clarity	a 1. T								
Metric 6: Metadata	Completeness Lo	OW	× 1	3	only includes release media				
Domain 4: Variability and Uncertainty									
Metric 7. Metadata Completeness			× 1	3	No discussion of variability or uncertainty				
	e e e e e e e e e e e e e e e e e e e			,					
Overall Quality Determination <sup><math>\dagger</math></sup>	Le	ow		2.3					
		0.11		2.0					

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Releases to the Environment; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Release Estimation Method:			Manufacture Manufacture of DCM Manufacture of DCM air <1 percent compared to the use of DCM in 1995 Estimated					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	oility Metric 1:	Methodology	Medium	× 1	2	Refers to Tukker et al. 1995		
Domain 2. Popra	aantatiwa							
Domain 2: Repres	Metric 2:	Geographic Scope	Medium	× 1	2	OECD		
	Metric 3:	Applicability	High	$\times 2$	2	Manufacture of DCM		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1995		
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data		
Domain 3: Accessibility/Clarity Metric 6: Metadata Completeness				× 1	3	only includes release media		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Releases to the Environment; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Uso					
Life Cycle Descrip	otion (Subca	ategory of Use):	Paint Stri	pping				
Release Source:			Paint Stri	pping				
Environmental M	edia:		85-90 per	cent to a	ir; 10-15	5 percent to waste		
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1, Paliah	:1:+							
Domain 1: Kenad	Metric 1.	Methodology	Medium	× 1	2	Refers to Tukker et al. 1995		
	Meetic 1.	Methodology	meanin	~ 1				
Domain 2: Repres	sentative							
*	Metric 2:	Geographic Scope	Medium	$\times 1$	2	OECD		
	Metric 3:	Applicability	High	$\times 2$	2	Paint Stripping		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1991		
-	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data		
	·1 ·1· / C1	.,						
Domain 3: Access	Motric 6	Ity Motadata Completeness	Low	× 1	3	only includes valence modia		
	metric 0.	Metadata Completeness	LOW	~ 1	5	only includes release media		
Domain 4: Variat	oility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Releases to the Environment; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	otion (Subca	ategory of Use):	Adhesives	5				
Release Source:	× ×	0,0,0,0	Adhesives					
Environmental M	edia:		air					
Release or Emissie	on Factor:		1					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1, Poliah								
Domain 1. Renad	Metric 1:	Methodology	Medium	$\times 1$	2	Refers to Tukker et al. 1995		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	OECD		
	Metric 3:	Applicability	High	$\times 2$	2	Adhesives		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1995		
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data		
Domain 3: Access	ibility/Clar	i+						
Domain 5: Access	Metric 6:	Metadata Completeness	Low	$\times 1$	3	only includes release media		
Domain 4: Variab	ility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Releases to the Environment; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrit	otion (Subca	tegory of Use):	Aerosols					
Release Source:	(		Aerosols					
Environmental M	edia:		air					
Release or Emissi	on Factor:		1					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1. Roliah	ilitar							
Domain 1. Renau	Metric 1:	Methodology	Medium	$\times 1$	2	European Commission Report		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	OECD		
	Metric 3:	Applicability	High	$\times 2$	2	Aerosols		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	unknown		
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data		
Domain 2. Accord	ibiliter /Class							
Domain 5: Access	Metric 6:	Metadata Completeness	Low	× 1	3	only includes release media		
		metadata completeness	1011	~ 1	0			
Domain 4: Variab	oility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality Determination <sup>†</sup>			Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Releases to the Environment; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Uso					
Life Cycle Descri	otion (Subca	ategory of Use):	Pharmace	uticals				
Release Source:			Pharmace	uticals				
Environmental M	edia:		55 percen	t to air;	44 perce	ent discharge with waste; 1 percent to water		
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1, Daliah								
Domain 1: Kenad	Metric 1.	Methodology	Medium	× 1	2	Refers to Tukker et al. 1995		
	MCOLIC 1.	Wiethodology	Medium	~ 1	2	Refers to Turket et al. 1999		
Domain 2: Repres	sentative							
×.	Metric 2:	Geographic Scope	Medium	$\times 1$	2	OECD		
	Metric 3:	Applicability	High	$\times 2$	2	Pharmaceuticals		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1995		
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data		
		.,						
Domain 3: Access	Matrie 6	Ity Matadata Completeness	Low	V 1	9	1		
	Metric 6:	Metadata Completeness	LOW	× 1	3	only includes release media		
Domain 4. Variat	and Ur	ocertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno,. 1999 Releases to 3809449	9. Methylene chloride: Advantag o the Environment; Completed H	ges and Dra Exposure or	wbacks o Risk As	f Possil sessmer	ble Market Restrictions in the EU. hts;
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Use			
Life Cycle Description (Subcategory of Use):			Other che PUR)	emical pr	ocessin	g (solvent in polycarbonate; blowing agent in
Release Source:			Other che	emical pr	ocessin	g (solvent in polycarbonate; blowing agent in
Environmental Media:			0.2 percer	nt to wat	er; 64.8	percent to air; 35 percent to waste
EVALUATION						
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments
Domain 1: Reliab	ility					
	Metric 1:	Methodology	Medium	$\times 1$	2	Refers to Tukker et al. 1995
Domain 2: Repres	sentative					
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	OECD
	Metric 3:	Applicability	High	$\times 2$	2	Other chemical processing (solvent in polycarbonate; blowing agent in PUR)
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1995
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data
Domain 3: Access	sibility/Clar	itv				
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	only includes release media
Domain 4: Variab	vility and U	ncertainty				
	Metric 7:	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty
Overall Quality D	eterminatio	$\mathrm{n}^{\dagger}$	Low		2.3	

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Releases to the Environment; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Uso					
Life Cycle Descri	otion (Subca	ategory of Use).	Degreasin	o				
Release Source:	ption (Suber	stegory of obo).	Degreasin	19 19				
Environmental M	edia:		0.3 percer	nt to wat	er; 57.7	percent to air; 42 percent to waste		
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1. Roliah								
Domain 1. Renau	Metric 1:	Methodology	Medium	× 1	2	Refers to van der Most 1993		
		methodolog,	mourum	~ 1	-			
Domain 2: Repres	sentative							
*	Metric 2:	Geographic Scope	Medium	$\times 1$	2	OECD		
	Metric 3:	Applicability	High	$\times 2$	2	Degreasing		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993		
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data		
<b>D</b>								
Domain 3: Access	sibility/Clar	ity	т	1	9			
	Metric 6:	Metadata Completeness	Low	× 1	3	only includes release media		
Domain 4: Variat	vility and Ur	cortainty						
Domain 4. Variat	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
		L				v v		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			
• 0								

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno, 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Releases to the Environment; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION			_					
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	otion (Subca	ategory of Use):	Food extr	action				
Release Source:			Food extr	action				
Environmental M	edia:		100 perce	ent to air				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Beliability								
	Metric 1:	Methodology	Medium	$\times 1$	2	Refers to UBA 1991		
Domain 2: Repres	sentative							
1	Metric 2:	Geographic Scope	Medium	$\times 1$	2	OECD		
	Metric 3:	Applicability	High	$\times 2$	2	Food extraction		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1991		
	Metric 5:	Sample Size	Low	$\times 1$	3	no sample size data		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	only includes release media		
Domain 4. Variah	ility and U	agentainte						
Domain 4. Variat	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation:	Kikuchi, E. mi, Kikuchi, Y., Hirao, M 2012. Monitoring and Analysis of Solvent Emissions from Metal Cleaning Processes for Program Processes Improvement Annals of Occupational Hydrony							
Type of Data Source Hero ID	Releases to the Environment; Published Models for Exposures or Releases; 2128076							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Release Estimation Method:				Use Open top vapor degreasing Open top vapor degreasing air various rate of solvent diffusion (kg/m-s) calculated curves based on data				
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Medium	$\times 1$	2	Journal article		
Domain 2: Ropros	contativo							
Domain 2. Repres	Metric 2.	Geographic Scope	Medium	× 1	2	Japan		
	Metric 3:	Applicability	High	$\times 2$	2	Vapor Degreasing		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2011		
	Metric 5:	Sample Size	N/A		N/A	modeling approach - no sample size		
Domain 3: Access	sibility/Clar	ity Metadata Completeness	Low	× 1	3	modeling air releases		
	Methic 0.	Metadata Completeness	LOW	~ 1	5	modening an releases		
Domain 4: Variab	oility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	error bars included but no discussion		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	High		1.6			

\* MWF = Metric Weighting Factor

Source Citation:19Type of Data SourceRHero ID38	<ul> <li>1994. Chemical summary for methylene chloride (dichloromethane).</li> <li>Releases to the Environment; Reports for Data or Information Other than Exposure or Release Data; 3860545</li> </ul>								
EXTRACTION									
Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use):			EPA Ch Varies	EPA Chemical Summary Varies					
Release Source:			Varies						
Disposal /Treatment	Method:		Varies						
Environmental Media	a:		Air						
Release or Emission	Factor:		Varies						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliabilit M	y Ietric 1:	Methodology	High	$\times 1$	1	EPA - though there is a line that states: No attempt has been made to verify information in these databases and secondary sourced.			
Domain 2: Represent	tative								
M	fetric 2:	Geographic Scope	High	$\times 1$	1	US			
Μ	letric 3:	Applicability	Low	$\times 2$	6	Overview of the DCM, production use, fate, etc.			
Μ	fetric 4:	Temporal Representativeness	Low	$\times 2$	6	1994, 24 years old			
M	letric 5:	Sample Size	Low	$\times 1$	3	No Comment.			
Domain 3: Accessibil M	lity/Clari letric 6:	ty Metadata Completeness	Low	$\times 1$	3	No Comment.			
Domain 4: Variabilit	y and Un	certainty							
M	letric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.			
Overall Quality Dete	ermination	n <sup>†</sup>	Low		2.6				

\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT - DO NOT CITE OR QUOT
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Source Citation:	Atsdr., 2006. Health consultation: Historical outdoor air emissions in the Endicott area: International Business Machines Corporation (IBM): Village of Endicott, Broome County, New York EPA facility ID: NYD002233039, Part 2.							
Type of Data Source Hero ID	Releases to the Environment; Completed Exposure or Risk Assessments; 3978093							
EXTRACTION								
Parameter			Data					
			<b>T T</b>					
Life Cycle Stage:	tion (Cubo	tomore of Lac).	Use		atumina			
Bolosso Source:	stion (Subca	ategory of Use):	fugitivo a	s manuia nd stack	cturing			
Environmental Me	edia:		Air	nu stack				
Release or Emissio	on Factor:		Varies					
Release Estimation	n Method:		calculated	l based o	n histor	ric facility use data		
Release Days per	Year:		continuou	IS				
Number of Sites:			1					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
	•••							
Domain 1: Reliabi	Ility Motrie 1.	Mathadalagy	Uich	× 1	1	A marker for The is Cale downed on a Discourse Densister (ATCODD)		
	metric 1.	Methodology	IIIgii	× 1	1	Agency for Toxic Substances and Disease Registry (AISDR)		
Domain 2: Repres	entative							
1	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Low	$\times 2$	6	Overview and analysis of historical DCM release into the environment		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2006, 12 years old		
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.		
		•						
Domain 3: Access	Motrie 6:	Ity Motodoto Completeness	High	$\sim 1$	1	Clearly desurrents sources methods and sourcetions		
	Metric 0.	Metadata Completeness	mgn	~ 1	1	Clearly documents sources, methods, and assumptions		
Domain 4: Variab	ility and U	ncertainty						
	Metric 7:	Metadata Completeness	High	$\times 1$	1	Discusses limitations and uncertainty in data.		
		-						
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.9			

Source Citation: Type of Data Source Hero ID	Erg,. 2008. LCI summary for six tuna packaging systems. Releases to the Environment; Reports for Data or Information Other than Exposure or Release Data; 3978168						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Use				
Life Cycle Descrip	otion (Subca	ategory of Use):	Food Producti	on			
Environmental M	edia:		Air				
Annual Release C	uantity (kg	/yr):	0.000043 to $0.0$	0015  lbs/	100,000	ounces	
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1. Reliah	ility						
	Metric 1:	Methodology	High	$\times 1$	1	Franklin Associates/ERG	
Domain 2: Repres	sentative						
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US	
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Not quite relevant. Only addresses atmospheric emissions of	
	Materia 4	Town and Downson to time or	Madian	<b>.</b>	4	Methylene Chloride	
	Metric 4: Metric 5:	Sample Size	Medium	× 2 × 1	4	2008, 10 years old	
	metric 5.	Sample Size	LOW	× 1	ა	No Comment.	
Domain 3: Access	sibility/Clari	ity					
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Data is generally well documented.	
Domain 4: Variat	Metal 7	Metalata Canadataraa	Madian	1	0		
	Metric 7:	Metadata Completeness	Medium	× 1	2	Limited Discussion of uncertainty	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.3.	

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	U.S, E. P. Releases to 3970168	A. 1993. Locating and estimat o the Environment; Environment	ing air emis tal Release	sions from Data;	m sourc	ces of methylene chloride.	
EXTRACTION							
Parameter			Data				
Life Cycle Stage:		Manufacture Mathema Chlorination					
Release Source:		tegory of esc).	Inert Gas	burge ve	ent proc	luct recover condenser	
Environmental M	edia:		Air	F 0	P		
Release or Emissi	on Factor:		0.28  lb/tc	on produc	$\operatorname{ced}$		
Number of Sites:			5				
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	ility						
	Metric 1:	Methodology	Medium	$\times 1$	2	Method was referenced in citation: XATEF database	
Domain 2: Repres	sentative						
	Metric 2:	Geographic Scope	High	$\times 1$	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that produces Methylene Chloride	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993, 25 years old	
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.	
Domain 3. Access	ibility/Clar	ity					
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Basic Metadata present	
Domain 4. Variah	ility and Ur	acertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No addressed	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1		

Source Citation:U.S, E. P. A.: 1993. Locating and estimating air emissions from sources of methylene chloride.Type of Data SourceReleases to the Environment; Environmental Release Data;Hero ID3970168							
EXTRACTION							
Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Number of Sites:			Manufacture Methane Chlorination Storage Air 2.04 lb/ton produced 5				
EVALUATION			-		~	-	
Domain		Metric	Rating	MWF*	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	Medium	$\times 1$	2	Method was referenced in citation: XATEF database	
Domain 2: Repres	sentative						
	Metric 2:	Geographic Scope	High	$\times 1$	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that produces Methylene Chloride	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993, 25 years old	
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.	
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Medium	$\times 1$	2	Basic Metadata present	
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No addressed	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1		

Source Citation: Type of Data Source Hero ID	Source Citation:U.S, E. P. A., 1993. Locating and estimating air emissions from sources of methylene chloride.Type of Data SourceReleases to the Environment; Environmental Release Data;Hero ID3970168						
EXTRACTION							
Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Number of Sites:			Manufacture Methyl Chloride Chlorination Inert Gas purge vent product recover condenser Air 0.052 lb/ton produced 5				
<b>EVALUATION</b> Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	Medium	× 1	2	Method was referenced in citation: XATEF database	
Domain 2: Repres	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1\\ 2\\ 6\\ 3\end{array}$	US Workplace that produces Methylene Chloride 1993, 25 years old No Comment.	
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Medium	× 1	2	Basic Metadata present	
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No addressed	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1		

Source Citation:U.S, E. P. A 1993. Locating and estimating air emissions from sources of methylene chloride.Type of Data SourceReleases to the Environment; Environmental Release Data;Hero ID3970168							
EXTRACTION							
Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Number of Sites:			Manufacture Methyl Chloride Chlorination Storage Air 4.92 lb/ton produced 5				
EVALUATION		Materia	Deting	N // X / ID *	C	Commente	
Domain		Metric	Rating	MWF*	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	Medium	$\times 1$	2	Method was referenced in citation: XATEF database	
Domain 2. Donna							
Domain 2: Repres	Motric 2.	Geographic Scope	High	$\sim 1$	1	IIG	
	Metric 3:	Applicability	High	$^{\wedge 1}$ $\times 2$	2	US Workplace that produces Methylene Chloride	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993 25 years old	
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.	
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Medium	× 1	2	Basic Metadata present	
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No addressed	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1		

Source Citation: Type of Data Source Hero ID	burce Citation:U.S, E. P. A. 1993. Locating and estimating air emissions from sources of methylene chloride.ype of Data SourceReleases to the Environment; Environmental Release Data;dero ID3970168						
EXTRACTION							
Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Number of Sites:			Manufacture Methylene Chloride Production Entire Processs Air 6 lb/ton produced 5				
<b>EVALUATION</b> Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	Medium	× 1	2	Method was referenced in citation: XATEF database	
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1\\ 2\\ 6\\ 3\end{array}$	US Workplace that produces Methylene Chloride 1993, 25 years old No Comment.	
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Medium	× 1	2	Basic Metadata present	
Domain 4: Variat	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No addressed	
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.1		

Source Citation:U.S, E. P. A., 1993. Locating and estimating air emissions from sources of methylene chloride.Type of Data SourceReleases to the Environment; Environmental Release Data;Hero ID3970168						
EXTRACTION						
Parameter			Data			
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Number of Sites:			Manufacture Wate Water Treatment Publically owned treatment works Air 1040 lb/ton produced 5			
EVALUATION Domain		Metric	Rating	MWF*	Score	Comments
			8			
Domain 1: Reliab	ility Metric 1:	Methodology	Medium	$\times 1$	2	Method was referenced in citation: XATEF database
Domain 9. Donna	antatina					
Domain 2: Repres	Metric 2.	Geographic Scope	High	$\times 1$	1	211
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that produces Methylene Chloride
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993. 25 years old
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Medium	× 1	2	Basic Metadata present
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No addressed
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1	

Source Citation: Type of Data Source Hero ID	ce Citation:1991. Emissions of Metals and Organics from Municipal Wastewater Sludge Incinerators.of Data SourceReleases to the Environment; Environmental Release Data;ID1261227							
EXTRACTION								
Parameter	Data							
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Release Estimation Method: Number of Sites:				Disposal Sludge Incinerator Stacks Air .151-1.04 gram/hr semi-VOST method (collected from flu-gas) 4				
EVALUATION		Matria	Pating		Saoro	Commonto		
Domain		Metric	natilig	IVI VV F	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	EPA Method was referenced in text.		
Domain 2: Repres	Sentative	Communitie Google	TT:l.	1	1			
	Metric 2:	Geographic Scope	High	× 1 × 2	1			
	Metric 3.	Terran anal Depresentativeness	Low	× 2 × 9	4	workplace indirectly connected to Methylene Chloride		
	Metric 4: Metric 5:	Sample Size	Low	$\times 2$ $\times 1$	3	No Comment.		
Domain 3: Accessibility/Clarity Metric 6: Metadata Completeness				× 1	2	Majority of metadata present		
Domain 4. V	ilitar and Th	· · · · · · · · · · · · · · · · · · ·						
Domain 4: Variab	Metric 7.	Metadata Completeness	Low	× 1	3	None addressed		
		included completeness	101	~ 1	0	Tone addressed.		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.2			

\*  ${\rm MWF} = {\rm Metric}$  Weighting Factor
PEER REVIEW DRAFT	- DO NOT C	CITE OR Q	UOTE
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Source Citation:	Chiang, H exhaust co	Chiang, H. L., Lin, K. H. 2014. Exhaust constituent emission factors of printed circuit board pyrolysis processes and its exhaust control. Journal of Hazardous Materials.					
Type of Data Source Hero ID	Releases to 2232631	Releases to the Environment; Environmental Release Data; 2232631					
EXTRACTION Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor: Release Estimation Method:				cling g/g PCE , but not	3 pyroly t named	sis I.	
<b>EVALUATION</b> Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	Medium	$\times 1$	2	Journal of Hazardous Materials - though no methods were stated for DCM	
Domain 2: Repres	Sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	Low Medium High Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 3\\4\\2\\3\end{array}$	China Workplace indirectly connected to Methylene Chloride 2013, 5 years old No Comment.	
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Medium	$\times 1$	2	Majority of metadata present	
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Medium	$\times 1$	2	Some variability addressed in the results.	
Overall Quality D	eterminatio	n <sup>†</sup>	Medium		2.0		

\* MWF = Metric Weighting Factor
<sup>†</sup> If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

Source Citation:	Schuetz, C.,Bogner, J.,Chanton, J.,Blake, D.,Morcet, M.,Kjeldsen, P. 2003. Comparative oxidation and net emissions of methane and selected non-methane organic compounds in landfill cover soils. Environmental Science and Technology.							
Type of Data Source Hero ID	Releases to 2528560	Releases to the Environment; Environmental Release Data; 2528560						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Disposal					
Life Cycle Descrip	otion (Subca	tegory of Use):	Landfill E	Emissions				
Release Source:			Ambient	Emission	s			
Environmental M	edia:		Air					
Release or Emissi	on Factor:		$700 \mathrm{ug/L}$					
Release Estimatio	on Method:		Discussed	, but not	named			
Release Days per	Year:		365					
Number of Sites:			1					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility							
	Metric 1:	Methodology	Medium	$\times 1$	2	American Chemical Society Environmental Science and Tech- nology - detailed description of process, but no statement of method.		
Domain 2: Repres	sentative							
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	× 1	1	US, predominantly, Lab work was done in the US.		
	Metric 3:	Applicability	Low	$\times 2$	6	Workplace indirectly connected to Methylene Chloride		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2003, 15 years old		
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.		
Demeir 9. Acces	:1::1:: / <i>C</i> 1:							
Domain 5: Access	Motrie 6	Motadata Completeness	Modium	$\vee$ 1	9	Majority of motodata macont		
	MEULIC 0.	metadata Completeness	meurum	^ 1	4	majority or metadata present		
Domain 4: Variah	oility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	None addressed.		
Overall Quality D	eterminatio	n†	Low		2.3			

<sup>\*</sup> MWF = Metric Weighting Factor
<sup>†</sup> If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

PEER REVIEW	DRAFT -	DO NOT	CITE OR	QUOTE
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Source Citation:	Cheng, W., Hsu, S. K., Chou, M. S 2008. Volatile organic compound emissions from wastewater treatment plants in Taiwan:						
Type of Data Source	Releases to the Environment: Environmental Release Data:						
Hero ID	2546404	2546404					
EXTRACTION							
Parameter			Data				
Life Creale Starrow			Disposal				
Life Cycle Stage:	otion (Subca	ategory of Use):	Watewate	er Treatm	nent		
Release Source:			industrial	effluent	10110		
Disposal /Treatm	ent Method	:	Standard				
Environmental M	edia:		Air/Wate	r			
Release or Emissi	on Factor:		ND-48.1 1	ıg/L	_		
Release Estimatic	on Method:		EPA Met	hod 8240	B		
EVALUATION							
Domain		Metric	Rating	MWF*	Score	Comments	
Domain 1: Reliab	oility						
	Metric 1:	Methodology	High	$\times 1$	1	EPA Method 8240B	
Domain 2: Benre	sentative						
Domain 2. Repres	Metric 2:	Geographic Scope	Low	$\times 1$	3	Taiwan	
	Metric 3:	Applicability	Medium	$\times 2$	4	Workplace indirectly connected to Methylene Chloride	
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2008, 10 years old	
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.	
Domain 2. Accord	sibility /Clan	:+					
Domain 5: Access	Metric 6	Metadata Completeness	Low	× 1	3	Lacking in critical metadata	
	Meerre 0.	Metadata Completeness	LOW	~ 1	0		
Domain 4: Variab	oility and Ur	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	None addressed.	
		t	T		0.9		
Overall Quality L	eterminatio	11.	LOW		2.3		

\* MWF = Metric Weighting Factor
<sup>†</sup> If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

Source Citation:	Source Citation: Zhang, K 2010. Characterization and Uncertainty Analysis of VOCs Emissions from Industrial Wastewater Treatment					
Type of Data SourceReleases to the Environment; Environmental Release Data;Hero ID2630164						
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Disposal			
Life Cycle Descrip	otion (Subca	ategory of Use):	Industria	Wastew	ater Tre	eatment
Release Source:			industrial	effluent		
Environmental M Polosco Estimatio	edia: n Mothodi		MIT Wate	er Lond TO	VCUEN	$I \rightarrow V2$
Daily Balaasa Ou	antity (kg/d	lav).	2500 - 2	822  lb/d	AUTEN	1 + V 3
Release Days per	Year:	idy).	2.050 - 2. 365?	022 ID/ ut	чy	
Number of Sites:	10011		1			
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 1: Reliab	ility Motrie 1.	Mathadalam	II: mh	× 1	1	
	Metric 1:	Methodology	підп	× 1	1	WATER9 and TOXCHEM +V3
Domain 2: Repres	sentative					
	Metric 2:	Geographic Scope	High	$\times 1$	1	US
	Metric 3:	Applicability	Medium	$\times 2$	4	Workplace indirectly connected to Methylene Chloride
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2010, 8 years old
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.
	.1.1	•,				
Domain 3: Access	Motrie 6	Motodoto Completeness	Modium	× 1	0	Maline's a Consider Jude annound
	metric 0.	Metadata Completeness	meannin	× 1	2	Majority of metadata present
Domain 4: Variab	ility and U	ncertainty				
	Metric 7:	Metadata Completeness	High	$\times 1$	1	Uncertainty in data/estimations is addressed in detail.
		Å				· ,
Overall Quality D	eterminatio	$\mathrm{on}^{\dagger}$	High		1.6	
• 0			0			

\* MWF = Metric Weighting Factor
† If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

Source Citation:	McCulloch, A., Midgley, P. M. 1996. The production and global distribution of emissions of trichloroethene, tetrachloroethene and dichloromethane over the period 1988"1992. Atmospheric Environment							
Type of Data Source Hero ID	Releases to 3026800	Releases to the Environment; Environmental Release Data; 3026800						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Clobal Fr	nissions				
Life Cycle Descrit	otion (Subc	ategory of Use).	Manufact:	ure of D(	$^{\rm CM}$			
Environmental M	edia:	stegory of obc).	Air		0101			
Release Estimatio	on Method:		Discussed	, but not	named	l.		
Annual Release Q	uantity (kg	/yr):	513,000 -	, 592,000 :	metric t	cons		
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Damain 1. Daliah	:1:							
Domain 1: Reliad	Motric 1.	Mathadalogy	Modium	$\sim 1$	9	Process emplained and sited		
	MEULIC 1.	Wethodology	Weatum	~ 1	2	r locess explained and cited.		
Domain 2: Repres	sentative							
1	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Europe		
	Metric 3:	Applicability	Medium	$\times 2$	4	Workplace that produces Methylene Chloride, but only relates to environmental emissions		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1995, 23 years old		
	Metric 5:	Sample Size	Low	$\times 1$	3	not provided		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Majority of metadata present		
		*						
Domain 4: Variab	oility and U	ncertainty						
	Metric 7:	Metadata Completeness	High	$\times 1$	1	Uncertainty in data/estimations is addressed in detail.		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.2			

\* MWF = Metric Weighting Factor

Source Citation:	U.S, E. P. A. 1978. OAQPS guideline series: Control of volatile organic emissions from manufacture of synthesized pharma-						
Type of Data Source	Releases to	Releases to the Environment: Environmental Release Data:					
Hero ID	3970050	3970050					
EXTRACTION							
Parameter			Data				
			<b>T</b> T				
Life Cycle Stage:	Caller	f	Use		C +-		
Life Cycle Descrip	otion (Subca	ategory of Use):	pnarmace	euticai ma	anuiact	ure	
Disposal /Trootm	ont Mothod		Ingitive a	nd stack			
Environmental M	ent Methou		Ain	1011			
Rolonso Estimatio	n Mothod		All Based on	nurchosc	and re	novory numbers	
Annual Bolosso O	n Methou. Wantity (ka	/wr).	5 310 mot	ric tons	e anu re	covery numbers	
Number of Sites:	uantity (kg	/ y1).	>26				
Number of Sites.			/20				
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
	•1•,						
Domain 1: Reliab	Ility Motrie 1.	Mathadalagy	Uich	× 1	1		
	Metric 1:	Methodology	підп	X 1	1	EPA document	
Domain 2: Repres	sentative						
Ĩ	Metric 2:	Geographic Scope	High	$\times 1$	1	US	
	Metric 3:	Applicability	Medium	$\times 2$	4	Workplace that produces Methylene Chloride, but only relates	
						to environmental emissions	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1978, 40 years old	
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.	
Domain 2. Access	ihiliter /Class	:+					
Domain 5: Access	Motrie 6:	Motodata Completeness	Modium	$\vee$ 1	9	Maintin of motodata present	
	Metric 0.	Metadata Completeness	meuluin	~ 1	4	Majority of metadata present	
Domain 4. Variah	ility and U	ncertainty					
Domain 4. Variab	Metric 7.	Metadata Completeness	Low	× 1	3	None addressed	
			2011	// ±	9	None addressed.	
Overall Quality D	otorminatio	m <sup>†</sup>	Modium		<u>?</u> ?		
Overall Quality D	eterminatio	11.	meanum		2.2		

Source Citation:	Japanese Ministry of, Environment. 2009. Overview of PRTR data in fiscal year 2009: Top 10 chemicals of reported release, release outside notification of PRTR.							
Type of Data Source Hero ID	Releases to 3986513	Releases to the Environment; Environmental Release Data; 3986513						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use/Man	ufacture				
Life Cycle Descrip	otion (Subca	ategory of Use):	Use/Man	ufacture				
Annual Release Q	uantity (kg	/yr):	14,763 to	ns/year (	2009)			
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1, Paliah	:1:+							
Domain 1. Relian	Metric 1:	Methodology	Medium	$\times 1$	2	Ministry of the Environment (UK)		
		87						
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Europe		
	Metric 3:	Applicability	Medium	$\times 2$	4	Workplace that produces Methylene Chloride, but only relates to environmental emissions		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2009, 9 years old		
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.		
Domain 3: Accord	ibility/Clar	i+.,						
Domain 5. Access	Metric 6:	Metadata Completeness	Low	× 1	3	No Comment.		
		F						
Domain 4: Variab	ility and U	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not addressed		
Overall Quality Determination <sup>†</sup>		Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation:U.S,Type of Data SourceReleatHero ID39701	E. P. A., 1997. Pharmaceutical proc ses to the Environment; Environmen 21	luction NES ntal Release	HAP. Data;		
EXTRACTION					
Parameter		Data			
Life Cycle Store:		Uso			
Life Cycle Description (	ubcategory of Use).	Pharmac	uetical M	anufact	lire
Environmental Media:	abcategory of eser.	Air Wate	or	anulact	
Annual Release Quantit	(kg/vr):	1992, ind	ustrv wie	le:Air:	7.128.769 lb/vrWater: 496.917 lb/vr
-		,	U		, , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
EVALUATION					
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments
Demain 1. Deliebilitar					
Domain 1: Renability Metr	c 1: Methodology	Medium	$\times 1$	2	US EPA - but data is pulled from surveys, reporting, and extrapolation
Demeir 9. Demeterti	-				
Domain 2: Representati	e 2. Caamanhia Saana	II: mh	V 1	1	110
Metr	22: Geographic Scope	Medium	$\times 1$	1	US
Metr	2.5. Applicability	meann	× 2	4	industry that works with methylene chloride, but is focused on industry -wide big picture.
Metr	c 4: Temporal Representativeness	Low	$\times 2$	6	1997, 21 years old
Metr	c 5: Sample Size	Low	$\times 1$	3	No Comment.
Domain 3: Accessibility	Clarity	Low	$\sim 1$	2	No Comment
Metr	co. Metadata Completeness	LOW	× 1	ა	No Comment.
Domain 4: Variability a	d Uncertainty				
Metr	c 7: Metadata Completeness	Low	$\times 1$	3	Not addressed
Overall Quality Determination <sup>†</sup> Low     2.4					

 $\star$  MWF = Metric Weighting Factor

PEER REVIEW	<sup>7</sup> DRAFT -	DO NOT	CITE OR	QUOTE
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Source Citation:	U.S, E. P. Chloride.	U.S, E. P. A. 2017. Preliminary Information on Manufacturing, Processing, Distribution, Use, and Disposal: Methylene Chloride.					
Type of Data Source Hero ID	Source Releases to the Environment; Environmental Release Data; 3986757						
EXTRACTION Parameter	XTRACTION Parameter Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release Estimation Method: Annual Release Quantity (kg/yr):				Use/Manufacture Use/Manufacture 21 manufacture8 import146 processing202 other uses All Reported Releases 2015: 153,707,292 lbs/yr.			
<b>EVALUATION</b> Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	Office of Chemical Safety and Pollution Prevention (OCSPP) Report	
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High Medium High High	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1 \\ 4 \\ 2 \\ 1 \end{array}$	US Industry that works with methylene chloride, but is focused on industry -wide big picture. 2017, 1 year old Well characterized.	
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	High	× 1	1	Well documented.	
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Medium	$\times 1$	2	Not applicable	
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	High		1.3		

MWF = Metric Weighting Factor
If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

Source Citation:Japanese Ministry of, Environment. 2004. Manual for PRTR release estimation models: Part II materials.Type of Data SourceReleases to the Environment; Environmental Release Data;Hero ID3986511								
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Release Source: Environmental Media: Release or Emission Factor:				Use/Manufacture Use/Manufacture Manufacture, storage, solvent use, cleaning Atmosphere Manufacture: 0.002 kg/tStorage: 0.26 kg/tSolvent: 336 kg/tCleaning: 891 kg/t				
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	not specified		
Domain 2: Repre	sentative							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Likely Japan		
	Metric 3:	Applicability	Medium	$\times 2$	4	Industry that works with methylene chloride, but is focused on industry -wide big picture.		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Unknown		
	Metric 5:	Sample Size	Low	$\times 1$	3	Not well characterized		
Domain 3: Access	sibility/Clar	ity	TT: 1		-			
	Metric 6:	Metadata Completeness	High	× 1	1	Well documented.		
Domain 4: Variability and Uncertainty		Modium	× 1	0	Not applicable			
	metric 7:	metadata Completeness	meanum	× 1	2	not applicable		
Overall Quality I	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Japanese Ministry of, Environment. 2004. Manual for PRTR release estimation models: Part II materials. Releases to the Environment; Environmental Release Data; 3986511								
EXTRACTION									
Parameter	Data								
Life Cycle Stage:			Use						
Life Cycle Descri	otion (Subca	ategory of Use):	Use						
Release Source:	ption (Dubbe	leggi of eleg.	Degreasin	g/steam	washin	<u>o</u> ,			
Environmental M	edia:		Atmosphe	ere: 0.8W	Ater: 0	Unit: Release/handled quantity			
Release or Emissi	on Factor:		With solv	ent recov	very dev	vice: 0.4Without solvent recovery device: 0.75			
EVALUATION									
Domain		Metric	Rating	$MWF^*$	Score	Comments			
Domain 1: Reliat	oility								
	Metric 1:	Methodology	Low	$\times 1$	3	not specified			
Domain 2: Repre	sentative			1	0				
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Likely Japan			
	Metric 3:	Applicability	Medium	$\times 2$	4	Industry that works with methylene chloride, but is focused on industry -wide big picture.			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Unknown			
	Metric 5:	Sample Size	Low	$\times 1$	3	Not well characterized			
Domain 3: Access	sibility/Clar	ity	TT: 1	1	1				
	Metric 6:	Metadata Completeness	High	× 1	1	Well documented.			
Domain 4: Varial	oility and U	ncertainty							
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Not applicable			
		<u>^</u>							
Overall Quality Determination <sup><math>\dagger</math></sup>			Low		2.3				

\* MWF = Metric Weighting Factor

Source Citation: Gilbert, D	Gilbert, D., Goyer, M., Lyman, W., Magil, G., Walker, P., Wallace, D., Wechsler, A., Yee, J.: 1982. An exposure and risk assessment for totrachloracthylono.								
Type of Data SourceReleases toHero ID732615	Releases to the Environment; Environmental Release Data; 732615								
EXTRACTION									
Parameter	Data								
Life Cycle Stage		Use							
Life Cycle Description (Subca	ategory of Use):	Dry Clear	ning						
Environmental Media:		air++++	+water						
Release or Emission Factor:			extimated 121,000 MT of PCE released to the atmosphere; the indus- try emits roughly one-half of the PCE it uses, mostly in the form of evaporative losses. Levels at the vents are between 6,800 and 680,000 ug/m3+++++++10 MT to sewer systems (table 2; pg 27 of 152).						
Waste Treatment Method:	Carbon adsorption systems are being used increasingly to treat waste materials. In the process, solvents are routed through "chillers" to re- duce relative temperatures.								
EVALUATION									
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	$\mathbf{Score}$	Comments				
Domain 1: Reliability Metric 1:	Methodology	High	× 1	1	EPA				
	0,	0							
Domain 2: Representative									
Metric 2:	Geographic Scope	High	× 1	1	US				
Metric 3:	Applicability	High	$\times 2$	2	dry cleaning data				
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Data from greater than 20 years (1982)				
Metric 5:	Sample Size	Medium	× 1	2	Distribution of sample is characterized by a range with uncer- tain statistics				
Domain 3: Accessibility/Clar	itv								
Metric 6:	Metadata Completeness	High	$\times 1$	1	Data sources clearly described				
Domain 4. Variability and H	acortainty								
Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not addressed.				
	1								
Overall Quality Determinatio	n <sup>†</sup>	Medium		1.8					
Continued on next page									

	- conti	nued from j	previous	page					
Source Citation:	Gilbert, D.,Goyer, M.,Lyman, W.,Magil, ment for tetrachloroethylene.	, G.,Walker, I	P.,Wallac	e, D.,Wechsle	r, A.,Yee, J 1982. An exposure and risk assess-				
Type of Data Source	Releases to the Environment; Environme	eleases to the Environment; Environmental Release Data;							
Hero ID	732615								
EVALUATION									
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				

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\* MWF = Metric Weighting Factor

Source Citation:	Gilbert, D., Goyer, M., Lyman, W., Magil, G., Walker, P., Wallace, D., Wechsler, A., Yee, J. 1982. An exposure and risk asses											
Гуре of Data Source Hero ID	Releases to 732615	o the Environment; Enviro	nmental Release	Data;								
EXTRACTION Parameter			Data									
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Environmental Media: Release or Emission Factor: Release Estimation Method:			Use metal deg waterTett tain inorg pounds o metals; th solutions TABLE 5 DER VAI 40 MT t waste.Da	Use metal degreasing waterTetrachloroethylene is decomposed by contact with hot metals, cer- tain inorganic acids, hot carbon, and certain alkaline metals or com- pounds of them. Unstabilized tetrachloroethylene can be corrosive to metals; this has obvious implications for the "terminal" disposal of waste solutions and sludges (containing the chemical) in unlined metal drums. TABLE 5. DEGRADATION OF TETRACHLOROETHYLENE UN- DER VARIOUS CONDITIONS 40 MT to water15-62.5 percent of the solvent consumed results in waste.Data for Tetrachloroethylene (PCE) concentrations in wastewa-								
			ters befor may cont low 100 u removal e Largest r Evaporat similar ca point, vo expensive wastes in 1300	<ul> <li>waste.Data for Tetrachloroethviene (PCE) concentrations in wastewaters before and after teratment are shown in Table 8. Combined sewage may contain up to 2412 ug/l, although influent levels were typically below 100 ug/l. Effluents were much lower, usually below 5 ug/l, indicating removal efficiencies usually above 90 percent.</li> <li>Largest release from cold metal cleaning is waste solvent evaporation. Evaporation from a vapor degreaser is less than from a cold cleaner of similar capacity because vapor degreasing wastes have a higher boiling point, volatilizing less rapidly, and vapor degreasing solvents contain expensive halogens, which are recycled. Distillation is used to recycle wastes in half of open-top vapor degreasers.</li> </ul>								
EVALUATION												
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments						
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	EPA						
Domain 2: Repres	entative Metric 2:	Geographic Scope	High	× 1	1	115						

Source Citation: Type of Data Source Hero ID	Gilbert, D.,Goyer, M.,Lyman, W.,Magil, G.,Walker, P.,Wallace, D.,Wechsler, A.,Yee, J.: 1982. An exposure and risk assessment for tetrachloroethylene. Releases to the Environment; Environmental Release Data; 732615								
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
	Metric 3:	Applicability	High	$\times 2$	2	degreasing data			
	Metric 5:	Sample Size	Medium	$\times 2 \times 1$	$\frac{0}{2}$	Data from greater than 20 years (1982) Distribution of sample is characterized by a range with uncer- tain statistics			
Domain 3: Access	sibility/Clar	ity			_				
	Metric 6:	Metadata Completeness	High	$\times 1$	1	Data sources clearly described			
Domain 4: Variability and Uncertainty Metric 7: Metadata Completeness Low $\times 1$ 3 Not addressed.									
Overall Quality Determination <sup><math>\dagger</math></sup>			Medium		1.8				

– continued from previous page

\* MWF = Metric Weighting Factor

Source Citation:	Gilbert, D., Goyer, M., Lyman, W., Magil, G., Walker, P., Wallace, D., Wechsler, A., Yee, J. 1982. An exposure and risk assessment for tetrachloroethylene.								
Type of Data Source Hero ID	Releases to 732615	o the Environment; Environmen	tal Release	Data;					
EXTRACTION									
Parameter	Data								
			TT						
Life Cycle Stage:	tion (Suba	tomore of Lap).	Use Dry Clear	ing In	decatarial	Plant			
Environmental M	odia:	ategory of Use):	Dry Clea	ning - Ind	lustriai	Flam			
Bolosso or Emissi	on Factor		Bolosso(s	oo Tablo	16 for a	additional dotails)			
Release Estimatic	n Method		model	ee rable	10 101 8	additional details)			
Daily Belease Qu	antity (kg/d	lav).	22606						
Annual Belease G	mantity (kg/d	/vr)·	13 004 48	3					
Release Days per	Year:	/ 5 - ).	6	0					
Number of Sites:			270						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1. Daliah	:1:4								
Domain 1: Reliad	Motrie 1.	Mathadalagy	High	$\vee$ 1	1	EDA			
	Metric 1.	Wethodology	IIIgii	~ 1	1	LFA			
Domain 2: Repres	sentative								
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	dry cleaning data			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Data from greater than 20 years (1982)			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Distribution of sample is characterized by a range with uncertain statistics			
Damain 2. A	-:1.:1:+/Cl								
Domain 3: Access	Metal Clar	Ity Mata data Gammlatan ara	TT:l.	1	1				
	Metric 6:	Metadata Completeness	High	× 1	1	Data sources clearly described			
Domain 4. Variah	vility and U	acortainty							
Domain 4: variability and Uncertainty Motrie 7: Metadata Completeness		Low	× 1	3	Not addressed				
	MEDIIC /.	metadata Completeness	LOW	^ 1	0	NOT AUTOSSEL.			
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		1.8					

\* MWF = Metric Weighting Factor

Source Citation:	Gilbert, D., Goyer, M., Lyman, W., Magil, G., Walker, P., Wallace, D., Wechsler, A., Yee, J. 1982. An exposure and risk assessment for tetrachloroethylene.								
Type of Data Source Hero ID	Releases to 732615	b the Environment; Environmen	tal Release	Data;					
EXTRACTION			Data						
			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	otion (Subca	ategory of Use):	Dry Clear	ning - Co	ommerci	ial plant			
Environmental M	edia:		air						
Release or Emission Factor:			Release(se mation or	ee Table 1 dischar	16 for a ges to F	dditional details); see page 96 of 152 for infor- POTWs.			
Release Estimatio	n Method:		model		0				
Daily Release Qua	antity (kg/d	lay):	35002						
Annual Release Q	uantity (kg	/yr):	48,262,18	9					
Release Days per	Year:		5						
Number of Sites:				18750					
EVALUATION									
Domain Metric				MWF*	Score	Comments			
			8			• • • • • • • • • • • • • • • • • • • •			
Domain 1: Reliab	ility								
Domain 1. Honab	Metric 1:	Methodology	High	$\times 1$	1	EPA			
		00	0						
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	dry cleaning data			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Data from greater than 20 years $(1982)$			
	Metric 5:	Sample Size	Medium	× 1	2	Distribution of sample is characterized by a range with uncer- tain statistics			
Domain 3: Access	sibility/Clar	ity							
Domain 5. Meeess	Metric 6:	Metadata Completeness	High	$\times 1$	1	Data sources clearly described			
		ľ	0			v			
Domain 4: Variab	ility and Ui	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not addressed.			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.8				
Continued on next page									

	- contin	lueu from	previous	page					
Source Citation:	Gilbert, D.,Goyer, M.,Lyman, W.,Magil, G.,Walker, P.,Wallace, D.,Wechsler, A.,Yee, J. 1982. An exposure and risk assessment for tetrachloroethylene.								
Type of Data Source	Releases to the Environment; Environme	eleases to the Environment; Environmental Release Data;							
Hero ID	732615	732615							
EVALUATION									
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				

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\* MWF = Metric Weighting Factor

Source Citation:	Gilbert, D., Goyer, M., Lyman, W., Magil, G., Walker, P., Wallace, D., Wechsler, A., Yee, J. 1982. An exposure and risk assessment for tetrachloroethylene.								
Type of Data Source Hero ID	Releases to 732615	b the Environment; Environment	tal Release	Data;					
EXTRACTION									
Parameter			Data						
Life Cycle Stage:	/C 1		Use						
Life Cycle Descrip	otion (Subca	ategory of Use):	metal deg	greasing					
Environmental M	edia:		Water Delease(a	oo Tabla	16 for a	dditional dotails); soo page 06 of 152 for infor			
Release of Emissi	on ractor.		mation or	ee Table	$10\ 101\ a$	20 TW <sub>e</sub>			
Release Estimatio	n Method		EXAMS	n uischarg model	ges to I	01 WS.			
Daily Release Quantity (kg/day)			58163	model					
Annual Release Quantity (kg/day).			8.76						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
	_								
Domain 1: Reliab	ility		TT. 1		-				
	Metric 1:	Methodology	High	× 1	1	EPA			
Domain 2: Repres	sentative								
- ••r	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	degreasing data			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Data from greater than 20 years $(1982)$			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Distribution of sample is characterized by a range with uncer- tain statistics			
Demain 9. Access	:1:1:4/Cl								
Domain 5: Access	Motrie 6:	Motadata Completeness	High	$\sim 1$	1	Data annea clearly described			
	metric 0.	Metadata Completeness	IIIgii	~ 1	1	Data sources clearly described			
Domain 4. Variah	and U	ocertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not addressed.			
		L							
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.8				
- <b>v</b>					-				

Source Citation:	International Association for Soaps Detergents and Maintenance Products. 2012. AISE SPERC fact sheet - wide dispersive use of cleaning and maintenance products									
Type of Data Source Hero ID	Releases to 5099141	Releases to the Environment; Environmental Release Data; 5099141								
EXTRACTION										
Parameter			Data							
Life Cycle Stage:			Use							
Life Cycle Descrip	otion (Subca	ategory of Use):	aerosols							
Environmental M	edia:		air	air						
Release or Emissie	on Factor:		100 perce	nt						
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score		Comments			
Domain 1: Reliab	ility Motrie 1.	Mathadalam	Low	× 1	2					
	Metric 1:	Methodology	LOW	× 1	3	not specified				
Domain 2: Repres	sentative									
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	EU				
	Metric 3:	Applicability	High	$\times 2$	2	Aerosols				
	Metric 4:	Temporal Representativeness	N/A		N/A	NA - assumption				
	Metric 5:	Sample Size	N/A		N/A	NA - assumption				
		•,								
Domain 3: Access	Matrie 6	Ity Matadata Completeness	NT / A		NI / A	<b>NT A</b>				
	Metric 6:	Metadata Completeness	N/A		N/A	NA - assumption				
Domain 4: Variab	ility and Ur	ncertainty								
	Metric 7:	Metadata Completeness	N/A		N/A	NA - assumption				
		-			,					
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.8					

\* MWF = Metric Weighting Factor

Occupational Exposure

Source Citation:	White, R. mixed-solv	White, R. F., Proctor, S. P., Echeverria, D., Schweikert, J., Feldman, R. G., 1995. Neurobehavioral effects of acute and chronic mixed-solvent exposure in the screen printing industry. American Journal of Industrial Medicine								
Type of Data Source Hero ID	Occupation 7671	Occupational Exposure; Monitoring Data; 7671								
EXTRACTION										
Parameter	Data									
Life Cycle Stage			Use							
Life Cycle Descrit	otion (Subca	ategory of Use):	Screen Pi	rinting						
Physical Form:	(		liquid, va	por						
Route of Exposur	e:		inhalatio	1						
Exposure Concent	tration (Uni	t):	25-100pp	m						
Number of Sampl	es:	,	3							
Number of Sites:			1							
Type of Measurer	nent or Met	hod:	short teri	n						
Worker Activity:			washing s	screens						
Type of Sampling:				area						
Exposure Duratio		20  min.								
Exposure Frequen		6x/day								
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliab	ility									
	Metric 1:	Methodology	Medium	$\times 1$	2	No method, but sampling equimpent mentioned in addition to being reliable source: Department of Neurology, Boston Uni- versity School of Medicine				
Domain 2: Repres	sentative									
	Metric 2:	Geographic Scope	High	$\times 1$	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Workplace scenario that exposes employees to Methylene Chlo- ride				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1995, 23 years old and prior to most recent PEL				
	Metric 5:	Sample Size	Medium	$\times 1$	2	Characterized by a range.				
		_								
Domain 3: Access	sibility/Clar	ity		_	-					
	Metric 6:	Metadata Completeness	Low	× 1	3	Does not have baseline metadata				
Domain 4: Variab	oility and U	ncertainty								
		Con	tinued on i	next page	)					

		Cont	mucu nom p	n c v lous	page				
Source Citation:	White, R. mixed-solv	White, R. F., Proctor, S. P., Echeverria, D., Schweikert, J., Feldman, R. G., 1995. Neurobehavioral effects of acute and chronic mixed-solvent exposure in the screen printing industry. American Journal of Industrial Medicine.							
Type of Data Source	Occupation	Occupational Exposure; Monitoring Data;							
Hero ID	7671								
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Does not address variability and uncertainty.			
Overall Quality Determination <sup>†</sup> Medium $2.1$									

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\* MWF = Metric Weighting Factor

Source Citation:	Lash, A. A.,Becker, C. E.,So, Y.,Shore, M. 1991. Neurotoxic effects of methylene chloride: Are they long lasting in humans?. Occupational and Environmental Medicine.								
Type of Data Source Hero ID	Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 13509								
EXTRACTION Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	otion (Subca	ategory of Use):	Paint Stri	ipping					
Physical Form:	,		liquid, va	por					
Route of Exposur	e:		inhalation	1					
Exposure Concent	tration (Uni	t):	Many yea	r range 1	1975 - 1	986.97 - 236 ppm			
Number of Sampl	es:		155						
Number of Sites:			1						
Type of Measuren	nent or Met	hod:	varies						
Worker Activity:			Varies						
Number of Worke	rs:		1,758						
Type of Sampling	:		personal,	area					
Sampling Location	n:		hanger						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility								
	Metric 1:	Methodology	Low	$\times 1$	3	No analytical method given			
Domain 2: Barro	ontotivo								
Domain 2. Repres	Metric 2.	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace scenario that exposed employees to Methylene Chlo-			
	meene o.	ripplicability	111511	<u> </u>	2	ride			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1991, 27 years old			
	Metric 5:	Sample Size	Low	$\times 1$	3	Not characterized			
Domain 3: Access	sibility/Clar	ity							
Domain 9. Meees	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Well documented			
D . 4 V . 1	•1•7 1 1 1								
Domain 4: Variab	Matrie 7	Matadata Completence	Low	V 1	0				
	Metric 7:	Metadata Completeness	LOW	× 1	ა	None addressing data			
Continued on next page									

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Source Citation:	Lash, A. A.,Becker, C. E.,So, Y.,Shore, M Occupational and Environmental Medicin	I 1991. Neu ne.	irotoxic e	ffects of r	nethylene chloride: Are they long lasting in humans?.			
Type of Data Source	Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data;							
Hero ID	13509							
EVALUATION								
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Overall Quality I	$\operatorname{Determination}^\dagger$	Medium		2.2				

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\* MWF = Metric Weighting Factor

Source Citation:	McCammo Hygiene.	on, CS, Jr; Glaser, RA; Wells, VI	E; Phipps, H	FC; Halpe	erin, W	E. 1991. nan. Applied Occupational and Environmental
Type of Data Source Hero ID	Occupatio 13526	nal Exposure; Monitoring Data;				
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Use	a		
Life Cycle Descri	ption (Subca	ategory of Use):	Furniture	Strippin	ıg	
Physical Form:			vapor			
Route of Exposul	re: tration (IIni			1		
Number of Semp	ltration (Un	it):	10 - 500 p	opm		
Number of Sites:	les.		14 5			
Type of Measure	ment or Met	hod	TWA			
Worker Activity:	ment of met	silou.	Stripping	furniture	e (stripi	ping, washing, refinishing)
Number of Worke	ers:		14	rarmoar	e (seripi	58, ((astring), 108)
Type of Sampling	z:		Personal			
PPE:	2		rubber gl	oves, rub	ber apr	ons, safety glasses, rubber boots
				,	,	, , ,
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
ויות ו	•1•7					
Domain 1: Reliat	Motrie 1.	Mathadalam	II: mla	v 1	1	
	Metric 1:	Methodology	підіі	X 1	1	NIOSH Study
Domain 2: Repre	sentative					
- • • • • • • • • • • • • • • • • • • •	Metric 2:	Geographic Scope	High	$\times 1$	1	5 furniture strippers in U.S.
	Metric 3:	Applicability	High	$\times 2$	2	Furniture Stripping
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1991 - more than 20 years old and prior to most recent PEL
	Metric 5:	Sample Size	High	$\times 1$	1	Individual data points
Domain 3: Acces	sibility/Clar	rity				
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	provided key information
Domain 4: Varial	aility and U	ncortainty				
Domanii 4. Vanai	Motric 7	Motadata Completeness	Modium	$\times 1$	2	Study was conducted in summer, and shop doors were open
	metric 7:	metadata Completeness	meanum	~ 1	2	allowing increased ventilation. These exposures may be among the lowest for the work year if all else is equal.
		Con	tinued on 1	next page	9	
				1.0		

		iniaca nom p	1011046	Page	
Source Citation:	McCammon, CS, Jr; Glaser, RA; Wells, Hygiene.	, VE; Phipps, F	C; Halpe	erin, WE.	1991. nan. Applied Occupational and Environmental
Type of Data Source	Occupational Exposure; Monitoring Da	ata:			
Hero ID	13526	,			
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Overall Quality I	$\operatorname{Petermination}^\dagger$	Medium		1.7	

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\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Ghittori, S Occupatio 13832	S.,Marraccini, P.,Franco, G.,Imbr nal Exposure; Monitoring Data;	riani, M 1	993. Met	hylene	chloride exposure in industrial workers. AIHA Journal.
EXTRACTION						
Parameter			Data			
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity: Type of Sampling: Exposure Duration:			Use Pharmace vapor inhalatior 50.3 mg/n washing g Personal half shift	eutical n m3 (mear gelatine c (4 hr)	ı) apsules	
EVALUATION						
Domain		Metric	Rating	$MWF^*$	Score	Comments
Domain 1: Reliab	ility Metric 1:	Methodology	Medium	$\times 1$	2	AIHA Journal Article
Domain 2: Repres	sentative					
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Italy
	Metric 3:	Applicability	High	$\times 2$	2	Pharmaceutical factory - washing gelatine capsules
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993, prior to most recent PEL
	Metric 5:	Sample Size	Low	$\times 1$	3	only provided mean, range, and SD
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	personal samples, taken over 4 hr period
Domain 4: Variab	oility and U	ncertainty				- · ·
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	no discussion of uncertainy for air concentration data
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3	

\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT	- DO NOT	CITE OR	QUOTE
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Source Citation:	Ott, M. G., Skory, L. K., Holder, B. B., Bronson, J. M., Williams, P. R., 1983. Health evaluation of employees occupationally exposed to methylene chloride. Scandinavian Journal of Work, Environment and Health.									
Type of Data Source Hero ID	Occupatio 29149	Occupational Exposure; Monitoring Data; 29149								
EXTRACTION										
Parameter	Data									
Life Create Sterrey			TT							
Life Cycle Stage:	tion (Suba	atogory of Uso).	Colluloro	Triscotat	o and E	Film Base Production propagation and extru				
Life Cycle Descrip		ategory of Use).	sion	maceta	le and r	This base i founction - preparation and extru-				
Physical Form			Vapor							
Route of Exposur	e:		Inhalatio	n						
Exposure Concent	tration (Un	it):	140-475 p	opm (med	lian)					
Worker Activity:	(-		Cellulose	Triacetat	e and F	Film Base Production - preparation and extru-				
·			sion							
Type of Sampling	:		PBZ							
EVALUATION										
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments				
Damain 1. Daliah	:1:									
Domain 1: Reliad	Motric 1.	Methodology	Low	$\sim 1$	3	not decembed				
	MEULC 1.	memodology	LOW	~ 1	5	not described				
Domain 2: Repres	sentative									
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US data				
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1983, prior to most recent PEL				
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and median given, but no discrete data				
Domain 3: Access	sibility/Clar	ity N. I. I. C. I. I.	т	1	0					
	Metric 6:	Metadata Completeness	Low	× 1	3	sample type given, no other metadata				
Domain 4: Variah	ulity and U	ncertainty								
Domain 4. Variac	Metric 7.	Metadata Completeness	Low	× 1	3	Not discussed				
		metadata compreteness	1011	<u> </u>	0	Tot discussed.				
Overall Quality D	eterminatic	nn <sup>†</sup>	Medium		22					
Overall Quality D		<u>, , , , , , , , , , , , , , , , , , , </u>	meannin		4.4					

Source Citation: Tat T and Type of Data Source Occ Hero ID 516	Tates, A. D.,Grummt, T.,Van Dam, F. J.,De Zwart, F.,Kasper, F. J.,Rothe, R.,Stirn, H.,Zwinderman, A. H.,Natarajan, A. T. 1994. Measurement of frequencies of HPRT mutants, chromosomal aberrations, micronuclei, sister-chromatid exchanges and cells with high frequencies of SCEs in styrene/dichloromethane-exposed workers. DNA Repair. Occupational Exposure; Monitoring Data; 51622							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:	(0.1		Use		<i>.</i> .	11 1		
Life Cycle Description	(Subc	ategory of Use):	industrial	styrene	contian	ers and boards		
Physical Form:			Liquid, va	ipor				
Route of Exposure:		+).	Innalation	1 /				
Number of Sites:	on (Un	it):	0-742 mg	/m3				
Type of Measurement	or Mot	had	TWA					
Worker Activity:	or met	liou.	Fauinmar	at Cloani	na			
Number of Workers			46	it Oleani	ng			
Type of Sampling:			ambient a	ir				
Type of Sumpring.								
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliability								
Met	ric 1:	Methodology	Low	$\times 1$	3	Unknown method		
Domain 2: Representa	tive							
Met	ric 2:	Geographic Scope	Medium	$\times 1$	2	Former German Democratic Republic		
Met	ric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
Met	ric 4:	Temporal Representativeness	Low	$\times 2$	6	1994, 24 years old and prior to most recent PEL		
Met	ric 5:	Sample Size	Medium	$\times 1$	2	Only provides mean and range		
Domain 3: Accessibilit	y/Clar	ity						
Met	ric 6:	Metadata Completeness	Low	$\times 1$	3	Very basic metadata		
Domain 4: Variability	and U	ncertainty						
Met	ric 7:	Metadata Completeness	Medium	$\times 1$	2	Offers limited discussion regarding potentials for variability.		
		L				0 01		
Overall Quality Determ	ninatio	$\mathrm{on}^\dagger$	Medium		2.2			
		Cor	tinued on r	next page	e			

	COIL	tinucu nom j	JICVIOUS	page		
Source Citation:	Tates, A. D.,Grummt, T.,Van Dam, F T 1994. Measurement of frequencies and cells with high frequencies of SCE	'. J.,De Zwart, of HPRT muta s in styrene/dic	F.,Kaspe ants, chrc chloromet	r, F. J.,Ro omosomal ε hane-expo	the, R.,Stirn, H.,Zwinderman, A. H.,Natarajan, A. berrations, micronuclei, sister-chromatid exchanges sed workers. DNA Repair.	
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 51622					
EVALUATION						
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	

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\* MWF = Metric Weighting Factor

Source Citation:	Friedlander, B. R., Hearne, T., Hall, S 1978. Epidemiologic investigation of employees chronically exposed to methylene chloride: Mortality analysis. Journal of Occupational and Environmental Medicine.								
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 65067								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	otion (Subca	ategory of Use):	cleaning s	olvent -	film ace	tate			
Physical Form:			vapor						
Route of Exposur	e:		inhalatior	1					
Exposure Concent	tration (Uni	t):	0-350 ppr	n					
Number of Sampl	es:		307						
Number of Sites:			1	,	,				
Type of Sampling	:		Spot Sam	ples, per	sonal m	onitoring			
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1. Beliah	ility								
	Metric 1:	Methodology	Low	$\times 1$	3	not described			
Domain 2: Repres	sentative								
- ••r-••r	Metric 2:	Geographic Scope	High	$\times 1$	1	US data			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1978, 40 years old and prior to most recent PEL			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Only provides mean and range			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	sample type given, no other metadata			
Domain 4: Variab	ility and U	ncertainty							
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Offers limited discussion regarding potentials for variability.			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1				

 $\star$  MWF = Metric Weighting Factor

Source Citation:	Vincent, R., Poirot, P., Subra, I., Rieger, B., Cicolella, A. 1994. Occupational exposure to organic solvents during paint stripping and painting operations in the aeronautical industry. International Archives of Occupational and Environmental Health.								
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 76565								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Use	,					
Life Cycle Descrip Diversal Forme	ption (Subca	ategory of Use):	Airplane	stripping					
Filysical Form. Bouto of Exposur	· · ·		inhalation	por					
Exposure Concert	e. tration (Uni	t).	200 2-188	1 8 9 mg/r	m3				
Number of Sites:			1	0.5 mg/1	110				
Type of Measurer	nent or Met	hod:	TWA						
Worker Activity:			Stripping	aircraft	paint				
Type of Sampling	:		personal		-				
Exposure Duratio	on:		up to 8 h	ours					
PPE:			None wor	None worn.					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
	•1•7								
Domain 1: Kenab	Metric 1:	Methodology	Medium	× 1	2	Not defined but clearly described			
	11100110 11		mourain		_				
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	France			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace scenario that exposes employees to Methylene Chlo- ride			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993, 25 years old and prior to most recent PEL $$			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Characterized by a range.			
Domain 3: Access	sibility/Clar	ity		-	0				
	Metric 6:	Metadata Completeness	Medium	× 1	2	Has baseline metadata			
Domain 4: Variat	vility and U	acertainty							
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Data utilizes SD, but does not discuss variability much beyond			
						tilat.			
		Con	tinued on 1	next page	9				

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Source Citation:	Vincent, R., Poirot, P., Subra, I., Rieger, B., Cicolella, A.: 1994. Occupational exposure to organic solvents during paint stripping and painting operations in the aeronautical industry. International Archives of Occupational and Environmental Health.				
Type of Data Source	Occupational Exposure; Monitoring I	Data;			
Hero ID	76565	,			
EVALUATION					
Domain	Metric	Rating MWI	F <sup>*</sup> Score	Comments	
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium	2.0		

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\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT -	DO NOT	CITE OR	QUOTE
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Source Citation:	Vincent, R., Poirot, P., Subra, I., Rieger, B., Cicolella, A 1994. Occupational exposure to organic solvents during paint stripping						
Type of Data Source Hero ID	and painting operations in the aeronautical industry. International Archives of Occupational and Environmental Health. Occupational Exposure; Monitoring Data; 76565						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Use				
Life Cycle Descrip	otion (Subca	ategory of Use):	Airplane stripping				
Physical Form:			vapor				
Route of Exposur	e:		inhalation				
Exposure Concentration (Unit):			Stripping: 86 - 1,239.5 mg/m3 (8-hr TWA); Masking: 97.2-174.6 mg/m3 (8-hr TWA)				
Number of Sampl	es:		45				
Number of Sites:			1				
Type of Measurer	nent or Met	hod:	TWA				
Worker Activity:			stripping (direct exposure); masking (indirect exposure)				
Type of Sampling	5:		personal				
Exposure Duratio	on:		various				
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Reliab	vility						
Domain 1. Renad	Metric 1:	Methodology	Medium	$\times 1$	2	unclear- equipment information provided	
Domain 2: Repres	sentative				0		
	Metric 2:	Geographic Scope	Medium	× 1	2	France	
	Metric 3:	Applicability	High	$\times 2$	2	Aircraft stripping	
	Metric 4: Motric 5:	Sample Size	Low Modium	$\times 2$ $\times 1$	0	1993 - more than 20 years old and prior to most recent PEL	
	Metric 5.	Sample Size	medium	~ 1	2	ranges provided	
Domain 3: Accessibility/Clarity							
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	details not provided for each sample	
Domain 4. Variat	Densin A. Maishilter and Hassachicke						
Motrie 7: Metadata Completeness M			Modium	× 1	0		
	metric 7:	metadata Completeness	meann	× 1	4	minted discussion on variability	
Continued on next page							

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Source Citation:	Vincent, R., Poirot, P., Subra, I., Rieger, B., Cicolella, A. 1994. Occupational exposure to organic solvents during paint stripping and painting operations in the aeronautical industry. International Archives of Occupational and Environmental Health.				
Type of Data Source	Occupational Exposure: Monitoring Data:				
Hero ID	76565	,			
EVALUATION					
Domain	Metric	Rating 1	MWF <sup>*</sup> Score	Comments	
Overall Quality Determination <sup>†</sup>		Medium	2.0		

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\* MWF = Metric Weighting Factor
Source Citation:	Ukai, H.,Okamoto, S.,Takada, S.,Inui, S.,Kawai, T.,Higashikawa, K.,Ikeda, M. 1998. Monitoring of occupational exposure to dichloromethane by diffusive vapor sampling and urinalysis. International Archives of Occupational and Environmental Health.								
Type of Data Source Hero ID	Occupation 667565	nal Exposure; Monitoring Data;							
EXTRACTION Parameter			Data						
Life Cycle Stage:	/C 1		Use						
Life Cycle Descrip	otion (Subca	tegory of Use):	Printing						
Physical Form:			vapor						
Functional Concent	e: retion (Uni	+).	1 180 ppr	1					
Number of Sites:	ration (Uni	t):	1-180 ppi	11					
Worker Activity:			cleaning	up of pri	ntingro	lls with DCM and application of DCM as a			
WOIKEI MEUNIUY.			solvent in	theprod	uction of	of industrial materials, among other processes			
Number of Worke	rs:		61 (unclea	ar how m	anv site	s)			
Type of Sampling	:		personal	carbon-c	loth di'	usive sampler)			
Exposure Duratio	n:		8 hr	8 hr					
1									
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Boliah	ility								
Domain 1. Renau	Metric 1:	Methodology	Medium	$\times 1$	2	carbon-cloth di"usive sampler - unclear the validity of the method			
Domoin 9. Domoo	ontotino								
Domain 2: Repres	Motria 2	Coorrephie Seene	Modium	× 1	0				
	Metric 2:	Applicability	High	$\times 1$ $\times 2$	2	Data from Japan (OECD country)			
	Metric 4.	Temporal Bepresentativeness	Low	$\times 2$	6	study performed in 1997 after most recent PEL			
	Metric 5:	Sample Size	Medium	$\times 1$	2	range, geometric mean, geometric standard deviation given, no discrete data			
Domain 3: Access	ibility/Clar	ity			2				
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Most metadata given, missing exposure frequency and duration			
Domain 4: Variab	ility and Ur	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	not discussed			
Continued on next page									

				1.9.	
Source Citation: Type of Data Source Hero ID	Ukai, H.,Okamoto, S.,Takada, S.,Inui, S to dichloromethane by diffusive vapor s Health. Occupational Exposure; Monitoring Dat 667565	.,Kawai, T.,H ampling and u a;	igashikav urinalysis	va, K.,Ike s. Interna	da, M. 1998. Monitoring of occupational exposure tional Archives of Occupational and Environmental
EVALUATION					
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments
Overall Quality D	$\operatorname{Petermination}^\dagger$	Medium		2.1	

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\* MWF = Metric Weighting Factor

Source Citation:	Hein, M. J., Waters, M. A., Ruder, A. M., Stenzel, M. R., Blair, A., Stewart, P. A. 2010. Statistical modeling of occupational chlorinated solvent exposures for case-control studies using a literature-based database. Annals of Occupational Hygiene.								
Type of Data Source Hero ID	Occupation 729521	Occupational Exposure; Monitoring Data; 729521							
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Multi-Industry	,					
Life Cycle Descrip	Life Cycle Description (Subcategory of Use):								
Physical Form:			Vapor, liquid,	aerosol					
Exposure Concent	ration (Uni	t):	Range: 0.0004	- 2200 p	pmMedi	ian: 7.0 ppm			
Number of Sample	es:		1272 reported	measure	ments fr	om 1970 - 2011			
Type of Measurem	nent or Met	hod:	All converted t	to 8 hour	TWA				
Worker Activity:			Varies						
Number of Worker	rs:		Varies						
Type of Sampling:	Type of Sampling:			, Short 7	Гerm				
Engineering Contr	ol & percer	t Exposure Reduction:	Varies: looked	at impac	ct of loca	al exhaust ventilation and industrial me-			
				chanical dilution					
Analytic Method:			Varies						
EVALUATION									
Domain		Metric	Rating	$\rm MWF^{\star}$	Score	Comments			
Domain 1: Reliabi	lity								
	Metric 1:	Methodology	High	$\times 1$	1	NIOSH document			
Domain 2: Repres	entative								
	Metric 2:	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Does not indicate specific exposure scenarios for any of the data			
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2010, but utilizes decades old data for analysis.			
	Metric 5:	Sample Size	Low	$\times 1$	3	Gives summary of data, no detailed points with characteriza- tion			
Domain 3: Accessi	ibility/Clar	ity							
	Metric 6:	Metadata Completeness	Low	× 1	3	Does not quite fit the metadata completeness for the moni- toring section, but cearly states how the metadata has been accounted for.			
			N 1						

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Source Citation:	Hein, M. J chlorinated	Lein, M. J., Waters, M. A., Ruder, A. M., Stenzel, M. R., Blair, A., Stewart, P. A. 2010. Statistical modeling of occupational hlorinated solvent exposures for case-control studies using a literature-based database. Annals of Occupational Hygiene.								
Type of Data Source	Occupation	Occupational Exposure; Monitoring Data;								
Hero ID	729521									
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	High	× 1	1	Variability and uncertainty are addressed in the document in the discussion of the methods.				
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.3.				

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Cherry, N., Venables, H., Waldron, H. A., Wells, G. G. 1981. Some observations on workers exposed to methylene chloride. British Journal of Industrial Medicine								
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 730498								
EXTRACTION Parameter	Data								
Life Cycle Stage:			Use						
Life Cycle Descrit	otion (Subca	tegory of Use):	acetate film ma	anufactu	ring				
Physical Form:	(		vapor		0				
Route of Exposur	e:		inhalation						
Exposure Concent	tration (Uni	t):	75-100ppm(giv	en, untes	$\operatorname{sted})$				
Number of Sites:			1						
Number of Worke	ers:		76						
EVALUATION									
Domain		Metric	Rating	$\mathbf{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	oility								
	Metric 1:	Methodology	Low	$\times 1$	3	None Noted			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	Medium	$\times 2$	4	Focuses on medical impact not work environment.			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1981 - 37 years old and prior to most recent PEL			
	Metric 5:	Sample Size	Low	× 1	3	Limited			
Domain 3: Access	sibility/Clari	ity							
	Metric 6:	Metadata Completeness	Unacceptable	$\times 1$	4	No metadata			
Domain 4: Variat	oility and Ur	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	None addressing data			
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.7.			
Continued on next page									

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Source Citation:	Cherry, N., Venables, H., Waldron, H. A., Wells British Journal of Industrial Medicine.	s, G. G 198	81. Some	e observatior	ns on workers exposed to methylene chloride.				
Type of Data Source	Occupational Exposure; Monitoring Data;	Occupational Exposure; Monitoring Data;							
Hero ID	730498								
EVALUATION									
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Anundi, H.,Lind, M. L.,Friis, L.,Itkes, N.,Langworth, S.,Edling, C 1993. High exposures to organic solvents among graffiti removers. International Archives of Occupational and Environmental Health.								
Type of Data Source Hero ID	Occupation 730504	nal Exposure; Monitoring Data;							
EXTRACTION			Data						
			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	tion (Subca	tegory of Use):	Graffiti R	emoval					
Physical Form:			vapor						
Route of Exposure	e:		inhalatior	1					
Exposure Concentration (Unit):		18 - 1,188 mean = 2 - 400 mg	mg/m3; 260 mg/m 3. m3: mag	geomet 13; 15-n metric	tric mean = $127 \text{ mg/m3}$ ; geo SD = $3.6 \text{ mg/m3}$ ; nin samples: $6 \cdot 5,315 \text{ mg/m3}$ ; geometric mean SD = $5.59 \text{ mg/m3}$ ; mean = $1.117 \text{ mg/m3}$				
Number of Samples:			12	, mo, gee	meene	SD = 0.00  mg/mb, mean = 1,117  mg/mb			
Number of Sites:			1						
Type of Measurement or Method:			TWA						
Worker Activity:			Graffiti cl	eaning (s	pray sol	lvent on surfaces and swab with tissue, or apply			
			thickened	thickened solvent with brush and wash with heated (70oC) high-pressure					
			water spray)						
Number of Worker	rs:		12						
Type of Sampling:	:		Personal						
PPE:			leather gloves; no respirators; sometimes confined spaces						
EVALUATION									
Domain		Metric	Bating	MWF*	Score	Comments			
			Ttating		Beore				
Domain 1: Reliabi	ility								
Domain 1. Honabi	Metric 1:	Methodology	Medium	× 1	2	unclear - methods provided, conducted by Swedish Department			
						of Occupational Medicine			
Domain 2: Repres	entative	~							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Sweden			
	Metric 3:	Applicability	High	× 2	2	Graffiti Remover			
	Metric 4:	Temporal Representativeness	LOW	× 2	6	1993 - more than 20 years old and prior to most recent PEL			
	Metric 5:	Sample Size	Medium	× 1	Ζ	range, geometric mean, mean			
Domain 3: Access	ibilitv/Clari	tv							
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	8-hr TWA personal samples			
		Con	tinued on r	next page					

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Source Citation:	urce Citation: Anundi, H.,Lind, M. L.,Friis, L.,Itkes, N.,Langworth, S.,Edling, C. 1993. High exposures to organic solvents among graffiti removers. International Archives of Occupational and Environmental Health.								
Type of Data Source	Occupational Exposure; Monitoring Data;								
Hero ID	730504								
EVALUATION									
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 4: Variab	pility and Uncertainty Metric 7: Metadata Completeness	Medium	× 1	2	limited discussion on variability				
Overall Quality I	$\operatorname{Petermination}^{\dagger}$	Medium		2.0					

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\* MWF = Metric Weighting Factor

Source Citation:	Dell, L. D. the potent	Dell, L. D., Mundt, K. A., McDonald, M., Tritschler, J. P., Mundt, D. J 1999. Critical review of the epidemiology literature on the potential cancer risks of methylene chloride. International Archives of Occupational and Environmental Health.								
Type of Data Source Hero ID	Occupatio 730507	nal Exposure; Monitoring Data;								
EXTRACTION										
Parameter			Data							
Life Cycle Stage:			Use							
Life Cycle Descrip	otion (Subca	ategory of Use):	Triacetate	e film bas	se prodi	uction				
Physical Form:			vapor							
Route of Exposure	e:		inhalatior	1						
Exposure Concent	tration (Uni	t):	30-120ppi	m						
Type of Measuren	nent or Met	hod:	TWA							
Worker Activity:			various							
Type of Sampling	:		personal/	area						
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1, Poliah	:1:+									
Domain 1. Renab	Metric 1:	Methodology	Low	$\times 1$	3	Not Specified				
Domain 2: Repres	sentative									
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	× 1	1	US data				
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1959-1975, prior to most recent PEL				
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data				
		•.								
Domain 3: Access	Matria 6	Ity Matadata Completeness	Madium	× 1	0					
	Metric 0:	Metadata Completeness	Medium	× 1	Ζ	Missing sample time, exposure duration, and exposure fre- quency but results presented as 8-hr TWAs				
Domain 4. Variab	ility and U	acertainty								
Domain 4. Variab	Metric 7:	Metadata Completeness	Low	× 1	3	Not discussed				
				·· •	,					
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1					

Source Citation:	Dell, L. D.	Dell, L. D., Mundt, K. A., McDonald, M., Tritschler, J. P., Mundt, D. J. 1999. Critical review of the epidemiology literature on the potential cancer risks of methylene chloride. International Archives of Occupational and Environmental Health.								
Type of Data Source Hero ID	Occupatio 730507	nal Exposure; Monitoring Data;		national	11101111					
EXTRACTION										
Parameter			Data							
Life Cycle Stage:			Use							
Life Cycle Descrip	otion (Subca	ategory of Use):	Triacetate	e film bas	se produ	uction				
Physical Form:			vapor							
Route of Exposur	e:		inhalation	1						
Exposure Concent	tration (Uni	it):	5-380 ppn	n (prepai	ration a	rea); 50-590 ppm (extrusion area)				
Type of Measurer	nent or Met	hod:	TWA							
Type of Sampling			various							
Type of Sampling			personai							
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
	•1•,									
Domain 1: Reliab	Ility Motrie 1.	Mathadalagy	Low	$\sim 1$	2	Nat Case:Gad				
	Metric 1.	Methodology	LOW	~ 1	5	Not Specified				
Domain 2: Repres	sentative									
	Metric 2:	Geographic Scope	High	$\times 1$	1	US data				
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1954-1977, prior to most recent PEL				
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data				
Domain 3: Access	vibility/Clar	it.,								
Domain 5. Access	Metric 6:	Metadata Completeness	Medium	× 1	2	Missing sample time exposure duration, and exposure fre-				
			intourum	~ <u>-</u>	_	quency but results presented as 8-hr TWAs				
	1									
Domain 4: Variat	Motrie 7	Metadata Completeness	Low	× 1	9					
	metric 7:	metadata Completeness	LOW	× 1	ა	ivot discussed.				
Overall Quality D	otorminatio	m <sup>†</sup>	Modium		9.1					
Overan Quality L	etermitatio	<u>11</u>	meann		2.1					

Source Citation:	Dell, L. D. the potent	Dell, L. D., Mundt, K. A., McDonald, M., Tritschler, J. P., Mundt, D. J 1999. Critical review of the epidemiology literature on the potential cancer risks of methylene chloride. International Archives of Occupational and Environmental Health.								
Type of Data Source Hero ID	Occupatio 730507	nal Exposure; Monitoring Data;				-				
EXTRACTION										
Parameter			Data							
Life Cycle Stage			Use							
Life Cycle Descrip	otion (Subca	ategory of Use):	Triacetate	e film bas	se prodi	uction				
Physical Form:	<sup>×</sup>		vapor							
Route of Exposure	e:		inhalation	ı						
Exposure Concent	tration (Uni	t):	32325							
Type of Measuren	nent or Met	hod:	TWA							
Worker Activity:			various							
Type of Sampling	:		personal							
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Demein 1. Delieb	:1:4									
Domain 1: Reliad	Metric 1.	Methodology	Low	× 1	3	Not Specified				
	Meene 1.	Wethodology	LOW	~ 1	0	Not Specified				
Domain 2: Repres	sentative									
*	Metric 2:	Geographic Scope	Medium	$\times 1$	2	UK				
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1980-1988, prior to most recent PEL				
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data				
	·1 ·1· / / / / 1	•,								
Domain 5: Access	Motrie 6:	Motodoto Completeness	Modium	$\sim 1$	9	Missing completing auroques duration and auroques for				
	Metric 0.	Metadata Completeness	meann	× 1	2	Missing sample time, exposure duration, and exposure fre- quency but results presented as 8-hr TWAs				
	•1•, 1 ••									
Domain 4: Variab	Motrie 7	Metadata Completeness	Low	$\sim 1$	9					
	metric /:	Metadata Completeness	LOW	X 1	3	NOT discussed.				
Quorell Quelit- D	otorminatio	n†	Modium		<b>ე</b> ე					
Overall Quality D	eterminatio	11 '	medium		2.2					

Source Citation:	Hearne, F. T., Pifer, J. W 1999. Mortality study of two overlapping cohorts of photographic film base manufacturing employees exposed to methylene chloride. Journal of Occupational and Environmental Medicine.							
Type of Data Source Hero ID	Occupatio 730525	nal Exposure; Monitoring Data;	oournar or	occupati				
EXTRACTION								
Parameter			Data					
Life Cruele Stame.			Uae					
Life Cycle Stage:	tion (Sube	atorory of Uso).	Use	bic film	support	-		
Physical Form:		ategory of ese).	vapor					
Route of Exposure	e:		inhalatior	1				
Exposure Concent	ration (Uni	it):	0-520 ppr	n (data s	ame as	730524 and 730507)		
Number of Sample	es:	,	1500 area	, 2500 pe	ersonal	over 50 years		
Number of Sites:			1					
Type of Measuren	nent or Met	hod:	$8 \text{ hour } \mathrm{TV}$	WA				
Worker Activity:			Various					
Number of Worke	rs:		1,070					
Type of Sampling	:		personal,	personal, area				
EVALUATION	EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Beliah	ility							
	Metric 1:	Methodology	Low	$\times 1$	3	Unknown method		
Domain 2: Repres	entative							
Domain 2. Ropros	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Medium	$\times 2$	4	Focuses on medical impact not work environment.		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Data runs from 1946-1994, prior to most recent PEL		
	Metric 5:	Sample Size	Low	$\times 1$	3	Limited		
Domain 3: Access	ibility/Clar	ity	т	1	0			
	Metric 6:	Metadata Completeness	Low	× 1	3	Limited		
Domain 4. Variab	ility and U	ncertainty						
Domain 4. Variab	Metric 7:	Metadata Completeness	Low	× 1	3	None addressing data		
					-	0		
Overall Quality D	eterminatio	$\mathrm{n}^{\dagger}$	Low		2.6			
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Source Citation:	Hearne, F. T.,Pifer, J. W 1999. Mor employees exposed to methylene chloride.	tality study Journal of	of two o Occupati	overlapping conal and Env	ohorts of photographic film base manufacturing ironmental Medicine.
Type of Data Source	Occupational Exposure; Monitoring Data	;			
Hero ID	730525				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments

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\* MWF = Metric Weighting Factor

Source Citation:	Estill, C. I Industrial	F., Spencer, A. B., 1996. Case stu Hygiona Association Journal	udy: Contro	ol of met	hylene c	chloride exposures during furniture stripping. American		
Type of Data Source Hero ID	Occupatio 730528	nal Exposure; Monitoring Data;						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	otion (Subca	ategory of Use):	Furniture	Strippin	g			
Physical Form:	X X	0,00	liquid, va	por	0			
Route of Exposur	e:		inhalation	n, dermal				
Exposure Concent	tration (Uni	it):	21-2160 p	pm				
Number of Sites:	× ×	,	1	-				
Type of Measurer	ment or Met	hod:	TWA					
Worker Activity:			Stripping	furniture	е			
Type of Sampling	:		personal					
Engineering Cont	rol & percei	nt Exposure Reduction:	Some loca	al exhaus	t ventil	ation and a makeup air unit outside stripping		
			area.					
Analytic Method:			NIOSH M	NIOSH Method 1005				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility			-				
	Metric 1:	Methodology	Hıgh	× 1	1	NIOSH Method 1005		
Domain 2. Ponro	antativa							
Domain 2: Repres	Matria 2	Coomanhia Soona	II: mb	v 1	1	IIG		
	Metric 2:	Applicability	High	$\times 1$	1	US Weekslage comparis that any core employees to Mathulana Chie		
	metric 5.	Applicability	mgn	~ 4	2	ride		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1996, 22 years old and prior to most recent PEL		
	Metric 5:	Sample Size	Low	× 1	3	Datapoints given as a range in many cases. Very little characterization		
		•,						
Domain 3: Access	sibility/Clar	ity		1	0			
	Metric 6:	Metadata Completeness	Medium	× 1	2	Basic metadata present.		
Domain 4. Variah	ility and U	ncontainty						
Domain 4: variat	Motrie 7	Motodoto Completeneco	Low	$\vee$ 1	2	Not discussed		
	metric 7:	metadata Completeness	LOW	× 1	ა	not discussed.		

		-			
Source Citation: Type of Data Source Hero ID	Estill, C. F.,Spencer, A. B., 1996. Ca Industrial Hygiene Association Journ Occupational Exposure; Monitoring 1 730528	ase study: Contro al. Data;	l of meth	ylene chl	oride exposures during furniture stripping. American
Hero ID	150020				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Overall Quality I	$\operatorname{Determination}^{\dagger}$	Medium		2.0	

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\* MWF = Metric Weighting Factor

Source Citation:	Gibbs, G.	Gibbs, G. W., Amsel, J., Soden, K. 1996. A cohort mortality study of cellulose triacetate-fiber workers exposed to methylene chloride. Journal of Occupational and Environmental Medicine						
Type of Data Source Hero ID	Occupatio 730533	Occupational Exposure; Monitoring Data; 730533						
EXTRACTION			_					
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Exposure Concentration (Unit): Number of Sites:		Use Cellulose Triacetate-Fiber 50-1250 ppm 1						
Number of Worke	rs:		3,211					
EVALUATION Domain		Metric	Rating	MWF*	Score	Comments		
			8					
Domain 1: Reliab	ility							
	Metric 1:	Methodology	Low	$\times 1$	3	Not mentioned		
Domain 2: Benres	sontativo							
Domain 2. Repres	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Canada		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace scenario that exposed employees to Methylene Chlo- ride		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1996, but utilizes decades old data for analysis (prior to PEL)		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Gives summary of basic data and a basic range, but nothing too detailed		
Domain 3: Access	ibility/Clar	ity						
Domain 9. Meees	Metric 6:	Metadata Completeness	Low	$\times 1$	3	discussed personal sampling data from another source		
Domain 4: Variab	ility and U	ncortainty						
Domain 4. Variau	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Does not address variability and uncertainty.		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation:	Hearne, F. T., Pifer, J. W., Grose, F., 1990. Absence of adverse mortality effects in workers exposed to methylene chloride: An					
Type of Data Source	Occupation	nal Exposure: Monitoring Data:				
Hero ID	730543	nai Exposure, Monitoring Data,				
	100010					
Parameter			Data			
			Data			
Life Cycle Stage:			Use			
Life Cycle Descrip	tion (Subca	ategory of Use):	photograp	ohic film	support	-
Physical Form:	,		vapor			
Route of Exposure	e:		inhalation	1		
Number of Sample	es:		1200 area	, 900 per	sonal or	ver 40 years
Number of Sites:			1			
Worker Activity:			Various			
Number of Worke	rs:		1,013			
Type of Sampling	:		personal,	area		
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 1, Paliah	:1:+					
Domain 1. Kenad	Metric 1.	Methodology	Low	× 1	3	Unknown method
	Meetic 1.	Methodology	LOW	~ 1	0	Chknown method
Domain 2: Repres	entative					
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US
	Metric 3:	Applicability	Medium	$\times 2$	4	Focuses on medical impact not work environment.
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Data runs from 1946-1988, prior to most recent PEL
	Metric 5:	Sample Size	Low	$\times 1$	3	Limited
Domain 3: Access	ibility/Clar	ity	т	1	0	
	Metric 6:	Metadata Completeness	Low	× 1	3	Limited
Domain 4. Variah	ility and U	acontaint				
Domain 4: Variab	Motric 7.	Motadata Completeness	Low	$\times 1$	3	None addressing data
	1011U /.	monadana Completeness	LOW	^ 1	5	Tione addressing data
Overall Ouglity D	otorminatio	$\mathbf{n}^{\dagger}$	Low		26	
Overall Quality D	eterminatio	11	LOW		2.0	

\* MWF = Metric Weighting Factor

Source Citation:	Lanes, S. F.,Rothman, K. J.,Dreyer, N. A.,Soden, K. J., 1993. Mortality update of cellulose fiber production workers.							
Type of Data Source	Occupation	nal Exposure; Monitoring Data;	nt and Hea	ltn.				
Hero ID	730555	730555						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Manufact	1110				
Life Cycle Descrip	otion (Subca	ategory of Use):	cellulose	triacetate	e fiber			
Route of Exposur	e:		inhalatior	1				
Exposure Concent	tration (Uni	t):	ND-1700	ppm				
Number of Sites:			1					
Type of Measurer	ment or Met	hod:	8  hr TW	ł				
Number of Worke	rs:		1,271					
FVALUATION								
Domain		Metric	Bating	MWF*	Score	Comments		
Domain		Metric	nating	IVI VV I	50016	Comments		
Domain 1: Reliab	ility							
	Metric 1:	Methodology	Low	$\times 1$	3	None given, references data from sampling done by Williams PR, et al.		
Domain 2: Ropros	contativo							
Domain 2. Repres	Metric 2.	Geographic Scope	High	× 1	1	US data		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993, 25 years old and prior to most recent PEL		
	Metric 5:	Sample Size	Medium	$\times 1$	2	range given, but no other statistics		
Domain 2. Access	ibility /Class	:						
Domain 5: Access	Motric 6	Motadata Completeness	Low	$\times 1$	3	completions given no other metadate		
	Methic 0.	Metadata Completeness	LOW	~ 1	5	sample type given, no other metadata		
Domain 4: Variab	oility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	None addressing data		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.2			

\* MWF = Metric Weighting Factor

Source Citation:Mahmud,Type of Data SourceOccupatioHero ID730564	M.,Kales, S. N 1999. Methyler nal Exposure; Monitoring Data;	e chloride I	poisoning	; in a ca	binet worker. Environmental Health Perspectives.	
EXTRACTION						
Parameter		Data				
Life Cycle Stage:		Use				
Life Cycle Description (Subca	ategory of Use):	laminatin	g cabinet	try		
Physical Form:		vapor, liq	uid			
Route of Exposure:		inhalation	i, dermal	L		
Exposure Concentration (Uni	it):	300-500 p	pm			
Number of Sites:		1				
Worker Activity:		Laminatii	ng - spra	ying cor	ntact cement	
Number of Workers:		10				
Type of Sampling:		Area				
Exposure Duration:		varies				
Exposure Frequency:		Varies	L			
PPE:		None used				
EVALUATION						
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1. Poliability						
Metric 1:	Methodology	Low	$\times 1$	3	None Noted	
Domain 2: Representative	Communitie Commu	TT:l.	v 1	1		
Metric 2:	Geographic Scope	High	× 1	1		
Metric 3:	Applicability	Medium	× Z	4	Focuses on medical impact not work environment.	
Metric 4: Motrie 5:	Sample Size	Low	× 2 × 1	4	1999, 19 years old but collected after most recent PEL	
Metric 5:	Sample Size	LOW	X 1	3	Limited	
Domain 3: Accessibility/Clar	ity					
Metric 6:	Metadata Completeness	Low	$\times 1$	3	Limited	
Domain 4: Variability and U	ncertainty					
Metric 7:	Metadata Completeness	Low	× 1	3	None addressing data	
	metadata Compreteness	LOW	~ 1	9		
Overall Quality Determination	$\mathrm{on}^\dagger$	Low		2.3		
Continued on next page						

		aca mom	provioa	P480	
Source Citation: Type of Data Source Hero ID	Mahmud, M.,Kales, S. N 1999. Methylen Occupational Exposure; Monitoring Data; 730564	e chloride	poisoning	in a cabinet	worker. Environmental Health Perspectives.
EVALUATION					
Domain	Metric	Rating	$\mathbf{MWF}^{\star}$	Score	Comments

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\* MWF = Metric Weighting Factor

Source Citation:	Tomenson, J. A.,Bonner, S. M.,Heijne, C. G.,Farrar, D. G.,Cummings, T. F. 1997. Mortality of workers exposed to methylene chloride employed at a plant producing cellulose triacetate film base. Occupational and Environmental Medicine.						
Type of Data Source Hero ID	730586						
EXTRACTION Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Exposure Concentration (Unit): Number of Sites: Type of Measurement or Method: Worker Activity:			Use Film Proo 2-165 ppn 1 8 hr TWA Varies	duction n10 ppm	average	2	
Number of Worke	rs:		1,473				
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	Explained exposure estimation philosophy but unable to verify credibility	
Domain 2: Benres	entative						
Domain 2. Repres	Metric 2:	Geographic Scope	Medium	× 1	2	UK	
	Metric 3:	Applicability	High	$\times 2$	2	Workplace scenario that exposed employees to Methylene Chlo- ride	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997, but utilizes decades old data for analysis (prior to PEL)	
	Metric 5:	Sample Size	Medium	$\times 1$	2	Gives summary of basic data and a basic range, but nothing too detailed	
Domain 3: Access	ibility/Clar	ity					
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Does not quite fit the metadata completeness for the moni- toring section, but cearly states how the metadata has been accounted for.	
Domain 4: Variab	ility and Ur	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Does not address variability and uncertainty.	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3		
Continued on next page							

	Cont	mueu nom pr	evious	page	
Source Citation:	Tomenson, J. A.,Bonner, S. M.,Heijne, C chloride employed at a plant producing	C. G., Farrar, D. C. cellulose triacet:	G.,Cum ate film	mings, T. F. base. Occup	. 1997. Mortality of workers exposed to methylene pational and Environmental Medicine.
Type of Data Source	Occupational Exposure; Monitoring Da	ta;			
Hero ID	730586				
EVALUATION					
Domain	Metric	Rating M	$MWF^{\star}$	Score	Comments

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\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Soden, K. J 1993. An evaluation of chronic methylene chloride exposure. Journal of Occupational Medicine. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 730597						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Uso				
Life Cycle Descrir	otion (Subca	tegory of Use).	Triacetate Fibe	er Manuf	acture		
Exposure Concent	tration (Uni	t).	475 ppm avg	Ji iviailui	acture		
Number of Sites:			1 1				
Number of Worke	rs:		1,271				
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	ility						
	Metric 1:	Methodology	Low	$\times 1$	3	No analytical method given	
	_						
Domain 2: Repres	sentative	aa	*** 1				
	Metric 2:	Geographic Scope	High	× 1	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Workplace scenario that exposed employees to Methylene Chlo- ride	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993, 25 years old	
	Metric 5:	Sample Size	Low	$\times 1$	3	Not characterized	
Domain 3: Access	Matria 6	Noto doto. Completenega	Unaccontable	× 1	4		
	Metric 0:	Metadata Completeness	Unacceptable	X 1	4	personal samples. 8-hr TWA	
Domain 4: Variab	oility and Ur	ocertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed - focused on health effects	
Overall Quality D	eterminatio	n <sup>†</sup>	Unacceptable		4	Metric Mean Score: 2.4.	

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source	Tomenson, J. A 2011. Update of a cohort mortality study of workers exposed to methylene chloride employed at a plant producing cellulose triacetate film base. International Archives of Occupational and Environmental Health. Occupational Exposure; Monitoring Data;					
Hero ID	787813					
EXTRACTION						
Parameter			Data			
Life Cycle Stage: Life Cycle Descrip Exposure Concent Number of Sites: Type of Measuren Worker Activity: Number of Worke	otion (Subca cration (Uni nent or Met rs:	ategory of Use): t): hod:	Use Film Prod 19ppm av 1 8 hr TWA Varies 1,473	duction rerage		
EVALUATION						
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	Method referenced to journal article, but not fully expressed
Domain 2: Repres	Motrie 2	Coorrenhia Saona	Modium	× 1	0	1112
	Metric 2: Metric 3:	Applicability	High	$\times 1 \times 2$	$\frac{2}{2}$	UK Workkplace scenario that exposed employees to Methylene Chloride
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2010, but utilizes decades old data for analysis.
	Metric 5:	Sample Size	Medium	$\times 1$	2	Gives summary of data and a basic range, but nothing too detailed.
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Does not quite fit the metadata completeness for the moni- toring section, but cearly states how the metadata has been accounted for.
Domain 4. Veriel	ilitar and TI-					
Domain 4: Variab	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Does not address variability and uncertainty.
Overall Quality D	eterminatio	n <sup>†</sup>	Medium		2.1	
Continued on next page						

		I		F0-				
Source Citation:	Tomenson, J. A 2011. Update of a col producing cellulose triacetate film base.	hort mortalit International	y study o Archives	of workers of of Occupa	exposed to methylene chloride employed at a plant tional and Environmental Health.			
Type of Data Source	Occupational Exposure; Monitoring Data	Occupational Exposure; Monitoring Data;						
Hero ID	787813							
EVALUATION								
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments			

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\* MWF = Metric Weighting Factor

Source Citation:	Thrall, K. D., Callahan, P. J., Weitz, K. K., Edwards, J. A., Brinkman, M. C., Kenny, D. V 2001. Design and evaluation of a broath analysis system for biological monitoring of volatile compound. AIHA I							
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 819357							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Environm	ent				
Life Cycle Descrit	otion (Subca	ategory of Use):	Waste Re	packagin	g			
Route of Exposur	e:		inhalation	1	0			
Exposure Concent	tration (Uni	t):	ND-573 p	$_{\rm pm}$				
Number of Sampl	es:		27					
Number of Sites:			1					
Worker Activity:			Waste Re	packagin	ıg			
Type of Sampling	;:		personal					
Exposure Duratio	n:		varies					
Exposure Frequer	icy:		varies					
Analytic Method:			NIOSH N	lethod 1	500 and	others		
EVALUATION			D ('	111117+	G			
Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1. Baliah	;];+							
Domain 1. Menab	Motric 1	Methodology	High	$\sim 1$	1	NIOSH Method 1500 and new methods for better Piclosical		
	Methe 1.	Wiethodology	mgn	~ 1	1	Exposure indexing		
Damain 9. Daman								
Domain 2: Repres	Motria 2.	Coographic Scope	High	$\sim 1$	1	IIC		
	Metric 2:	Applicability	High	$^{\wedge 1}$	2	US Workplace that has potential exposure to employees		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2001 17 years old		
	Metric 5:	Sample Size	Medium	$\times 1$	2	personal samples		
		T				K K		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Basic Meta data given.		
Domain 4. Variah	ility and U	acertainty						
Domain 4. Variac	Metric 7.	Metadata Completeness	Low	× 1	3	None addressing data		
			ноw	~ 1	0	Hone addressing data		
	Continued on next page							

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Source Citation:	Thrall, K. D., Callahan, P. J., Weitz, K. K., Edwards, J. A., Brinkman, M. C., Kenny, D. V 2001. Design and evaluation of a breath-analysis system for biological monitoring of volatile compound. AIHAJ.								
Type of Data Source	Occupational Exposure; Monitoring Da	ata;							
Hero ID	819357	,							
EVALUATION									
Domain	Metric	Rating N	IWF <sup>*</sup> Score	Comments					
Overall Quality I	$\operatorname{Petermination}^\dagger$	Medium	1.7						

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\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT -	DO NOT	CITE OR	QUOTE
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Source Citation:	Kersemaekers, W. M., Roeleveld, N., Zielhuis, G. A. 1995. Reproductive disorders due to chemical exposure among hair- dressers. Scandinavian Journal of Work, Environment and Health.							
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 1333689							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Uso					
Life Cycle Descrir	otion (Subca	ategory of Use):	Hair Salo	n (Hair s	prav)			
Physical Form:	buon (Subor	acceptly of esc).	Aerosol	ii (iiaii 5	pray)			
Route of Exposur	e:		inhalatior	1				
Exposure Concent	tration (Uni	it):	TWA Are	a: 4-8pp	mTWA	Personal: 18ppmPeak:400ppm		
Type of Measuren	nent or Met	hod:	Peak, TW	/A II				
Worker Activity:			Hair Styli	ng				
Type of Sampling	:		Personal,	area				
Sampling Location	n:		Ambient	salon air	and arc	bund chair		
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Roliah	ilitar							
Domain 1. Renad	Metric 1:	Methodology	Low	$\times 1$	3	No methodology given		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	The Netherlands		
	Metric 3:	Applicability	High	$\times 2$	2	Hair salon, representative of workplace use.		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1995, prior to most recent PEL		
	Metric 5:	Sample Size	Medium	$\times 1$	2	ranges and averages provided		
Domain 3: Access	ibility/Clar	ity						
Domain 0. Meeese	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Possible 2, has basic information regarding overall findings		
		-						
Domain 4: Variab	ility and U	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	None addressing data		
Overall Quality Determination <sup>†</sup>		Low		2.3				

Source Citation:	Lee, E. G., Harper, M., Bowen, R. B., Slaven, J 2009. Evaluation of COSHH essentials: methylene chloride, isopropanol, and							
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 1612579							
EXTRACTION			_					
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	otion (Subca	ategory of Use):	Printing press	cleaning				
Physical Form:			liquid, vapor					
Route of Exposur	e:		inhalation					
Exposure Concent	tration (Uni	t):	Estimated aver	rage expo	osure: 6	9ppm		
Number of Sampl	es:		7					
Number of Sites:			1					
Worker Activity:			Cleaning print	press rol	lers			
Exposure Duratio	n:		8 hr					
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility							
	Metric 1:	Methodology	Low	$\times 1$	3	No methodology given		
Domain 2: Repres	sentative							
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Representative of a workplace use.		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Published 2009, but utilizes much older data (1993-2000, data from pre- and post-most recent PEL: therefore scored a "3")		
	Metric 5:	Sample Size	Low	$\times 1$	3	Range of data points on graph, but not expressly detailed		
Domain 3. Accoss	vibility/Clari	ity						
Domain 5. Access	Metric 6:	Metadata Completeness	Unacceptable	$\times 1$	4	No information as to sample type in exposure data/estimations		
Domain 4: Variab	oility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Low	× 1	3	None addressing data		
Overall Quality D	Unacceptable		4	Metric Mean Score: 2.4.				
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Source Citation:	Lee, E. G., Harper, M., Bowen, R. B., Slaven, J. 2009. Evaluation of COSHH essentials: methylene chloride, isopropanol, and acetone exposures in a small printing plant. Annals of Occupational Hygiene.								
Type of Data Source	Occupational Exposure; Monitoring Data;	Occupational Exposure: Monitoring Data:							
Hero ID	1612579								
EVALUATION									
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments				

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\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Reh, C. M 98-0153-28 Occupation 1737898	I.,Mortimer, V. D.,Nemhauser, 883, Custom Products, Inc. Moo nal Exposure; Monitoring Data;	J. B.,Trout, D. resville, NC.	. 2002.	NIOSH	I Health Hazard Evaluation Report: HETA No.
EXTRACTION						
Parameter			Data			
Life Cycle Stage: Life Cycle Description (Subcategory of Use):			Use Solvent Based	Adhesive	es	
EVALUATION						
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments
Domain 1: Reliab	oility					
	Metric 1:	Methodology	High	$\times 1$	1	NIOSH
Domain 2: Bepre	sentative					
Domain 2. Repre	Metric 2:	Geographic Scope	High	$\times 1$	1	US
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	HHE of facility that recently transitioned from methylene chloride to $1$ -bromopropane $(1-BP)$
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2002, 16 years old
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.
Domain 3: Access	sibility/Clar	itv				
Domain 5. Access	Metric 6:	Metadata Completeness	Unacceptable	$\times 1$	4	No Comment.
Domain 4. Varial	ility and U.	agentainty				
Domain 4. Variat	Metric 7:	Metadata Completeness	Low	× 1	3	No Comment
			2011	~ <b>1</b>	0	
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.7.

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, two of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Kumagai, S.,Kurumatani, N.,Arimoto, A.,Ichihara, G. 2013. Cholangiocarcinoma among offset colour proof-printing workers exposed to 1.2-dichloropropage and/or dichloromethane. Occupational and Environmental Medicine									
Type of Data Source Hero ID	Occupatio 1936441	Occupational Exposure; Monitoring Data; 1936441								
EXTRACTION										
Parameter			Data							
			<b>T</b> T							
Life Cycle Stage:	tion (Color		Use							
Dire Cycle Descrip	ption (Subca	ategory of Use):	liquid vapor	•						
Routo of Exposur	·••		inhalation							
Exposure Concen	e. tration (Uni	i+)•	Estimated: 190	01_1003+	120-430	nnm1003_1008· 100_5/0nnm				
Number of Sites:	tration (on		1	/1 1000.	120 100	ppm1350 1550. 150 010ppm				
Worker Activity:			Cleaning ink fi	om print	plates					
Number of Worke	ers:		62	· · ·	1					
Exposure Duration	on:		8 hr							
Exposure Frequer	ncy:		150-400 times							
PPE:			plastic gloves							
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
	•1•									
Domain 1: Reliab	Motrie 1.	Mathadalamy	Low	× 1	2	NT (1 1 1 1				
	Metric 1:	Methodology	LOW	× 1	3	No methodology given				
Domain 2: Repre	sentative									
*	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Japan				
	Metric 3:	Applicability	High	$\times 2$	2	Representative of a workplace use.				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Published 2015, but utilizes much older (pre-PEL) data and first hand accounts $% \left( {\left( {{{\rm{D}}} \right)_{\rm{T}}} \right)_{\rm{T}}} \right)$				
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range of data, no specific data points				
<b>D</b>										
Domain 3: Access	sibility/Clar	ity								
	Metric 6:	Metadata Completeness	Unacceptable	× 1	4	No information as to sample type in exposure data/estimations				
Domain 4: Variat	oility and U	ncertainty								
	Metric 7:	Metadata Completeness	Low	× 1	3	None addressing data				
		Provonoss			~					
			N *							
	Continued on next page									

Source Citation:	Kumagai, S.,Kurumatani, N.,Arimoto, A.,Ichihara, G. 2013. Cholangiocarcinoma among offset colour proof-printing workers exposed to 1,2-dichloropropane and/or dichloromethane. Occupational and Environmental Medicine.						
Hero ID	1936441						
EVALUATION							
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Overall Quality I	$\operatorname{Petermination}^\dagger$	Unacceptable		4	Metric Mean Score: 2.4.		

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\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT	- DO NOT	CITE OR	QUOTE
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Source Citation:	Chan, C.,Lee, S. C.,Chan, W.,Ho, K.,Tian, L.,Lai, S.,Li, Y.,Huang, Y. u. 2011. Characterisation of Volatile Organic Compounds at Hotels in Southern China. Indoor and Built Environment.								
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 1978790								
EXTRACTION			Data						
			Data						
Life Cycle Stage:			Ambient	Environn	nent (ho	otel)			
Life Cycle Descrip	otion (Subca	ategory of Use):	Various						
Physical Form:			vapor						
Exposure Concent	tration (Uni	it):	0-35  ug/s	m3					
Number of Sampl	es:		26						
Number of Sites:			13						
Type of Measurer	nent or Met	hod:	8 hour						
Type of Sampling	;:		area						
Sampling Location	n:		non-smol	king guest	room				
Exposure Duratio	on:		continuo	us					
Exposure Frequer	ncy:		varies						
Analytic Method:			US EPA	Compend	lium Me	ethod TO-14a			
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	oility								
	Metric 1:	Methodology	High	$\times 1$	1	US EPA Compendium Method TO-14a			
Domain 2: Bopros	contativo								
Domain 2. Repres	Metric 2	Geographic Scope	Low	× 1	3	China			
	Metric 3:	Applicability	Low	$\times 2$	6	Focused on ambient air quality in a hotel, but relayent to work-			
		ripplicability	1011	~ =	Ū	ers in any ambient built environment			
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2011			
	Metric 5:	Sample Size	Low	$\times 1$	3	Provides basic summary and difficult to understand bar graph			
Domain 3. Access	yibility/Clar	i+							
Domain 5. Access	Metric 6:	Metadata Completeness	High	× 1	1	Has baseline metadata			
			111811	× 1	1				
Domain 4: Variab	ility and U	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Does not address variability and uncertainty.			
Continued on next page									

Source Citation:	Chan, C.,Lee, S. C.,Chan, W.,Ho, K.,Tian, L.,Lai, S.,Li, Y.,Huang, Y. u. 2011. Characterisation of Volatile Organic Compounds at Hotels in Southern China. Indoor and Built Environment.								
Type of Data Source	Occupational Exposure, Monitoring Data,								
Hero ID	1978790								
EVALUATION		5.1							
Domain	Metric	Rating	MWF'*	Score	Comments				
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.1					

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\* MWF = Metric Weighting Factor

Source Citation:	Colborn, T., Schultz, K., Herrick, L., Kwiatkowski, C 2014. An exploratory study of air quality near natural gas operations.									
Type of Data Source	Occupation	nal Exposure; Monitoring Data;								
Hero ID	2108438									
EXTRACTION										
Parameter			Data							
Life Cycle Stage:			Mining/Drilling							
Life Cycle Description (Subcategory of Use):			Closed loop hydraulic fracturing well							
Physical Form:	Physical Form:			vapor						
Exposure Concent	Exposure Concentration (Unit):			Mean: 206.2 ppbRange: 2.7-1730						
Number of Sample	es:		48							
Number of Sites:			1							
Type of Measurement or Method:			24 hour samples once a week							
Worker Activity:	Worker Activity:			Drilling, fracturing, other						
Type of Sampling:	Type of Sampling:			Area						
Sampling Location:			.7 miles from well pad of interest.							
Exposure Duration	Exposure Duration:			continuous						
Analytic Method	Analytic Method:				USEPA Method TO-15					
filled the moundar.			001111	liethou i	0 10					
EVALUATION										
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments				
Domain 1: Reliabi	lity									
	Metric 1:	Methodology	High	$\times 1$	1	EPA Methods TO-15				
Domain 2: Repres	entative									
	Metric 2:	Geographic Scope	High	$\times 1$	1	US				
	Metric 3:	Applicability	Medium	$\times 2$	4	Focused on ambient monitoring of a workplace that has exposure to Methylene chloride				
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2010				
	Metric 5:	Sample Size	High	$\times 1$	1	Presented as Range, but includes mean and standard deviation and other metrics				
Domain 3: Accessi	ibility/Clar	ity								
	Metric 6:	Metadata Completeness	High	$\times 1$	1	Has metadata in tables and within the text.				
		T	0							
Domain 4: Variability and Uncertainty										
	Continued on next page									
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Source Citation:	Colborn, T Human and	Colborn, T.,Schultz, K.,Herrick, L.,Kwiatkowski, C 2014. An exploratory study of air quality near natural gas operations. Human and Ecological Risk Assessment.								
Type of Data Source	Occupation	Occupational Exposure; Monitoring Data;								
Hero ID	2108438	2108438								
EVALUATION										
Domain		Metric	Rating	$\rm MWF^{\star}$	Score	Comments				
	Metric 7:	Metadata Completeness	High	$\times 1$	1	Addresses variability and uncertainty.				
Overall Quality I	High		1.2							

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\* MWF = Metric Weighting Factor

Source Citation:	Porter, E. 2006. OSHA compliance issues - Evaluation of worker exposure to TDI, MOCA, and methylene chloride. Journal of Occupational and Environmental Hygiene.									
Type of Data Source Hero ID	Occupation 2277546	nal Exposure; Monitoring Data;								
EXTRACTION Parameter			Data							
Life Cycle Stage:			Use							
Life Cycle Descrit	otion (Subca	ategory of Use).	Polvureth	ane Molo	1 Releas	se Agent				
Exposure Concent	tration (Uni	t):	8.1-72.5 r	name mon	1001004					
Number of Sampl	es:		8 - STEL	1 - 8 Hr '	TWA					
Number of Sites:			1							
Type of Measurer	nent or Met	hod:	STEL, T	WA						
Worker Activity:			Mold Rel	ease Agei	nt, Occa	asional Part Cleaning				
Number of Worke	ers:		11	0						
Type of Sampling			Personal							
Sampling Location	n:		various							
Exposure Duratio	Exposure Duration:			workday						
Exposure Frequer	ncy:		varies							
Engineering Cont	rol & percer	t Exposure Reduction:	Limited e	efficiency	vents					
EVALUATION										
Domain		Metric	Rating	$MWF^*$	Score	Comments				
Domain 1: Reliab	ility									
	Metric 1:	Methodology	High	$\times 1$	1	sampling conducted by OSHA, assumed OSHA method used				
Domain 2: Repres	sentative									
1	Metric 2:	Geographic Scope	High	$\times 1$	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Workplace scenario that exposed employees to Methylene Chlo- ride				
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2007, 11 years old and after most recent PEL				
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given				
Domain 3. Access	sibility/Clar	ity								
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Most metadata given, missing exposure frequency and duration				
Domain 4: Variab	oility and U	ncertainty								
		Con	tinued on 1	next page	;					

Source Citation:	Porter, E of Occupat	2006. OSHA compliance is cional and Environmental Hy	sues - Evaluatic ygiene.	on of wor	ker exp	osure to TDI, MOCA,	and methylene chloride. Journal				
Type of Data Source	Occupation	Occupational Exposure; Monitoring Data;									
Hero ID	2277546	2277546									
EVALUATION											
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score		Comments				
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	None addressing data					
Overall Quality D	Determination	n†	High		1.6						

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\* MWF = Metric Weighting Factor

Source Citation:	Fairfield, C. L., Jensen, P. A., Jones, J. H., Fischbach, T. J., 1990. In-Depth Survey Report: The Control of Methylene Chloride								
Type of Data Source Hero ID	Occupatio 2531020	nal Exposure; Monitoring Data;	ustriai Solv	ents, inc	., vince	ennes, indiana.			
EXTRACTION									
Parameter			Data						
Life Cycle Stage			Use						
Life Cycle Descrip	tion (Subc	ategory of Use):	Furniture	Strippin	ıg				
Physical Form:	(	0,000	liquid, va	por	0				
Route of Exposure	e:		inhalation	1					
Exposure Concent	tration (Uni	it):	Mean are	a: 68-667	7 ppmM	lean personal: 193-599 ppm			
Number of Sample	es:		44						
Number of Sites:			3						
Worker Activity:			Stripping	furnitur	е				
Type of Sampling	:		personal,	area					
Analytic Method:	.od: NIOSH Method 1005								
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Beliab	ility								
	Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method 1005			
Domain 2: Repres	sentative								
- ••••-F- ••	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Experiment that uses Methylene Chloride as it would be done in the workplace.			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990, 28 years old and prior to most recent PEL			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Characterized by a range, but also provides mean.			
Demain 9. Access	:1::::+ /Cl	:							
Domain 5: Access	Motric 6	Motadata Completeness	Low	$\times 1$	3	Data is presented in a range incomplete metadate			
	MEDIIC 0:	metauata Completelless	LOW	^ 1	J	Data is presented in a range, incomplete metadata.			
Domain 4: Variab	ility and U	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	None addressing data			
Overall Quality D	eterminatic	$\mathbf{n}^{\dagger}$	Medium		2.0				
Continued on next page									

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Source Citation:	Fairfield, C. L., Jensen, P. A., Jones, J. H., in Furniture Stripping at Kwick Kleen In	Fischbach, T dustrial Solv	<sup>.</sup> J 1990 vents, Inc	). In-Depth Su ., Vincennes, I	rvey Report: The Control of Methylene Chloride Indiana.
Type of Data Source	Occupational Exposure; Monitoring Data	ı;			
Hero ID	2531020				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments

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\* MWF = Metric Weighting Factor

Source Citation: M	e Citation: McCammon, C. S., 1990. Health Hazard Evaluation Report HETA 89-199-2033, Enseco, Inc., Rocky Mountain Analytical Laboratory, Arvada, Colorado,							
Type of Data Source C Hero ID 2	Decupation 2531033	nal Exposure; Monitoring Data;						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descripti	on (Subca	ategory of Use):	Laborato	ry solven	t			
Physical Form:	<b>`</b>		vapor	0				
Route of Exposure:			inhalatior	ı				
Exposure Concentra	ation (Uni	t):	0.8-8.5 pp	om (perse	onal); 3.	1-4.9 ppm (area)		
Type of Measureme	ent or Met	hod:	TWA					
Worker Activity:			various					
Type of Sampling:			personal					
Exposure Duration:			various					
Analytic Method:			charcoal tubes/CS					
Thay de Medioa.			citarcoar	aboby ac	,			
EVALUATION	EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliabili	ty Motrio 1.	Mathadalam	II:h	× 1	1	NIGUI		
1	Metric 1:	Methodology	підп	× 1	1	NIOSH		
Domain 2: Represer	ntative							
Ĩ	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
Ν	Metric 3:	Applicability	High	$\times 2$	2	Lab uses in scope		
Ν	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1989, prior to most recent PEL		
N	Metric 5:	Sample Size	High	$\times 1$	1	discrete samples available		
Domain 2. Accordin	ility /Clari							
Domain 5: Accessio	Motric 6:	Motadata Completeness	Modium	$\sim 1$	2	European frequency not given other metadate available		
1		Metadata Completeness	meannin	~ 1	2	Exposure frequency not given, other metadata available		
Domain 4: Variabili	ity and Ur	ncertainty						
Ν	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.		
Overall Quality Determination <sup>†</sup> Medium 1.8								
		Con	ntinued on r	next page	e e e e e e e e e e e e e e e e e e e			

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Source Citation:	McCammon, C. S., 1990. Health Hazard Ev Laboratory, Arvada, Colorado.	aluation	Report 1	HETA 89-199	9-2033, Enseco, Inc., Rocky Mountain Analytical
Type of Data Source	Occupational Exposure; Monitoring Data;				
Hero ID	2531033				
EVALUATION					
Domain	Metric	Rating	$\rm MWF^{\star}$	Score	Comments

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\* MWF = Metric Weighting Factor

Source Citation:	Hall, R. M., Sheehy, J. W. 1992. Walk-Through Survey Report: Control of Methylene Chloride in Furniture Stripping at Jet Strip, Boulder, Colorado, August 1, 1991									
Type of Data Source Hero ID	Occupatio 2531076	Occupational Exposure; Monitoring Data; 2531076								
EXTRACTION Parameter			Data							
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Number of Samples: Number of Sites: Worker Activity: Type of Sampling: Analytic Method:			Use Furniture Stripping liquid, vapor inhalation 25-68 3 1 Stripping furniture personal, area NIOSH Method 1005							
<b>EVALUATION</b> Domain		Metric	Bating	MWF*	Score	Comments				
	•1•,		8							
Domain 1: Reliab	Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method 1005				
Domain 2: Repres	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$egin{array}{c} 1 \\ 2 \\ 6 \\ 3 \end{array}$	US Workplace that uses Methylene Chloride 1995, 26 years old and prior to most recent PEL Poorly characterized				
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No sampling time or other pertinent metadata				
Domain 4: Variab	ility and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	None addressing data				
Overall Quality D	Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.1					
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Source Citation:	Hall, R. M., Sheehy, J. W 1992. Walk-Three Strip, Boulder, Colorado, August 1, 1991.	ough Surv	ey Repor	t: Control of	Methylene Chloride in Furniture Stripping at Jet		
Type of Data Source	Occupational Exposure; Monitoring Data;						
Hero ID	2531076						
EVALUATION							
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments		

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\* MWF = Metric Weighting Factor

Source Citation:	Mccammon, CS; Goldfield, J. 1993. Health Hazard Evaluation Report HETA 92-0360-2372, Ackerman and Sons, Littleton, Colorado, NTIS/02989953 2								
Type of Data Source Hero ID	Occupation 2531126	nal Exposure; Monitoring Data;							
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	tion (Subca	ategory of Use):	Furniture	Strippin	0.				
Physical Form:	(		liquid.va	or	0				
Route of Exposure	2:		inhalatio	n					
Exposure Concent	ration (Uni	t):	Before co	ontrols: 3'	7 = 445	After Controls: ND - 110			
Number of Sample	ès:	,	Area: 28	Personal:	14				
Number of Sites:			1						
Type of Measurem	nent or Met	hod:	TWA						
Worker Activity:			Paint/fin	ish stripp	ing furr	niture, cleaning it post stripping			
Number of Workers:			5						
Type of Sampling:			personal, area						
Sampling Location:			Stripping and washing station						
Exposure Duration	n:		3-4 hours	s a day m	ax				
Exposure Frequen	cy:		Generally a few hours per week.						
Engineering Contr	ol & percer	t Exposure Reduction:	Added exhaust ventilation						
PPE:			Rubber aprons, gauntlets, full shields,						
Analytic Method:			NIOSH Method 1005						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliabi	lity								
	Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method 1005			
Domain 2: Repres	entative								
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993, 25 years old and prior to most recent $\operatorname{PEL}$			
	Metric 5:	Sample Size	High	$\times 1$	1	Appropriate characterization included			
Domain 3: Access	ibility/Clar	itv							
_ 0111011 01 1100000		~J							

Source Citation:	Mccammo Colorado.	n, CS; Goldfield, J. 1993. Hea NTIS/02989953_2.	lth Hazard I	Evaluatio	n Repor	rt HETA 92-0360-2372, Ackerman and Sons, Littleton,
Type of Data Source	Occupation	nal Exposure: Monitoring Data	a.:			
Hero ID	2531126		-,			
	2001120					
EVALUATION						
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments
	Metric 6:	Metadata Completeness	High	$\times 1$	1	Complete Metadata
Domain 4: Variab	oility and Ur	ncertainty				
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Uncertainty addressed in NIOSH Method
Orrenall Quality Determination <sup>†</sup>			High		16	
Overall Quality D	eterminatio	11	Ingn		1.0	

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\* MWF = Metric Weighting Factor

Source Citation:	Golsteijn, impact ass	Golsteijn, L.,Huizer, D.,Hauck, M.,van Zelm, R.,Huijbregts, M. A. 2014. Including exposure variability in the life cycle impact assessment of indoor chemical emissions: the case of metal degreasing. Environment International.							
Type of Data Source Hero ID	Occupatio 2537636	nal Exposure; Published Models	for Exposu	ires or R	eleases;				
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Life Cycle	e Assessn	nent				
Life Cycle Descrip	otion (Subca	ategory of Use):	Indoor ch	emical er	missions	3			
Physical Form:			vapor	<b>.</b>					
worker Activity:	vapor degreasing - modeling								
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	Ility Motrie 1.	Mathadalam	II: mh	v 1	1				
	Metric 1:	Methodology	High	× 1	1	Peer reviewed, well referenced.			
Domain 2: Repres	sentative								
Domain _ Topro	Metric 2:	Geographic Scope	Medium	$\times 1$	2	EU			
	Metric 3:	Applicability	High	$\times 2$	2	Encompasses workplace exposure			
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2014			
	Metric 5:	Sample Size	N/A		N/A	N/A - modeling approach			
Demain 9. Access	:1:1:4 / <i>C</i> 1	:							
Domain 5: Access	Motric 6:	Motadata Completeness	High	$\times 1$	1	Patienale and approach are well detailed			
	Metric 0.	Metadata Completeness	Ingn	× 1	1	Rationale and approach are well detailed.			
Domain 4: Variab	ility and U	ncertainty							
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Unclear in the data how it is characterized, but there is a sig- nificant analysis of the limitations of the model.			
Overall Quality Determination <sup>†</sup>			High		1.3				

\* MWF = Metric Weighting Factor

Source Citation:	Kowalska, J., Gierczak, T 2013. Qualitative and Quantitative Analyses of the Halogenated Volatile Organic Compounds Emitted from the Office Equipment Itame. Indeer and Built Environment						
Type of Data Source Hero ID	Occupation 2655630	Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 2655630					
EXTRACTION							
Parameter			Data				
Life Create Sterrey			TT				
Life Cycle Stage:	tion (Suber	storowy of Uso).	Offensein	ar.			
Physical Form	Subca	tegory of Use).	Cas	5			
Route of Exposur	e.		inhalation	h			
Exposure Concent	tration (Uni	it):	0.04 - 1.2	- 4 ug/m:	3Mean: (	).51 ug/m3	
Number of Sampl	es:		16				
Worker Activity:			Standard	Office S	Supplies		
Sampling Location	n:		Lab				
Exposure Duratio	n:		Full-shift				
Exposure Frequer	ncy:		Continuo	us			
Analytic Method:			Described, but not named				
EVALUATION							
Domain		Metric	Rating	MWF'	Score	Comments	
Domain 1: Reliab	ility	NG (1 1 1	N.C. 11	1	0		
	Metric 1:	Methodology	Medium	× 1	2	Described, but not named	
Domain 2: Repres	sentative						
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Poland	
	Metric 3:	Applicability	Medium	$\times 2$	4	Workplace scenario that indirectly exposes employees to Methylene Chloride	
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2013, 5 years old	
	Metric 5:	Sample Size	Medium	$\times 1$	2	Decent characterization	
Domain 3: Access	sibility/Clar	ity					
Domain 0. Meees	Metric 6:	Metadata Completeness	High	$\times 1$	1	Well documented	
		r	0		-		
Domain 4: Variab	ility and U	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Does not address variability and uncertainty.	
		Con	tinued on r	next pag	re		
Continued on next page							

			10					
Source Citation:	Kowalska, J., Gierczak, T 2013. Qualitative and Quantitative Analyses of the Halogenated Volatile Organic Compounds Emitted from the Office Equipment Items. Indoor and Built Environment.							
Type of Data Source	Occupational Exposure; Reports for Da	ata or Information	Other than Expos	ure or Release Data;				
Hero ID	2655630		*					
EVALUATION								
Domain	Metric	Rating M	IWF <sup>*</sup> Score	Comments				
Overall Quality I	$\operatorname{Determination}^\dagger$	Medium	1.8					

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Source Citation:	Yamada, K.,Kumagai, S.,Nagoya, T.,Endo, G 2014. Chemical exposure levels in printing workers with cholangiocarcinoma.								
Type of Data Source	Occupational Exposure; Completed Exposure or Risk Assessments;								
Hero ID	2797854	2797854							
EXTRACTION									
Parameter			Data						
Life Cycle Stage			Uso						
Life Cycle Descrip	otion (Subca	ategory of Use):	Print Blanket	Cleaning					
Physical Form:	· · · · ·		liquid, vapor	0					
Route of Exposur	e:		inhalation						
Exposure Concent	tration (Uni	t):	Estimated:0-34	0 ppm					
Number of Sites:			3						
Type of Measurer	ment or Met	hod:	Retrospective l	Estimatic	ons				
Worker Activity:			Solvent based of	cleaning					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	oility								
	Metric 1:	Methodology	High	$\times 1$	1	Estimated based on Near Field /Far Field Model			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Japan			
	Metric 3:	Applicability	Low	$\times 2$	6	Retroactive look at a workplace scenario			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	2014, but uses old data			
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.			
Domain 2. Access	ibiliter /Class	:							
Domain 5: Access	Metric 6	Metadata Completeness	Unacceptable	× 1	4	No sampling technique used - no metadata as a result			
		motadata compreteness	enacceptable	~ 1	-	To sampling confidue used the metadatia as a result.			
Domain 4: Variab	ility and Ur	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Does not address variability and uncertainty.			
Overall Quality D	otorminatio	n†	Unaccontable		4	Motrie Mann Secret 2.8			
Overan Quality D	eter minatio	11	Chacceptable		4	Metric Mean SCOPE: 2.8.			
			Yantinual	4					
Continued on next page									

		icu nom pr	erious p	ugo			
Source Citation:	Yamada, K.,Kumagai, S.,Nagoya, T.,Endo, C Journal of Occupational Health.	G 2014. Cher	mical exp	osure leve	s in printing workers with cholangiocarcinoma.		
Type of Data Source	Occupational Exposure; Completed Exposure or Risk Assessments;						
Hero ID	2797854		,				
EVALUATION							
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		

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\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Yamada, K.,Kumagai, S.,Kubo, S.,Endo, G. 2015. Chemical exposure levels in printing and coating workers with cholangio- carcinoma (third report). Journal of Occupational Health.							
Type of Data Source Hero ID	Occupation 3064878	Occupational Exposure; Completed Exposure or Risk Assessments; 3064878						
EXTRACTION								
Parameter	Data							
			<b>T</b> T					
Life Cycle Stage:			Use Drivet Discussed	<u> </u>				
Dire Cycle Descrij	ption (Subca	ategory of Use):	liquid vapor	Cleaning				
Boute of Exposur	·••		inhalation					
Exposure Concen	c. tration (Uni	t).	Estimated 20-4	70 ppmF	Estimate	ed Max: 300-980 ppm		
Number of Sampl	es:		N/a	ro ppini	250111000	Max. 600 500 ppm		
Number of Sites:			2					
Type of Measurer	nent or Met	hod:	Retrospective 1	Estimatio	ons			
Worker Activity:			Solvent based	cleaning				
Number of Workers:			5					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	oility							
	Metric 1:	Methodology	High	$\times 1$	1	Estimated based on Near Field /Far Field Model		
Domain 2: Repre	sentative							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Japan		
	Metric 3:	Applicability	Low	$\times 2$	6	Retroactive look at a workplace scenario		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	2015, but estimates old data		
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.		
Domain 3: Access	sibility/Clari	ity						
Domain 5. Acces	Metric 6:	Metadata Completeness	Unacceptable	$\times 1$	4	No sampling technique used - no metadata as a result.		
		I				I O I I I I I I I I I I I I I I I I I I		
Domain 4: Variat	oility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Does not address variability and uncertainty.		
Overall Quality Determination <sup><math>\dagger</math></sup>			Unacceptable		4	Metric Mean Score: 2.8.		
Continued on next page								

– continued from previous page							
Source Citation:	itation: Yamada, K.,Kumagai, S.,Kubo, S.,Endo, G. 2015. Chemical exposure levels in printing and coating workers with cholangio- carcinoma (third report). Journal of Occupational Health.						
Type of Data Source	Occupational Exposure; Completed Exposure or Risk Assessments;						
Hero ID	3064878	3064878					
EVALUATION							
Domain	Metric Rating $MWF^{\star}$ Score Comments						

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Yamada, K.,Kumagai, S.,Endo, G. 2015. Chemical exposure levels in printing workers with cholangiocarcinoma (second report). Journal of Occupational Health						
Type of Data Source Hero ID	Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3064883						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Uso				
Life Cycle Descrit	otion (Subca	ategory of Use):	Print Ma	king			
Exposure Concent	tration (Uni	it):	Estimated	d: 0-440	ppm		
Number of Worke	ers:	,	7				
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Roliah	ilitar						
Domain 1. Renau	Metric 1:	Methodology	Low	$\times 1$	3	No analytical method given	
Domain 2: Repres	sentative						
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Japan	
	Metric 3:	Applicability	High	$\times 2$	2	Workplace scenario that exposed employees to Methylene Chlo- ride	
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2015	
	Metric 5:	Sample Size	Low	$\times 1$	3	Not characterized	
Domain 3: Access	sibility/Clar	ity	т	1	0		
	Metric 6:	Metadata Completeness	Low	× 1	3	Hazy understanding of where statistics come from.	
Domain 4. Variat	vility and U	ncertainty					
Domain 1. Variat	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Discuss variability and uncertainty	
		A COL				v v	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.9		
• 0							

\* MWF = Metric Weighting Factor

Source Citation:	NIOSH. 1995. Health hazard evaluation report HETA 91-0040-2510, Kraft General Foods, Inc., Maxwell House Coffee, Co., Houston, Texas. Technical Report NIOSH/00228254.							
Hero ID	3102344	Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3102344						
EXTRACTION								
Parameter			Data					
Worker Activity:			Coffee Decaffei	nating				
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	oility							
	Metric 1:	Methodology	Unacceptable	$\times 1$	4	No relevant methodology for DCM		
Domain 2: Repre	sentative							
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Methylene Chloride discontinued in operation years earlier		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990		
	Metric 5:	Sample Size	Low	$\times 1$	3	range provided from previous study		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	8-hr TWA personal samples		
Domain 4. Variat	ility and U	acortainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Does not address variability and uncertainty.		
Overall Quality I	Determinatio	$\mathrm{n}^\dagger$	Unacceptable		4	Metric Mean Score: 3.1.		

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\* MWF = Metric Weighting Factor

Source Citation:	Tsukahara assessment	Tsukahara, T., Miyauchi, H., Kuwada, D., Kikuchi, T., Tsuda, Y., Yanagiba, Y., Arito, H., Nomiyama, T. 2016. Control banding assessment of exposure of offset printing workers to organic solvents. Journal of Occupational Health.						
Type of Data Source Hero ID	Occupation 3419932	Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3419932						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Uso					
Life Cycle Descri	otion (Subca	ategory of Use):	Print Blanket (	Cleaning				
Physical Form:	phon (bubbe	logory of ebe).	liquid, vapor	cicaning				
U			<b>I</b> / <b>I</b>					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1, Daliah	:1:4							
Domain 1: Kenab	Metric 1:	Methodology	Low	× 1	3	Techniques not specified		
		hicene delegy	2011		<u> </u>			
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Japan		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Retroactive look at a workplace scenario but only examines chemicals purchased		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2016		
	Metric 5:	Sample Size	N/A		N/A	N/A - no sample data		
Domain 3. Access	sibility/Clar	ity						
Domain 9. Reces	Metric 6:	Metadata Completeness	Unacceptable	$\times 1$	4	No sampling technique used - no metadata as a result.		
Demein 4 M 11	·:1:41 TT							
Domain 4: Variat	Matria 7	Matadata Completeness	Low	V 1	9			
	metric 7:	Metadata Completeness	LOW	X 1	3	No Comment.		
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.8.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, two of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Tobiszewski, M., NamieÅnik, J 2013. Distribution of volatile organohalogen compounds in petrochemical plant water streams. Chemistry and Ecology.						
Type of Data Source Hero ID	Occupation 3490937	nal Exposure; Reports for Data	or Informat	tion Othe	er than i	Exposure or Release Data;	
EXTRACTION Parameter	Data						
Life Cycle Stage:			Use			• • • · · ·	
Life Cycle Descrip	otion (Subca	tegory of Use):	Cleaning	solvent (	Petroleu	im Industry)	
Fundation Concerns	tration (IIn;	+).	1 270 ug/	т			
Number of Sampl	es.	().	1-270 ug/	L			
Number of Sites	co.		11				
Analytic Method:			Described	, but not	t named	l	
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Beliab	ility						
	Metric 1:	Methodology	Medium	$\times 1$	2	Described, but not named	
Domain 2: Repres	sentative						
Domain 2. Ropro.	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Poland	
	Metric 3:	Applicability	Low	$\times 2$	6	Workplace scenario that exposes employees to Methylene Chlo- ride, but is focused on environmental sampling	
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2013, 5 years old	
	Metric 5:	Sample Size	Low	$\times 1$	3	Little Charcterization	
Domain 3. Access	vibility/Clar	ity					
Domain 5. Access	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Not always clear.	
Domain 4: Variab	oility and Ur	ncertainty			_		
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Limited Discussion.	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1		

\* MWF = Metric Weighting Factor

Source Citation:	Niu, Z. G. Tianjin, C	"Xu, S. Y.,Gong, Q. C 2014. hina. Environmental Science an	Health risk d Pollution	assessm Researc	ent of o h.	dors emitted from urban wastewater pump stations in			
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 3492550								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Ambient	Environ	nent				
Life Cycle Descrip	tion (Subca	ategory of Use):	Wastewat	er treati	nent				
Physical Form:	,		vapor						
Route of Exposure	:		inhalation	1					
Exposure Concent	ration (Uni	it):	7.4 - 89.95	$ m ug/m\hat{3}$					
Number of Sample	s:		16	-,					
Number of Sites:			1						
Type of Sampling:			area						
Sampling Location	:		Waste Wa	ater Pun	ıp Stora	ge Tank			
Exposure Duration:			Continous						
Exposure Frequency:			Varies						
Analytic Method:			USEPA1999						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1. Beliabi	lity								
Domain 1. Renabi	Metric 1:	Methodology	High	$\times 1$	1	USEPA1999			
Domain 2: Represe	entative								
	Metric 2:	Geographic Scope	Low	$\times 1$	3	China			
	Metric 3:	Applicability	Low	$\times 2$	6	Environmental sampling of waste water pump			
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2014			
	Metric 5:	Sample Size	Low	$\times 1$	3	Limited			
Domain 3: Accessi	bility/Clar	ity							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Limited			
Domain 4. Variabi	lity and U	ncertainty							
Domain 4. variabi	Metric 7.	Metadata Completeness	Medium	× 1	2	Addressed in USEPA method			
	WICUIIC 7.	metadata Completeness	moutum	~ 1	4	Audressed in USEI A method			
		Cor	ntinued on r	next page	e				

				10				
Source Citation:	Niu, Z. G., Xu, S. Y., Gong, Q. C 2014. Health risk assessment of odors emitted from urban wastewater pump stations in Tianjin, China. Environmental Science and Pollution Research.							
Type of Data Source	Occupational Exposure; Monitoring Da	ita;						
Hero ID	3492550	,						
	3432330							
EVALUATION								
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Overall Quality I	Determination <sup><math>\dagger</math></sup>	Medium		2.2				

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Source Citation:	Beaucham Evaluation	, C. C., Fent, K., Wiegand, D., Se of Forensic Crime Lab Employe	eaton, M. ees' Chen	. 2016. nical Exp	Hazard osures,	Evaluation Report: HHE-2012-0238-3257, August 2016. Job Stress, and Work-Related Health Concerns.		
Type of Data Source Hero ID	Occupation 3520311	nal Exposure; Monitoring Data;						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descript	tion (Subca	ategory of Use):	Use of A	Adhesive	s in Cri	me Scene Model Building		
Physical Form:	,	,	Liquid,	Vapor		C C		
Route of Exposure	:		Inhalat	ion, dern	nal			
Exposure Concentr	ration (Uni	t):	None D	etected				
Number of Sites:	,	,	1					
Worker Activity:			Transfe	rring me	thylene	chloride, using methylene chloride to bond plas-		
			tics.					
Number of Worker	s:		800					
Sampling Location	:		Operati	ional Pro	jects Ui	nit, Latent Prints Operational Unit		
Exposure Duration	n:		Varies					
Exposure Frequence	ey:		Varies					
PPE:			Use pro	oper glov	es			
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliabi	lity							
	Metric 1:	Methodology	Low	$\times 1$	3	No listed methods		
Domain 2. Benrese	entative							
Domain 2. Represe	Metric 2	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	Low	$\times 2$	6	Certain departments used Methylene Chloride on a regular bases to build their projects, but not representative of com- mercial/industrial adhesive use.		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2016		
	Metric 5:	Sample Size	Low	$\times 1$	3	Unknown amount of samples or further details.		
Domain 3: Accessi	bility/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No clear statement about any of the methods, data, etc.		
	1., 1.7.	, . ,						
Domain 4: Variabi	lity and Ui	ncertainty						
		Con	tinued or	nevt na	nge			

			aca non	provide	as pag					
Source Citation:	Beaucham, C. C., Fent, K., Wiegand, D., Seaton, M.: 2016. Hazard Evaluation Report: HHE-2012-0238-3257, August 2016. Evaluation of Forensic Crime Lab Employees' Chemical Exposures, Job Stress, and Work-Related Health Concerns.									
Type of Data Source	Occupation	hal Exposure; Monitoring Data	;							
Hero ID	3520311									
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
	M	Mata data Camadatan ara	Τ	v 1	9					
	Metric 7:	Metadata Completeness	Low	× 1	3	Not discussed.				
Overall Quality Determination <sup><math>\dagger</math></sup>			Low		2.3					

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\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT - DO NOT	<b>T CITE OR QUOTE</b>
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Source Citation:	Perbellini, L.,Brugnone, F.,Grigolini, L.,Cunegatti, P.,Tacconi, A., 1977. ALVEOLAR AIR AND BLOOD DICHLOROMETHANE CONCENTRATION IN SHOE SOLE FACTORY-WORKERS. International Archives of Occupa-								
Type of Data Source Hero ID	Cccupational Exposure; Monitoring Data; 3586319								
EXTRACTION			_						
Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	ption (Subca	ategory of Use):	Polyureth	nane shoe	e sole pr	roduction			
Physical Form:			liquid, va	por					
Route of Exposur	e:		inhalation	1					
Exposure Concen	tration (Uni	t):	39-730 m	m g/m3					
Number of Sampl	es:		15						
Type of Measurer	ment or Met	hod:	grasp san	nples - sh	ort terr	n?			
Worker Activity:			molds fill	ing, soles	s extract	tion, and soles polishing			
Type of Sampling	ers:		10 9709						
Sampling Locatio	n.		moulds fi	lling sol	es extra	ction and soles polishing stations			
Sampling Locatio			mounds in	ning, son	ob extitu	colon, and soles ponsining stations			
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1. Daliah	:1:4								
Domain 1: Kellan	Motric 1.	Mathadalagy	Low	$\sim 1$	3	Methods qualitatively explained but not clear nor current			
	MEGIIC 1.	Wethodology	LOW	~ 1	- 5	methods quantativery explained but not clear nor current			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Italy			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1977 - prior to most recent PEL			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Some sampling areas were just given as a range			
Domain 3: Access	sibility/Clar	itv							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	very basic meta data			
Domain 4: Variat	oility and U	ncertainty	Ŧ	-	0				
	Metric 7:	Metadata Completeness	LOW	× 1	3	None addressing data			
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Source Citation:	Perbellini, L.,Brugnone, F.,Grigolini DICHLOROMETHANE CONCENTR tional and Environmental Health.	i, L.,Cunegatti ATION IN SHO	, P.,Tacconi, DE SOLE FACT	A 1977. FORY-WORKERS	ALVEOLAR AIR AND BLOOD . International Archives of Occupa-
Type of Data Source	Occupational Exposure; Monitoring Da	ata;			
Hero ID	3586319	,			
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^\star  \mathrm{Score}$		Comments
Overall Quality D	$\operatorname{etermination}^{\dagger}$	Low	2.3		

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\* MWF = Metric Weighting Factor

Source Citation:	He, P., Tang, J., Zhang, D., Zeng, Y., Shao, L. 2010. Release of volatile organic compounds during bio-drying of municipal solid waste. Journal of Environmental Sciences								
Type of Data Source Hero ID	Occupatio 3587321	nal Exposure; Monitoring Data;							
EXTRACTION									
Parameter			Data						
			A 1 · · · ·						
Life Cycle Stage:	tion (Color	<b>f I I I I I I I I I I</b>	Ambient	Environn	nent Zeiste Die				
Dhysical Form:	priori (Subca	ategory of Use):	Wanar	i sona w	aste Dr	ying			
Physical Form.	· · ·		Inholotion	2					
Exposure Concorr	e. tration (Uni	+).	ND 2.01	$m \alpha / m \hat{3}$					
Type of Sampling		it).	ND-2.01 1	ing/ino					
Sampling Locatio	 n.		Waste site	۵					
Exposure Duratio	m.		Varies	C					
Exposure Frequer	ncv.		Varies						
Analytic Method:	icy.		Described	l. but not	t named				
j				-,					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Damain 1. Daliah	:1:4								
Domain 1: Reliad	Motrie 1.	Mathadalam	Low	× 1	9	NINI			
	Metric 1:	Methodology	LOW	× 1	ა	None Noted			
Domain 2. Benree	sentative								
Domain 2. Repres	Metric 2.	Geographic Scope	Low	× 1	3	China			
	Metric 3:	Applicability	Medium	$\times 2$	4	Focuses on medical impact not work environment			
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2010			
	Metric 5:	Sample Size	Low	$\times 1$	3	Limited			
		F F F F			-				
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Limited			
Domain 4: Variab	oility and U	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	None addressing data			
Overall Quality D	Determinatio	m <sup>†</sup>	Low		2.3				
C.Stair Quarity D			20		2.0				
		Cor	tinued on r	next page	)				

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Source Citation:	He, P., Tang, J., Zhang, D., Zeng, Y., Shao, L., waste. Journal of Environmental Sciences.	2010.	Release of v	olatile organic	compounds during bio-drying of municipal solid
Type of Data Source	Occupational Exposure; Monitoring Data;				
Hero ID	3587321				
EVALUATION					
Domain	Metric	Rating	MWF*	Score	Comments

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\* MWF = Metric Weighting Factor

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Source Citation:	Enander, R. T., Cohen, H. J., Gute, D. M., Brown, L. C., Desmaris, A. M., Missaghian, R 2004. Lead and methylene chloride								
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 3588270								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Uso						
Life Cycle Descrit	otion (Subc	ategory of Use).	Paint Stri	inning					
Physical Form:	otion (Bubbl	atogory of oboj.	Liquid, V	apor					
Route of Exposur	e:		Inhalation	n, dermal	l				
Exposure Concent	tration (Uni	it):	26-120 pp	m					
Number of Sampl	es:		2 TWA, 3	3 short te	$\operatorname{erm}$				
Number of Sites:			3						
Type of Measurer	ment or Met	hod:	8hr TWA	and sho	rt term				
Worker Activity:			Paint stri	pping					
Number of Worke	rs:		1						
Type of Sampling			Personal						
Exposure Duratio	n:		N/a NIOCIL I DI CIAM 197						
Analytic Method:			NIOSH method P&CAM 127						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility								
	Metric 1:	Methodology	High	$\times 1$	1	NIOSH method P&CAM 127			
Domain 2: Repres	sentative	~	··· ·	_	_				
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	Hign Madiuma	$\times 2$	2	Automotive Paint Stripping			
	Metric 4: Motric 5:	Sample Size	Medium	$\times 2$ $\times 1$	4	2004, 14 years old			
	metric 5.	Sample Size	meannin	^ 1	2	Limited data to work with.			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Very basic metadata			
Domain 4: Variab	oility and U	ncertainty		1	0				
	Metric 7:	Metadata Completeness	Medium	× 1	2	Addressed in NIOSH method			
		Con	tinued on r	next page	è.				

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Source Citation: Type of Data Source Hero ID	Enander, R. T.,Cohen, H. J.,Gute, D. M.,Brown, L. C.,Desmaris, A. M.,Missaghian, R 2004. Lead and methylene chloride exposures among automotive repair technicians. Journal of Occupational and Environmental Hygiene. Occupational Exposure; Monitoring Data; 3588270								
<b>EVALUATION</b> Domain	Metric	Rating	$MWF^{\star}$	Score	Comments				
Overall Quality I	$\operatorname{Determination}^{\dagger}$	Medium		1.7					

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\* MWF = Metric Weighting Factor

Source Citation:	Estill, C. F., Watkins, D. S., Shulman, S. A., Kurimo, R. W., Kovein, R. J., 2002. Engineering controls for furniture strippers to meet the OSHA methylene chloride PEL. AIHAI								
Type of Data Source Hero ID	Occupatio 3588505	Occupational Exposure; Monitoring Data; 3588505							
EXTRACTION Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	ption (Subca	ategory of Use):	Furniture	Strippin	g				
Physical Form:			liquid, va	por					
Route of Exposur	e:		inhalation	1					
Exposure Concent	tration (Uni	it):	Pre-venti Mean: 5.0	lation: 5 ppm	geometı	ric mean 39-332 ppmPost-ventilation: geo.			
Number of Sampl	es:		105						
Number of Sites:			1						
Type of Measurer	nent or Met	hod:	TWA						
Worker Activity:			Furniture	Strippin	g				
Type of Sampling	;:		personal, area						
Engineering Cont	rol & percei	nt Exposure Reduction:	No controls in the first 4 sampling events, but new ventilation system						
Analytic Method:			on the 5th. NIOSH 1005 and OSHA 80						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility								
	Metric 1:	Methodology	High	$\times 1$	1	NIOSH 1005 and OSHA 80			
Domain 2: Repres	sentative								
Domain _ Topro	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace scenario that exposes employees to Methylene Chlo- ride			
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2002, 16 years old			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Characterized by a range, but also provides geometric mean.			
Domain 3: Access	sibility/Clar	ity			_				
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Has baseline metadata			
Domain 4: Variab	oility and U	ncertainty							
		Cor	ntinued on i	next page	, <u> </u>				

Source Citation:	rce Citation: Estill, C. F., Watkins, D. S., Shulman, S. A., Kurimo, R. W., Kovein, R. J. 2002. Engineering controls for furniture strippers to meet the OSHA methylene chloride PEL. AIHAJ.									
Type of Data Source	Occupation	Occupational Exposure: Monitoring Data:								
Hero ID	3588505	3588505								
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Method addresses variability and uncertainty.				
Overall Quality Determination <sup><math>\dagger</math></sup>			High		1.6					

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\* MWF = Metric Weighting Factor

Source Citation:	Uang, S. N., Shih, T. S., Chang, C. H., Chang, S. M., Tsai, C. J., Deshpande, C. G. 2006. Exposure assessment of organic solvents for aircraft paint stripping and spraying workers. Science of the Total Environment.								
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 3589081								
EXTRACTION									
Parameter			Data						
Life Cuele Sterre									
Life Cycle Description (Subcategory of Use):			Airplane stripping						
Physical Form:			liquid, vapor						
Route of Exposure:				inhalation					
Exposure Concentration (Unit):			Personal Average: 116.09 ppm w/SD of 40.21 ppmArea Average: 84.07						
			ppm w/SD of 64.86						
Number of Samples:			33						
Number of Sites:			1						
Type of Measurement or Method:			TWA						
Worker Activity:	Worker Activity:			Stripping aircraft paint					
Type of Sampling	Type of Sampling:			personal, area					
Exposure Duratio	on:		12 hour shifts						
Exposure Frequer	ncy:		varies						
Engineering Cont	rol & percer	nt Exposure Reduction:	Ceiling and floor fans/exhaust.						
PPE:			Respirators						
Analytic Method:			CLA-1210 (council of labor affairs)						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1. Boliah	ilita								
Domain 1. Renau	Metric 1.	Methodology	High	× 1	1	Method cited and described			
	Metric 1.	Methodology	mgn	~ 1	1	Method ened and described.			
Domain 2: Repres	sentative								
1	Metric 2:	Geographic Scope	Low	$\times 1$	3	Taiwan			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace scenario that exposes employees to Methylene Chlo- ride			
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2005, 13 years old			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Provides an average for a series of data sets.			
Domain 3: Accessibility/Clarity									
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Has baseline metadata			
Continued on next page									

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Source Citation:	Uang, S. N., Shih, T. S., Chang, C. H., Chang, S. M., Tsai, C. J., Deshpande, C. G. 2006. Exposure assessment of organic solvents for aircraft paint stripping and spraying workers. Science of the Total Environment.										
Type of Data Source	Occupational Exposure; Monitoring Data;										
Hero ID	3589081										
EVALUATION											
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score		Comments				
Domain 4: Varial	oility and Un Metric 7:	certainty Metadata Completeness	Low	$\times 1$	3	None addressing data					
Overall Quality Determination <sup><math>\dagger</math></sup>			Medium		1.9						

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\* MWF = Metric Weighting Factor
Source Citation:	Citation: Ryan, T. J 2002. Survey of waste comminglers' VOC exposures. Journal of the Air and Waste Management Association (1990-1992).							
Type of Data Source Hero ID	ce Occupational Exposure; Monitoring Data; 3589795							
EXTRACTION								
Parameter			Data					
Life Create Sterrey			D:1					
Life Cycle Stage:	ation (Suba	torowy of Uco).	Laborator	m dianaa	al			
Physical Form		ttegory of Ose).	liquid va	nor	ai			
Route of Exposur	·e•		inhalatior	) I				
Exposure Concent	tration (Uni	t):	personal:	0.4 - 557	.0 ppm	parea: 0.1 - 809.9		
Number of Sampl	es:	.).	personal:	33area:	32			
Number of Sites:			12		-			
Type of Measurer	ment or Met	hod:	TWA					
Worker Activity:			dumping	lab waste	e into 5	5 gal drums		
Type of Sampling			personal,	area				
Sampling Location	n:		Hazardou	s Waste	Contair	ner Sites		
Exposure Duratio	on:		varies					
Exposure Frequer	ncy:		varies					
Engineering Cont	rol & percen	t Exposure Reduction:	varies					
PPE:			varies					
Analytic Method:			EPA Met	hod 8260	B			
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Beliah	ility							
Domain 1. Itenad	Metric 1	Methodology	High	× 1	1	EPA Method 8260B		
		hiothodology	111.911	<u> </u>	1			
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	Report form 2002		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Were not provided with each data point		
Domain 3: Access	sibility/Clari	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	meta data was given as ranges (time, exposure, etc.)		
		Con	tinued on r	next page	) )			

Source Citation: Type of Data Source Hero ID	Ryan, T. J (1990-1992). Occupational 3589795	2002. Survey of waste co Exposure; Monitoring Da	mminglers' VC .ta;	OC expos	sures.	Journal of the Air and	Waste Management Association
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score		Comments
Domain 4: Variab	ility and Uncer Metric 7: M	rtainty letadata Completeness	Medium	$\times 1$	2	Discussion on limitation	as and variations.
Overall Quality E	$\operatorname{Petermination}^\dagger$		Medium		1.7		

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\* MWF = Metric Weighting Factor

Source Citation: Grever furnitu Type of Data Source Occup	nkamp, A.,Occupational, Safety,He ire stripping operation. Journal of ational Exposure; Monitoring Data	ealth, Admir Occupationa a;	istration al and En	. 2007. ivironm	. Overexposure and control of methylene chloride in a nental Hygiene.			
Hero ID 359001	14							
EXTRACTION Parameter		Data						
Life Cycle Stage:		Use	a					
Life Cycle Description (S	ubcategory of Use):	Furniture	e Strippin	ıg				
Physical Form: Boute of Exposure:		vapor	n					
Exposure Concentration	(Unit):	First visi	t· 108 pr	om (8-h	r TWA): 153-634 ppm (STEL): Follow up: 61			
	(0.111).	ppm (8-h	r TWA):	; 330-38	80 ppm (STEL) – additional data for various			
		visits		,				
Number of Samples:		various						
Number of Sites:		1						
Type of Measurement or	Method:	TWA						
Worker Activity:		furniture	furniture stripping					
Type of Sampling:		1 porsonal	1 porsonal					
PPE:		full-face e	full-face elastomeric respirator with organic vapor cartridges and imper-					
		vious glo	ves and a	in apror	n			
EVALUATION								
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliability								
Metric	e 1: Methodology	High	$\times 1$	1	OSHA			
Domain 2: Roprosontativ	0							
Metric	: 2: Geographic Scope	High	× 1	1	US			
Metric	23: Applicability	High	$\times 2$	2	Furniture Stripping			
Metric	e 4: Temporal Representativeness	s Medium	$\times 2$	4	2007 - more than 10 years old			
Metric	e 5: Sample Size	High	$\times 1$	1	Individual data points			
Domain 3: Accessibility/	Clarity							
Metric	e 6: Metadata Completeness	High	$\times 1$	1	provided key information			
	Ce	ontinued on a	next page	э				

Source Citation:	Grevenkamp, A.,Occupational, Safety,Health, Administration. 2007. Overexposure and control of methylene chloride in a furniture stripping operation. Journal of Occupational and Environmental Hygiene.						
Type of Data Source	Occupation	nal Exposure; Monitoring Dat	ta;				
Hero ID	3590014	· / 0	,				
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion on uncortainty and variability	
	Metho 7.	Metadata Completeness	LOW	^ 1	0	No discussion on uncertainty and variability	
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	High		1.4		

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\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT - I	DO NOT CIT	<b>E OR QUOTE</b>
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Source Citation: Lewis,	F. A., 1980. Health Hazard Evalu	ation Dete	rmination	n, Repo	rt No. HHE-79-141-711, Fischer and Porter Company,		
Warmi Type of Data Source Occupy	ister, Pennsylvania. tional Exposure: Monitoring Data:						
Hero ID 365351	)						
FYTRACTION							
Parameter		Data					
		Data					
Life Cycle Stage:		Use					
Life Cycle Description (Su	bcategory of Use):	Epoxy us	e for wir	e coatin	g (instrumentation inside of water pipes)		
Physical Form:		Vapor					
Route of Exposure:		Inhalatio	n				
Exposure Concentration (	Unit):	Undetect	ed				
Number of Samples:		16					
Number of Sites:		1					
Type of Measurement or I	Iethod:	8 hr TWA	4				
Worker Activity:		Mixing E	poxy				
Type of Sampling:		Personal,	Area				
Exposure Duration:	Delection	8 hour sh	lift	<b>D</b>			
Engineering Control & pe	cent Exposure Reduction:	Deportation Cloures					
FFE: Applicitie Method:		NIOSH Mothod DI-CAM #127					
Analytic Method.		NIOSII Method F & CAM $\#127$					
EVALUATION							
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments		
Demois 1. Deliebilitza							
Domain 1: Reliability Motrie	1. Mothodology	High	$\vee 1$	1	NIOCH Mathad DeCAM #197		
	1. Methodology	IIIgii	~ 1	1	NIOSII Method F&CAM #127		
Domain 2: Representative							
Metric	2: Geographic Scope	High	$\times 1$	1	US		
Metric	3: Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
Metric	4: Temporal Representativeness	Low	$\times 2$	6	1979, 39 years old and prior to most recent PEL		
Metric	5: Sample Size	Low	$\times 1$	3	No methylene chloride was detected, no specific data about where samples were taken.		
Domain 2. Accessibility/	louiter						
Domain 5. Accessionity/C	6. Motadata Completeness	Modium	$\sim 1$	9	Missing comple durations and other metadata		
ivietiic	o. metadata Completeness	meannin	~ 1	4	missing sample durations and other metadata		
Domain 4: Variability and	Uncertainty						
	Cor	ntinued on i	next page	9			

Source Citation:	Lewis, F. J. Warminste	A 1980. Health Hazard Eva er, Pennsylvania.	aluation Deter	minatior	, Repor	rt No. HHE-79-141-711, Fischer and Porter Company,			
Type of Data Source	Occupation	Occupational Exposure: Monitoring Data:							
Hero ID	3653519	I							
	0000010								
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Uncertainty addressed in NIOSH Method			
Overall Quality I	Determination	$\mathrm{n}^\dagger$	Medium		1.9				

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\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT - DO NOT	<b>T CITE OR QUOTE</b>
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Source Citation:	Hall, RM; and Envir	Martinez, KF; Jensen, PA. 1995	. Control o	f methyle	ene chlor	ride" furniture stripping dip tank. Applied Occupational
Type of Data Source Hero ID	Occupatio 3808905	nal Exposure; Monitoring Data;				
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Use			
Life Cycle Descri	otion (Subca	ategory of Use):	Furniture	e Strippin	la	
Physical Form:			vapor	11	0	
Route of Exposur	e:		inhalation	n		
Exposure Concen	tration (Uni	it):	7 - 67 pp	m 8-hr T	WA	
Number of Sampl	es:		27			
Number of Sites:			1			
Type of Measurer	nent or Met	hod:	TWA			
Worker Activity:			furniture	dip strip	ping	
Number of Worke	ers:		2			
Type of Sampling	5:		personal			
Exposure Duratic	on:		various			
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 1. Paliah	.;1;+					
Domain 1. Renau	Metric 1.	Methodology	High	× 1	1	NIOSH
	MEGIIC 1.	Wethodology	Iligii	~ 1	1	NIOSII
Domain 2: Repre	sentative					
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US
	Metric 3:	Applicability	High	$\times 2$	2	furniture dip stripping
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	$1995$ - more than 20 years old and prior to most recent $\operatorname{PEL}$
	Metric 5:	Sample Size	High	$\times 1$	1	Individual data points
Domain 2. Accord	sibility /Clan	:+				
Domain 5. Access	Motric 6:	Motadata Completeness	Modium	~ 1	2	concentration ranges and compling time provided
	TATEFULC O:	metadata Completeness	meutuiff	~ 1	4	concentration ranges and sampling time provided
Domain 4: Variał	oility and U	ncertainty				
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Some discussion of uncertainty and variability
		*				v v
		~ ~	tions 1			
		Cor	nunued on 1	next page	3	

	contine		JI CVIOUS	page	
Source Citation:	Hall, RM; Martinez, KF; Jensen, PA. 1995. and Environmental Hygiene.	Control of	fmethyle	ne chloride"	furniture stripping dip tank. Applied Occupational
Type of Data Source	Occupational Exposure; Monitoring Data;				
Hero ID	3808905				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Overall Quality I	$\operatorname{Determination}^{\dagger}$	Medium		1.7	

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Source Citation: Type of Data Source	urce Citation: IARC. 2010. Occupational exposure as a painter. IARC monographs on the evaluation of carcinogenic risks to humans. Occupational Exposure: Completed Exposure or Risk Assessments:							
Hero ID	3808946	nai Enpotaro, comproto Enpot		11000000111	01100,			
EXTRACTION								
Parameter			Data					
Life Cruele Sterrey			Uae					
Life Cycle Stage:	tion (Suber	togory of Use).	Use Doint Stri	nning				
Physical Form	tion (Subca	itegory of Use).	vapor	pping				
Route of Exposure	·•		inhalation	ı				
Exposure Concent	ration (Uni	t):	633-1.017	mg/m3	(TWA)			
Number of Sample	es:		7	0/ -				
Type of Measurem	nent or Met	hod:	TWA					
Worker Activity:			Paint Stri	pping - 1	Non-Spe	ecific Workplace Settings		
Number of Worker	:s:		3					
Type of Sampling:			personal					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1. Doliahi	1:4							
Domain 1: Reliabi	Metric 1.	Methodology	High	× 1	1	LARC 2010		
	MICUIC 1.	Wethodology	IIIgii	~ 1	1	IAIC, 2010		
Domain 2: Repres	entative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Paint Stripping		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1980 - more than 20 years old		
	Metric 5:	Sample Size	Medium	$\times 1$	2	ranges provided		
Domain 3: Accessi	ibility/Clar	ity						
Domain 0. 1100035	Metric 6:	Metadata Completeness	Low	$\times 1$	3	range provided - breathing zone		
Domain 4: Variabi	ility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Low	× 1	3	uncertainy and variability not discussed		
Overall Quality De	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.0			

 $^{\star}$  MWF = Metric Weighting Factor

Source Citation:	Eu, 2007. Impact assessment of potential restrictions on the marketing and use of dichloromethane in paint strippers. Revised final report-Annexes.								
Type of Data Source Hero ID	a Source Occupational Exposure; Completed Exposure or Risk Assessments; 3808951								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descript	ion (Subca	ategory of Use):	Paint Str	ipping					
Physical Form:			vapor						
Route of Exposure:			inhalation	1					
Exposure Concentr	ation (Uni	t):	2.2-428 m	19/m3 (8-	-hr TW	A)			
Number of Samples	3:		4	-, ,					
Type of Measureme	ent or Met	hod:	TWA						
Worker Activity:			Non-Spec	ific Worl	cplace S	ettings - Unknown			
Type of Sampling:			$\operatorname{personal}$						
EVALUATION									
Domain		Metric	Rating	$MWF^*$	Score	Comments			
Domain 1: Reliabil	ity								
	Metric 1:	Methodology	High	$\times 1$	1	EU, 2007			
Domain 2: Bonroso	ntativo								
Domain 2. Represe	Metric 2.	Geographic Scope	Medium	× 1	2	Finland			
	Metric $3$ .	Applicability	High	$\times 2$	2	Paint Stripping			
	Metric 4.	Temporal Representativeness	Low	$\times 2$	6	1997-1998 - more than 20 years old			
	Metric 5:	Sample Size	High	$\times 1$	1	Individual data points			
		Å	0			Å			
Domain 3: Accessil	oility/Clar	ity							
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	personal samples			
Domain 4. Variabil	ity and Ur	ncertainty							
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Some discussion of uncertainty and variability			
		1							
Overall Quality De	terminatio	$n^{\dagger}$	Medium		1.8				
o torair quantif Do					1.0				

 $^{\star}$  MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Oecd, 2011. SIDS initial assessment profile: Dichloromethane (methylene chloride). Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3808975							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Descrip Physical Form: Route of Exposur Exposure Concent Worker Activity:	otion (Subca e: tration (Uni	ttegory of Use): t):	Use All uses Vapor Inhalation 0.004-318 mg/n All uses	m3				
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	SIDS Initial Assessment Profile		
Domain 2: Repres	Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	Medium Medium Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	2 $4$ $6$ $3$	Europe no particular OES specified unknown range provided		
Domain 3: Access	sibility/Clari Metric 6:	ity Metadata Completeness	Unacceptable	$\times 1$	4	no discussion of data		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	no discussion of uncertainy or variability		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Unacceptable		4	Metric Mean Score: 2.6.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Type of Data Source Hero ID       Occupational Exposure; Monitoring Data; 3808979         EXTRACTION Parameter       Data         EXTRACTION Parameter       Data         Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Sumber of Samples: Number of Samples: Samples: Type of Sampling: Sampling Location: Exposure Duration: Sampling Location: Exposure Duration: Exposure Duration: Sampling Location: Exposure Duration: Exposure	Source Citation: N C	NIOSH. 1991. In-depth survey report. The control of methylene chloride in furniture stripping at Association for Retarded Citizens Washington County Chapter, Inc. Technical Report ECTB number: 170-18a.							
Braneter       Data         Parameter       Use         Life Cycle Base:: with Cycle Stage: with Cycle Stage	Type of Data SourceOHero ID38	ccupation 808979	nal Exposure; Monitoring Data;		•				
Parameter       Data         Life Cycle Stage:       Use         Life Cycle Description (Subcategory of Use):       Furniture Stripping         Physical Form:       nhalation         Rotte of Exposure:       inhalation         Karper of Samples:       132 ppm (various sample times, existing ventilation); 13-27 ppm (Schur TWA, modified ventilation)         Number of Samples:       12         Number of Samples:       12         Number of Stes:       1         Worker Activity:       personal         Sampling Location:       yarious         Exposure Duration:       various         Domain 1: Reliability       Metric 1:         Metric 2:       Geographic Scope         Metric 3:       Applicability         High       × 1       1         Metric 4:       Temporal Representative         Metric 5:       Sample Size       1         Domain 3: Accessibility/Clarity       High       × 1       1         Metric 6:       Metadata Completeness       High       × 1       1         Domain 4: Variability and Urcertainty       Metric 7:       Sompleteness       1         Metric 7:       Metric 6:       Metric Completeness       1       1	EXTRACTION								
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Parameter			Data					
Life Cycle Description (Subcategory of Use):       Furniture Stripping       vapor         Physical Form:       vapor       inhalation         Rotte of Exposure:       inhalation         Exposure Concentration (Unit):       613-1,152 ppm (various sample times, existing ventilation); 13-27 ppm (8-hr TWA, modified ventilation)         Number of Samples:       12         Number of Sites:       1         Worker Activity:       furniture stripping         Type of Sampling:       personal         Sampling Location:       various         Exposure Duration:       various         Variaus       various         Domain 1: Reliability       Metric         Metric 2:       Geographic Scope         Metric 3:       Applicability         Metric 3:       Applicability         Metric 3:       Applicability         Metric 5:       Sample Size         High       × 1       1         Domain 3:       Accessibility/Clarity         Metric 6:       Metadata Completeness         High       × 1       1         provides key information	Life Cycle Stage:			Use					
Physical Form:       vapor         Route of Exposure:       inhalation         Route of Exposure:       inhalation         Route of Exposure:       613-1,152 ppm (various sample times, existing ventilation); 13-27 ppm (8-hr TWA, modified ventilation)         Number of Samples:       1         Number of Sites:       1         Worker Activity:       furniture stripping         Type of Sampling.       personal         Sampling Location:       various         EXALUATION       Metric         Domain       Metric         Reliability       fligh       × 1       1         Domain 1: Reliability       Metric 2:       Geographic Scope       High       × 1       1         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       Us         Metric 3:       Applicability       High       × 1       1       Us       Individual data points         Domain 3: Accessibility/Clarity       Metric 6:       Metadata Completeness       High       × 1       1       provides key information         Domain 4: Variability and Uncertainty       Metric 7:       Metadata Completeness       High       × 1       1       provides key information	Life Cycle Descriptio	on (Subca	tegory of Use):	Furniture	Strippin	g			
Route of Exposure:       inhalation         Exposure:       613-1,152 ppm (various sample times, existing ventilation); 13-27 ppm (8-hr TWA, modified ventilation)         Number of Samples:       12         Number of Samples:       12         Number of Sites:       1         Worker Activity:       furniture stripping         Type of Sampling:       personal         Sampling Location:       various         Exposure Duration:       various         Bomain 1: Reliability       Rating       MWF*         Domain 1: Reliability       Ketric 2:       Geographic Scope       High       × 1       1       NIOSH         Domain 2: Representative       Metric 3:       Applicability       High       × 2       2       Furniture Stripping         Metric 3:       Applicability       High       × 1       1       US         Metric 5:       Sample Size       High       × 2       6       1991 - more than 20 years old and prior to most recond there in dividual data points         Domain 3: Accessibility/Clarity       Metric 6:       Metadata Completeness       High       × 1       1       provides key information         Domain 4: Variability and Urcertainty       Metric 7:       Metadata Completeness       High       × 1       2	Physical Form:			vapor		0			
Exposure Concentration (Unit):       613-1,152 ppm (various sample times, existing ventilation); 13-27 ppm (8-hr TWA, modified ventilation)         Number of Samples:       1         Number of Sites:       1         Worker Activity:       furniture stripping         Type of Sampling:       personal         Sampling Location:       various         Exposure Duration:       various         Evaluation:       various         Evaluation:       various         Domain       Metric         Rating       MWF*         Score       Comments         Domain 1: Reliability       Ketric 2:         Metric 2:       Geographic Scope         Metric 3:       Applicability         Metric 2:       Geographic Scope         Metric 3:       Applicability         Metric 5:       Sample Size         Metric 5:       Sample Size         Metric 5:       Sample Size         Metric 6:       Metadata Completeness         High       × 1       1         Individual data points         Domain 3: Accessibility/Clarity         Metric 6:       Metadata Completeness         Metric 7:       Metadata Completeness         Metric 7:	Route of Exposure:			inhalation	1				
Number of Samples:       12         Number of Samples:       1         Number of Sites:       1         Worker Activity:       furniture stripping         Type of Sampling:       personal         Sampling Location:       various         Exposure Duration:       various         Exposure Duration:       various         Evaluation:       NUMP*         Somain 1: Reliability       Metric 1:         Metric 2:       Geographic Scope         High       × 1       1         Number of Size:       Sampling         Metric 3:       Applicability         Metric 4:       Temporal Representative         Metric 5:       Sample Size         High       × 1       1         Individual data points         Domain 3: Accessibility/Clarity       High       × 1       1         Metric 6:       Metadata Completeness       High       × 1       1         Domain 4: Variability and Uncertainty       Metric 7:       Metadata Completeness       Hedium       × 1       2         Some discussion of uncertainty Metric 7:       Metric 7:       Metadata Completeness       Some discussion of uncertainty and variability	Exposure Concentrat	tion (Uni	t):	613-1,152 (8-hr TW	ppm (va A. modif	arious sa ied vent	ample times, existing ventilation); 13-27 ppm tilation)		
Number of Sites:1Worker Activity:furniture strippingType of Sampling:personalSampling Location:variousExposure Duration:variousDomainMetricRatingMWF*Some I:Retric 1:Metric 1:MetricMetric 2:Geographic ScopeMetric 3:ApplicabilityMetric 4:Temporal RepresentativeMetric 5:Sample SizeMetric 5:Sample SizeMetric 5:Sample SizeMetric 6:Metric 7:Domain 3:Accessibility/ClarityMetric 6:Metric CompletenessMetric 7:Metric 7:Metri	Number of Samples:	Number of Samples:			,				
Worker Activity: Type of Sampling: Sampling Location: Exposure Duration:furniture stripping personal various variousfurniture stripping personal variousfurniture stripping personal variousfurniture stripping personal variousfurniture stripping personal variousfurniture stripping personal variousfurniture stripping personal variousfurniture stripping personal variousfurniture stripping personal variousfurniture stripping personalfurniture stripping personalfurniture stripping personalfurniture stripping personal variousfurniture stripping personal various	Number of Sites:	Number of Sites:							
Type of Sampling: Sampling Location: Exposure Duration:       personal various         EVALUATION         Domain       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability: Metric 1:       Methodology       High       × 1       1       NIOSH         Domain 2: Representative Metric 3:       Applicability       High       × 1       1       US         Metric 4:       Temporal Representative Metric 5:       Temporal Representative Sample Size       Kow       × 2       6       1991 - more than 20 years old and prior to most reconstruction of the most reconstruction of th	Worker Activity:			furniture	stripping	r S			
Sampling Location: Exposure Duration:       various         EVALUATION       Metric       Rating       MWF*       Score       Comments         Domain       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability Metric 1:       Methodology       High       × 1       1       NIOSH         Domain 2: Representative Metric 2:       Geographic Scope       High       × 1       1       US         Metric 3:       Applicability Metric 4:       Temporal Representativeness       Low       × 2       2       Furniture Stripping 1 dividual data points         Domain 3: Accessibility/Clarity Metric 6:       Metadata Completeness       High       × 1       1       provides key information         Domain 4: Variability and Uncertainty Metric 7:       Metadata Completeness       Medium       × 1       2       Some discussion of uncertainty and variability	Type of Sampling:			personal					
Exposure Duration:     various       EVALUATION     Rating     MWF*     Score     Comments       Domain     Metric     Rating     MWF*     Score     Comments       Domain 1: Reliability Metric 1:     Methodology     High     × 1     1     NIOSH       Domain 2: Representative Metric 2:     Geographic Scope     High     × 1     1     US       Metric 3:     Applicability Metric 4:     Temporal Representativeness     Low     × 2     2     Furniture Stripping 1991 - more than 20 years old and prior to most rec Metric 5:       Domain 3: Accessibility/Clarity Metric 7:     Metadata Completeness     High     × 1     1     individual data points       Domain 4: Variability and Urertainty Metric 7:     Metadata Completeness     Metin     × 1     2     Some discussion of uncertainty and variability	Sampling Location:	Sampling Location:							
Wetric N         Domain       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability       Metric 1:       Methodology       High       × 1       1       NIOSH         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       US         Metric 3:       Applicability       High       × 2       2       Furniture Stripping         Metric 4:       Temporal Representativeness       Low       × 2       6       1991 - more than 20 years old and prior to most recondition         Domain 3: Accessibility/Clarity       Metric 6:       Metadata Completeness       High       × 1       1       provides key information         Domain 4: Variability and Uncertainty       Metric 7:       Metadata Completeness       Medium       × 1       2       Some discussion of uncertainty and variability	Exposure Duration:			various					
EVALUATION       Metric       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability       Metric 1:       Methodology       High       × 1       1       NIOSH         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       US         Metric 3:       Applicability       High       × 2       2       Furniture Stripping         Metric 4:       Temporal Representativeness       Low       × 2       6       1991 - more than 20 years old and prior to most reconder to most reconde									
Domain       Metric       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability Metric 1:       Methodology       High       × 1       1       NIOSH         Domain 2: Representative Metric 2:       Geographic Scope       High       × 1       1       US         Metric 3:       Applicability Metric 4:       Temporal Representativeness       Low       × 2       2       Furniture Stripping 1991 - more than 20 years old and prior to most reconstruction         Metric 5:       Sample Size       High       × 1       1       Individual data points         Domain 3: Accessibility/Clarity Metric 6:       Metadata Completeness       High       × 1       1       provides key information         Domain 4: Variability and Uncertainty Metric 7:       Metadata Completeness       Medium       × 1       2       Some discussion of uncertainty and variability	EVALUATION								
Domain 1: Reliability Metric 1:       Methodology       High $\times 1$ 1       NIOSH         Domain 2: Representative Metric 2:       Geographic Scope       High $\times 1$ 1       US         Metric 3:       Applicability       High $\times 2$ 2       Furniture Stripping         Metric 4:       Temporal Representativeness       Low $\times 2$ 6       1991 - more than 20 years old and prior to most rec         Metric 5:       Sample Size       High $\times 1$ 1       Individual data points         Domain 3: Accessibility/Clarity Metric 6:       Metadata Completeness       High $\times 1$ 1       provides key information         Domain 4: Variability and Uncertainty Metric 7:       Metadata Completeness       Medium $\times 1$ 2       Some discussion of uncertainty and variability	Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Metric 1:       Methodology       High       × 1       1       NIOSH         Domain 2:       Representative	Domain 1: Reliability	у							
Domain 2: Representative       Metric 2:       Geographic Scope       High $\times 1$ 1       US         Metric 3:       Applicability       High $\times 2$ 2       Furniture Stripping         Metric 4:       Temporal Representativeness       Low $\times 2$ 6       1991 - more than 20 years old and prior to most rec         Metric 5:       Sample Size       High $\times 1$ 1       Individual data points	Μ	letric 1:	Methodology	High	$\times 1$	1	NIOSH		
Metric 2:       Geographic Scope       High       × 1       1       US         Metric 3:       Applicability       High       × 2       2       Furniture Stripping         Metric 4:       Temporal Representativeness       Low       × 2       6       1991 - more than 20 years old and prior to most rec         Metric 5:       Sample Size       High       × 1       1       Individual data points         Domain 3:       Accessibility/Clarity       Metric 6:       Metadata Completeness       High       × 1       1       provides key information         Domain 4:       Variability and Uncertainty       Metric 7:       Metadata Completeness       Medium       × 1       2       Some discussion of uncertainty and variability	Domain 2: Represent	tative							
Metric 1:       Geographic Scope       High       × 1       1       Good         Metric 3:       Applicability       High       × 2       2       Furniture Stripping         Metric 4:       Temporal Representativeness       Low       × 2       6       1991 - more than 20 years old and prior to most rec         Metric 5:       Sample Size       High       × 1       1       Individual data points         Domain 3:       Accessibility/Clarity       Metric 6:       Metadata Completeness       High       × 1       1       provides key information         Domain 4:       Variability and Uncertainty       Metric 7:       Metadata Completeness       Medium       × 1       2       Some discussion of uncertainty and variability	M	letric 2.	Geographic Scope	High	× 1	1	US		
Metric 4:       Temporal Representativeness       Low       × 2       6       1991 - more than 20 years old and prior to most rec         Metric 5:       Sample Size       High       × 1       1       Individual data points         Domain 3:       Accessibility/Clarity         Metric 6:       Metadata Completeness       High       × 1       1       provides key information         Domain 4:       Variability and Uncertainty       Metric 7:       Metadata Completeness       Medium       × 1       2       Some discussion of uncertainty and variability	M	letric 3:	Applicability	High	$\times 2$	2	Furniture Stripping		
Metric 5:     Sample Size     High     × 1     1     Individual data points       Domain 3:     Accessibility/Clarity Metric 6:     Metadata Completeness     High     × 1     1     provides key information       Domain 4:     Variability and Uncertainty Metric 7:     Metadata Completeness     Medium     × 1     2     Some discussion of uncertainty and variability	Μ	letric 4:	Temporal Representativeness	Low	$\times 2$	6	1991 - more than 20 years old and prior to most recent PEL		
Domain 3: Accessibility/Clarity         Metric 6:       Metadata Completeness         High       × 1       1         provides key information    Domain 4: Variability and Uncertainty Metric 7: Metadata Completeness Medium × 1 2 Some discussion of uncertainty and variability	Μ	letric 5:	Sample Size	High	$\times 1$	1	Individual data points		
Domain 3: Accessibility/Clarity         Metric 6: Metadata Completeness       High × 1 1 provides key information         Domain 4: Variability and Uncertainty         Metric 7: Metadata Completeness       Medium × 1 2 Some discussion of uncertainty and variability	D ' 9 A '1'	1	.,						
Metric 0.       Metadata Completeness       High       × 1       1       provides key information         Domain 4:       Variability and Uncertainty       Metric 7:       Metadata Completeness       Medium       × 1       2       Some discussion of uncertainty and variability	Domain 3: Accessibi	lity/Clari	Notadata Completeness	Uich	× 1	1			
Domain 4: Variability and Uncertainty       Metric 7: Metadata Completeness       Medium       ×       1       2       Some discussion of uncertainty and variability	IV	tetric 0:	Metadata Completeness	111g11	X 1	1	provides key information		
Metric 7: Metadata Completeness Medium × 1 2 Some discussion of uncertainty and variability	Domain 4: Variabilit	v and Ur	ocertainty						
	M	letric 7:	Metadata Completeness	Medium	$\times 1$	2	Some discussion of uncertainty and variability		
			T T T T T						
			~						

				1 0						
Source Citation:	NIOSH. 1991. In-depth survey report. The control of methylene chloride in furniture stripping at Association for Retarded Citizens Washington County Chapter, Inc. Technical Report ECTB number: 170-18a.									
Type of Data Source	Occupational Exposure; Monitoring Data;	occupational Exposure: Monitoring Data:								
Hero ID	3808979									
EVALUATION										
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments					
Overall Quality I	$\operatorname{Determination}^{\dagger}$	High		1.6						

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Source Citation: Type of Data Source Hero ID	U.S, E. P. Occupatio 3809029	U.S, E. P. A 2014. TSCA work plan chemical risk assessment, methylene chloride: paint stripping use. Occupational Exposure; Completed Exposure or Risk Assessments; 3809029							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Descrij	ption (Subca	ategory of Use):	Use Paint Stri	ipping					
EVALUATION									
Domain		Metric	Rating	$MWF^*$	Score	Comments			
Domain 1: Reliab	oility Metric 1:	Methodology	High	$\times 1$	1	EPA Risk Assessment			
Domain 2: Repres	sentative		0						
	Metric 2:	Geographic Scope	High	$\times 1$	1	US facilities			
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope			
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	data from 2014			
	Metric 5:	Sample Size	Medium	× 1	2	statistics given, discrete data not available			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	High	$\times 1$	1	use in scope			
Domain 4: Variab	bility and Un Metric 7:	ncertainty Metadata Completeness	High	$\times 1$	1	detailed uncertainty section			
Overall Quality I	Determinatio	$\mathrm{n}^\dagger$	High		1.1				

\* MWF = Metric Weighting Factor

Source Citation:Niosh,. 19Type of Data SourceOccupationHero ID3809433	92. Health Hazard Evaluation. nal Exposure; Monitoring Data;						
EXTRACTION							
Parameter		Data					
Life Cycle Stage:		Use					
Life Cycle Description (Subc	ategory of Use):	Paint stri	nning				
Physical Form:		liquid, va	por				
Route of Exposure:		inhalation	1				
Exposure Concentration (Uni	t):	ND-523 p	pm				
Number of Samples:	,	42	1				
Number of Sites:		1					
Type of Measurement or Met	hod:	short terr	n and TV	VA			
Worker Activity:		Stripping	furniture	9			
Number of Workers:							
Type of Sampling:	Personal,	area					
Exposure Duration:	Variable	Variable					
Exposure Frequency:	Variable						
PPE:	PPE:			l lengtl	h rubber gauntlets, a face shield, and plastic		
Analytic Method:	upper arm covers NIOSH method #1005						
EVALUATION							
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliability							
Metric 1:	Methodology	High	$\times 1$	1	Niosh Method #1005		
Domain 2: Representative	G 1: G	TT: 1	1	1			
Metric 2:	Geographic Scope	High	× 1	1			
Metric 3:	Applicability	High	× 2	2	Workplace scenario that exposes employees to Methylene Chlo- ride		
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1995, 23 years old and prior to most recent PEL		
Metric 5:	Sample Size	Medium	$\times 1$	2	Decent characterization		
Domain 3: Accessibility/Clar	ity						
Metric 6	Metadata Completeness	High	× 1	1	Complete Metadata		
		8	// ±	-			
	Cor	tinued on r	ovt page				

Source Citation: Type of Data Source Hero ID	Niosh, 199 Occupation 3809433	2. Health Hazard Evaluation. aal Exposure; Monitoring Data;				
EVALUATION						
Domain		Metric	Rating	$\rm MWF^{\star}$	Score	Comments
Domain 4: Variab	oility and Un Metric 7:	certainty Metadata Completeness	Medium	× 1	2	Method addresses variability and uncertainty.
Overall Quality D	etermination	ıţ	Medium		1.7	

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\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity:			Manufact Manufact Vapor Inhalation 219-374 n Maintena	Manufacture Manufacture Vapor Inhalation 219-374 mg/m3 Maintenance				
EVALUATION								
Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	Not Specified		
Domain 2: Repres	sentative							
Domain 2. Hopro,	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU		
	Metric 3:	Applicability	High	$\times 2$	2	manufacturing in scope		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	Indicates sample type but no other metadata		
Domain 4: Variab	oility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not discussed.		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3			

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Manufact	ure				
Life Cycle Descrip	otion (Subca	ategory of Use):	Manufact	ure				
Physical Form:			Vapor					
Route of Exposur	e:		Inhalation	1				
Exposure Concent	tration (Uni	t):	3.5->35 n	ng/mg3 (	8-hr TV	WA)		
Worker Activity:			Productio	on person	nelPlan	t & packagingpersonnel		
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliah	oility							
	Metric 1:	Methodology	Low	$\times 1$	3	Not Specified		
Domain 2: Repres	sentative							
Domain = 100pro.	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU		
	Metric 3:	Applicability	High	$\times 2$	2	manufacturing in scope		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data		
Domain 3: Access	aibility/Clar	ity						
Domain 5. Access	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Indicates sample type but no other metadata		
		-						
Domain 4: Variab	oility and Ui	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.		
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity:			Processing Formulati Aerosols Inhalation <180 mg/ Filling an	Processing Formulation of Products Aerosols Inhalation <180 mg/m3 Filling and packing				
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	Not Specified		
Domain 2: Repre	sentative Metric 2:	Geographic Scope	Medium	× 1	2	data from EU		
	Metric 3:	Applicability	High	$\times 2$	2	formulation in scope		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	Indicates sample type but no other metadata		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not discussed.		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			

Source Citation:Tno,.Type of Data SourceOccupHero ID380944	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter		Data						
Life Cycle Stage:		Use						
Life Cycle Description (S	bcategory of Use):	Adhesives	3					
Physical Form:		aerosol						
Route of Exposure:		Inhalation	n					
Exposure Concentration	Unit):	3.5  to  1,5	00  mg/m	13				
Worker Activity:			hesives					
EVALUATION								
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliability								
Metric	1: Methodology	Low	$\times 1$	3	Not Specified			
Domain 2: Representativ								
Metric	2: Geographic Scope	Medium	$\times 1$	2	data from EU			
Metric	3: Applicability	High	$\times 2$	2	Adhesive use in scope			
Metric	4: Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier			
Metric	5: Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data			
Domain 3: Accessibility/	Clarity	т	1	0				
Metric	6: Metadata Completeness	Low	× 1	3	Indicates sample type but no other metadata			
Domain 4: Variability an	Uncertainty							
Metric	7: Metadata Completeness	Low	$\times 1$	3	Not discussed.			
				-				
Overall Quality Determin	$\operatorname{ation}^{\dagger}$	Low		2.3				
3 · · · · · · · · · · · · · · · · · · ·								

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit):			Use Consumer Paint Stripping Aerosols Inhalation 35-14,100 mg/m3; majority <1770 mg/m3					
Worker Activity:			Consume	r Paint S	tripping	5		
EVALUATION								
Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	Not Specified		
Domain 2: Repre	sentative							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU		
	Metric 3: Motrie 4:	Applicability	High	$\times 2$	2	No Comment.		
	Metric 4: Metric 5:	Sample Size	Low Medium	× 2 × 1	2	Report from 1999 but many data sources are from earlier Bange and mean given, but no discrete data		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Indicates sample type but no other metadata		
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Not discussed.		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity:			Use Consumer Paint Stripping with good ventilation (assumed to be same for occuapational exposures in report) Vapor Inhalation 460-2980 mg/m3 (8-hr TWA) unventilated; 60-400 mg/m3 (8-hr TWA) ventilated Consumer Paint Stripping with good ventilation					
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	Not Specified		
Domain 2: Repres	Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	Medium High Low Medium	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	2 2 6 2	data from EU No Comment. Report from 1999 but many data sources are from earlier Range and mean given, but no discrete data		
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Indicates sample type but no other metadata		
Domain 4: Variab	ility and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not discussed.		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Low		2.3			

 $\star MWF = Metric Weighting Factor$ 

Source Citation: Type of Data Source Hero ID	Tno, 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	otion (Subca	ategory of Use):	Stripping					
Physical Form:			Vapor					
Route of Exposur	e:		Inhalatior	1				
Exposure Concent	tration (Uni	t):	18-7000 n	mg/m3 (8	-hr TW	VA)		
Worker Activity:			Immersion	n strippiı	ng of wo	bod		
EVALUATION								
Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1. Roliah	ilitar							
Domain 1. Kenab	Metric 1	Methodology	Low	× 1	3	Not Specified		
	10100110 11	methodolog,	1011	<u> </u>	0	Not opecated		
Domain 2: Repres	sentative							
*	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU		
	Metric 3:	Applicability	High	$\times 2$	2	No Comment.		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data		
Domain 3: Access	sibility/Clar	ity	Ŧ					
	Metric 6:	Metadata Completeness	Low	× 1	3	Indicates sample type but no other metadata		
Domain 4. Variat	vility and U	acertainty						
Domain 4. Variat	Metric 7	Metadata Completeness	Low	$\times 1$	3	Not discussed		
		Metadata Completeness	LOW	~ 1	0	not discussed.		
Overall Quelity F	otorminatio	nt	Low		0.2			
Overall Quality L	eterminatio	11 '	LOW		2.3			

Source Citation: Type of Data Source Hero ID	Tno, 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity:			Use Paint Stripping Aerosols Inhalation 98-321 mg/m3 (8-hr TWA) Aircraft paint stripping					
EVALUATION		N	<b>D</b> . 1		a			
Domain		Metric	Rating	MWF'*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	Not Specified		
Domain 2: Repre	sentative							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU		
	Metric 3:	Applicability	High	$\times 2$	2	No Comment.		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	Indicates sample type but no other metadata		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not discussed.		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449						
EXTRACTION							
Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit):			Use Stripping Vapor Inhalation				
Worker Activity:			(350 mg/ Immersion	n strippir	ng of me	etal (with appropriate protection measures)	
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Reliab	oility Metric 1:	Methodology	Low	× 1	3	Not Specified	
Domain 2: Benre	sentative						
Domain 2. Repre	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU	
	Metric 3:	Applicability	High	$\times 2$	2	No Comment.	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier	
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data	
Domain 3: Accessibility/Clarity Metric 6: Metadata Completeness			Low	$\times 1$	3	Indicates sample type but no other metadata	
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Not discussed.	
Overall Quality	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3		

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity:			Use Furniture Stripping Vapor Inhalation 25-3812 mg/m3 (8-hr TWA) Furniture Stripping (without adequate control measures)					
EVALUATION Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	Not Specified		
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	Medium High Low Medium	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	2 2 6 2	data from EU No Comment. Report from 1999 but many data sources are from earlier Range and mean given, but no discrete data		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Indicates sample type but no other metadata		
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Not discussed.		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity:			Use Cleaning agent in foam industry or aux blowing agent, releasing agent in PU molding Vapor Inhalation 7-1,770 mg/m3 Cleaning agent in foam industry or aux blowing agent, releasing agent in PU molding					
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	Not Specified		
Domain 2: Repres	Sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	Medium High Low Medium	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	2 2 6 2	data from EU PU foam Report from 1999 but many data sources are from earlier Range and mean given, but no discrete data		
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Indicates sample type but no other metadata		
Domain 4: Variab	ility and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not discussed.		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449						
EXTRACTION							
Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity			Use Pharmaceuticals Vapor Inhalation 3.5-106 mg/m3				
worker Activity:			Pharmace	eutical pr	ocessing	g 5	
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	Not Specified	
Domain 2: Repre	Sentative Motrie 2:	Caamankia Saana	Madium	V 1	0		
	Metric 2:	Geographic Scope	Medium Lich	$\times 1$	2	data from EU	
	Metric 3:	Tomporal Representativeness	Low	$\times 2$ $\times 2$	2 6	Papart from 1000 but many data courses are from carlier	
	Metric 4. Metric 5:	Sample Size	Medium	$ \times 1 $	2	Range and mean given, but no discrete data	
Domain 3: Accessibility/Clarity Metric 6: Metadata Completeness				× 1	3	Indicates sample type but no other metadata	
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Not discussed.	
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3		

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrit	otion (Subca	ategory of Use):	Cellulose	Triacetat	te and I	Film Base Production		
Physical Form:	(		Vapor					
Route of Exposur	e:		Inhalation	n				
Exposure Concen	tration (Uni	t):	0-350 mg	/m3 (8-h	r TWA	)		
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Boliah	ility							
Domain 1. Renad	Metric 1:	Methodology	Low	$\times 1$	3	Not Specified		
Domain 2: Repres	sentative				2			
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU		
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope		
	Metric 4:	Temporal Representativeness	Low	× 2	6	Report from 1999 but many data sources are from earlier		
	Metric 5:	Sample Size	Medium	× 1	2	Range and mean given, but no discrete data		
Domain 3: Access	vibility/Clar	ity						
Domain 5. Access	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Indicates sample type but no other metadata		
Domain 4: Variab	ility and Ui	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity:			Manufacture Manufacture/Distribution Vapor Inhalation 3.5-63 mg/mg3 (8-hr TWA) Production personnelPlant & packagingpersonnelTanker drivers:					
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	Not Specified		
Domain 2: Repre	sentative							
*	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU		
	Metric 3:	Applicability	High	$\times 2$	2	manufacturing in scope		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	Indicates sample type but no other metadata		
Domain 4: Variab	oility and Uı Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Not discussed.		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit):			Processing Other Chemical Processing (closed systems) Vapor Inhalation 23 mg/m3 (8-hr TWA)					
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	Not Specified		
	, , <b>.</b>							
Domain 2: Repres	Metric 2.	Geographic Scope	Medium	$\times 1$	2	data from FU		
	Metric 3:	Applicability	High	$\times 2$	$\frac{2}{2}$	Use in scope		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Indicates sample type but no other metadata		
Domain 4: Variat	oility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrit	otion (Subca	tegory of Use):	Degreasin	g				
Physical Form:	(		Vapor	0				
Route of Exposur	e:		Inhalation	1				
Exposure Concent	tration (Uni	t):	14-1000 n	ng/m3; m	nean 28	0  mg/m3		
Worker Activity:			Cold Deg	reasing				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1. Reliah	ility							
	Metric 1:	Methodology	Low	$\times 1$	3	Not Specified		
Domain 2: Repres	sentative							
Domain = Teopro	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU		
	Metric 3:	Applicability	High	$\times 2$	2	degreasing in scope		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data		
Demain 2. Access	::::::::::::::::::::::::::::::::::::::							
Domain 5: Access	Motric 6:	Motadata Completeness	Low	$\sim 1$	2	Indicates completing but no other metadate		
	Metric 0.	Metadata Completeness	LOW	× 1	3	Indicates sample type but no other metadata		
Domain 4: Variah	oility and Ur	ocertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3			
- •								

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity:			Use Food extraction (also similar to other open industrial applications such as printing, gauze and fabric coating) Vapor Inhalation 110 mg/m3 Food extraction (also similar to other open industrial applications such as printing, gauze and fabric coating)					
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	Not Specified		
Domain 2: Repres	Sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	Medium High Low Medium	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	2 2 6 2	data from EU Use in scope Report from 1999 but many data sources are from earlier Range and mean given, but no discrete data		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	Indicates sample type but no other metadata		
Domain 4: Variab	ility and U Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Not discussed.		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Tno, 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449									
EXTRACTION										
Parameter			Data							
Life Cycle Stage:	Life Cycle Stage:			Use						
Life Cycle Descrip	otion (Subca	ategory of Use):	Personal	care aero	sol use	(hairspray, insect repellent)				
Physical Form:	× ×	/	aerosol							
Route of Exposure	e:		Inhalation	1						
Exposure Concent	ration (Uni	t):	7  mg/m3	(8-						
Worker Activity:			Personal	care aero	sol use	(hairspray, insect repellent)				
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliab	ility									
	Metric 1:	Methodology	Low	$\times 1$	3	Not Specified				
Domain 2: Repres	entative									
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU				
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier				
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data				
Demain 9 Access	:1.:1:+ /Cl:									
Domain 3: Access	Motrie 6	Ity Motodoto Completeness	Low	× 1	9	To Produce and the second state of the second state.				
	Metric 0:	Metadata Completeness	LOW	× 1	3	Indicates sample type but no other metadata				
Domain 4: Variab	ility and Ur	acertainty								
Domain II (arias	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.				
		<b>A D</b>								
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3					
- · · · · · · · · · · · · · · · · · · ·					-					

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Description (Subcategory of Use):			Aerosols in unventilated room (Dow)						
Physical Form:			aerosol						
Route of Exposure:			Inhalation						
Exposure Concentration (Unit):			77.7  mg/m3						
Worker Activity:			Aerosols in unventilated room (Dow)						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliat	oility								
	Metric 1:	Methodology	Low	$\times 1$	3	Not Specified			
Domain 2: Repre	sentative								
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	data from EU			
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data			
Domain 5: Access	Metric 6	Metadata Completeness	Low	$\times 1$	3	Indicates sample type but no other metadata			
	WICHIE O.	Metadata Completeness	LOW	~ 1	0	indicates sample type but no other inetadata			
Domain 4: Variability and Uncertainty									
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.			
Overall Quality Determination <sup>†</sup>			Low		2.3				

Source Citation: Type of Data Source Hero ID	Tno,. 1999. Methylene chloride: Advantages and Drawbacks of Possible Market Restrictions in the EU. Occupational Exposure; Completed Exposure or Risk Assessments; 3809449								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Description (Subcategory of Use):			Hair Care Products						
Physical Form:			aerosol						
Route of Exposure:			Inhalation						
Exposure Concentration (Unit):			3.5-17.7  mg/m3 (8-hr  TWA)						
Worker Activity:			Professional salon use						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1. Beliah	ility								
	Metric 1:	Methodology	Low	$\times 1$	3	Not Specified			
Domain 2: Repres	sentative								
Domain 2. Repres	Metric 2:	Geographic Scope	Medium	× 1	2	data from EU			
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Report from 1999 but many data sources are from earlier			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Range and mean given, but no discrete data			
Domain 3: Accessibility/Clarity			т	1	0				
	Metric 6:	Metadata Completeness	Low	× 1	3	Indicates sample type but no other metadata			
Domain 4: Variability and Uncertainty									
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.			
Overall Quality Determination <sup>†</sup>			Low		2.3				
Source Citation:	Niosh, 1990. Walk-through survey report: Control of methylene chloride in furniture stripping at Colonial Furniture Stripping, Cincinnati, Obio								
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Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 3809453								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descri	ption (Subca	ategory of Use):	Furniture	Strippin	g				
Physical Form:			liquid, va	por					
Route of Exposur	e:		inhalatio			00.00.00			
Exposure Concen	tration (Uni	it):	2 persona	1: 77, 100	J ppm3	area: 90, 20, 63			
Number of Samp	les:		0 1						
Type of Measure	ment or Met	hod	1-hour T	WA					
Worker Activity:	inclut of Mict	liou.	Stripping	furniture	9				
Number of Worke	ers:		1	rarmoar					
Type of Sampling	ç:		personal,	area					
			• /						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1. Roliak	, ilitar								
Domain 1. Renau	Metric 1:	Methodology	High	$\times 1$	1	NIOSH 1005			
	:								
Domain 2: Repre	Motrie 2	Coorrenhie Seene	Uich	× 1	1	110			
	Metric 2:	Appliesbility	High	$\times 1$	1	US Warkerlage that uses Methodens Chlorida			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990 28 years old and prior to most recent PEL			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Reasonably well characterized.			
		T T T							
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Has baseline metadata			
Domain 4: Varial	ality and U	ncortainty							
Domain 4. Variat	Metric 7.	Metadata Completeness	Low	× 1	3	None addressing data			
			20.1	·· ±					
Overall Quality I	Determinatio	$\mathrm{on}^\dagger$	Medium		1.9				
Continued on next page									

	continu	cu nom	previous	page	
Source Citation:	Niosh,. 1990. Walk-through survey report: Cincinnati, Ohio.	Control of	methylen	e chloride in	furniture stripping at Colonial Furniture Stripping,
Type of Data Source	Occupational Exposure; Monitoring Data;				
Hero ID	3809453				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments

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\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT -	DO NOT	CITE OR	QUOTE
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Source Citation:	Niosh, 1990. Walk-through survey report: Control of methylene chloride in furniture stripping at Colonial Furniture Stripping, Cincinnati, Obio								
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 3809453								
EXTRACTION									
Parameter			Data						
Life Cruele Sterrey			Ugo						
Life Cycle Stage:	ption (Subc	atogory of Uso).	Use Furnitur	Strippin	NG.				
Physical Form:	ption (Dubea	itegory of ese).	vapor	Suppli	18				
Route of Exposur	·e:		inhalatio	n					
Exposure Concen	tration (Uni	t):	77-100 p	pm (1-hr	TWA)				
Number of Sampl	les:	,	2		,				
Number of Sites:			1						
Type of Measurer	ment or Met	hod:	1-hr TW	A					
Worker Activity:			furniture	dip strip	ping				
Number of Worke	ers:		1						
Type of Sampling	g:		personal						
Exposure Duratio	on:		various						
EVALUATION									
Densir		Matuia	Deting	MAND+	<b>C</b>	Commente			
Domain		Metric	Rating	IVI VV F ^	Score	Comments			
Domain 1. Reliat	oility								
Domain 1. Renar	Metric 1:	Methodology	High	$\times 1$	1	NIOSH			
		87	0						
Domain 2: Repre	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	furniture dip stripping			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990 - more than 20 years old and prior to most recent $\operatorname{PEL}$			
	Metric 5:	Sample Size	High	× 1	1	Individual data points			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	High	$\times 1$	1	Indicates sample type but no other metadata			
Domain 4: Varial	bility and U	ncertainty	_		_				
	Metric 7:	Metadata Completeness	Low	× 1	3	None addressing data			
	Continued on next page								

Source Citation:	Niosh, 1990. Walk-through survey report: Cincinnati, Ohio.	Control of	methylen	e chloride	e in furniture stripping at Colonial Furniture Stripping,
Type of Data Source	Occupational Exposure: Monitoring Data:				
Horo ID	3800/53				
TIEFO ID	3003433				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Overall Quality I	$\operatorname{Determination}^{\dagger}$	Medium		1.7	

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Source Citation: Type of Data Source Hero ID	Iarc,. 2016. Dichloromethane. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3827786									
EXTRACTION Parameter			Data							
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity: Type of Sampling:			Data Use Furniture Stripping vapor inhalation 39-332 ppm; 6 ppm (with controls installed) stripping and rinsing using tank not specified in review							
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments				
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	IARC 2016 - references Estill et al. 2002, method not specified in IARC				
Domain 2: Repres	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Medium Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$egin{array}{c} 1 \\ 2 \\ 4 \\ 3 \end{array}$	US data Use in scope data older than 10 years but after PEL range given but no other statistics				
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Only sample and exposure type given				
Domain 4: Variab	Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not discussed.				
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Iarc, 2016. Dichloromethane. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3827786									
EXTRACTION Parameter			Data							
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity: Type of Sampling:			Use Furniture Stripping vapor/aerosol inhalation 44-647 ppm TWA; <2ppm (with controls installed) spray stripping using compressed air not specified in review							
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments				
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	IARC 2016 - references Fairfax & Grevenkamp et al. 2007, method not specified in IARC				
Domain 2: Repres	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High High Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	1 2 2 3	US data Use in scope data less than 10 years old (2007) range given but no other statistics				
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Only sample and exposure type given				
Domain 4: Variab	Dility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not discussed.				
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Medium		1.9					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Iarc,. 2016. Dichloromethane. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3827786									
EXTRACTION										
Parameter			Data							
Life Cycle Stage:			Use							
Life Cycle Descrip	otion (Subca	ategory of Use):	Paint Stri	ipping						
Physical Form:			vapor/aer	rosol						
Route of Exposur	e:		Inhalation	1						
EVALUATION										
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments				
Domain 1: Reliab	ility									
	Metric 1:	Methodology	Low	$\times 1$	3	method not specified in IARC				
Domain 2: Benre	sontativo									
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US data				
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope				
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	data older than 10 years but after PEL				
	Metric 5:	Sample Size	Low	$\times 1$	3	range given but no other statistics				
Domain 2. Accord	sibility /Clan	:+								
Domain 5: Access	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Only sample and exposure type given				
Domain 4. Variat	vility and Ur	acertainty								
Domain 4. Variat	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.				
Overall Quality D	Determinatio	n <sup>†</sup>	Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Iarc, 2016. Dichloromethane. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3827786									
EXTRACTION Parameter			Data							
Life Cycle Stage: Life Cycle Descrip Physical Form: Route of Exposur Exposure Concent Type of Measurer Worker Activity: Type of Sampling	otion (Subca e: tration (Uni nent or Met :	ategory of Use): t): hod:	Use Paint Strivapor inhalation 26-120 pp TWA chemical not specifi	Use 'aint Stripping apor halation 6-120 ppm TWA TWA hemical paint stripping tot specified in review						
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments				
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	IARC 2016 - references Enander et al. 2004, method not spec- ified in IARC				
Domain 2: Repres	Sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Medium Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1\\ 2\\ 4\\ 3\end{array}$	US data Use in scope data older than 10 years but after PEL range given but no other statistics				
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Only sample and exposure type given				
Domain 4: Variab	ility and Un Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Not discussed.				
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Iarc,. 2016. Dichloromethane. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3827786									
EXTRACTION Parameter	XTRACTION Parameter									
Life Cycle Stage: Life Cycle Descrip Physical Form: Route of Exposur Exposure Concent Type of Measurer Worker Activity: Type of Sampling	otion (Subca e: tration (Uni nent or Met :	ategory of Use): it): hod:	Use Paint Stripping vapor inhalation 14-84 ppm (4-hr average) TWA Aircraft paint stripping not specified in review							
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments				
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	IARC 2016 - references Uang et al. 2006, method not specified in IARC				
Domain 2: Repres	Sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	Low High High Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	3 2 2 3	data from China and Taiwan (non-OECD) Use in scope data 10 years old (2006) range given but no other statistics				
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	Only sample and exposure type given				
Domain 4: Variab	Metric 7:	meertainty Metadata Completeness	Low	× 1	3	Not discussed.				
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Iarc,. 2016. Dichloromethane. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3827786									
EXTRACTION Parameter			Data							
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Type of Measurement or Method: Worker Activity: Type of Sampling:			Use Polyurethane Foam Blowing vapor inhalation 8 ppm TWA TWA mix and heat ingredients in oven not specified in review							
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments				
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	IARC 2016 - references Fairfax & Porter 2006, method not specified in IARC				
Domain 2: Repre	Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High High Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c}1\\2\\2\\3\end{array}$	US data PU foam data 10 years old (2006) single exposure concentration given, unclear if it is average, max, min, or single discrete value				
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Only sample and exposure type given				
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Not discussed.				
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.9					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Iarc, 2016. Dichloromethane. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3827786							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity: Type of Sampling:			Use Printing vapor inhalation 7 ppm cleaning p not specif	ı presses ied in rev	view			
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Beliab	ility		-					
	Metric 1:	Methodology	Low	$\times 1$	3	IARC 2016 - references Lee et al. 2009, method not specified in IARC		
Domain 2: Repres	sentative							
•	Metric 2:	Geographic Scope	High	$\times 1$	1	US data		
	Metric 3:	Applicability	High	$\times 2$	2	printing use in scope		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	data less than 10 years old (2009)		
	Metric 5:	Sample Size	Low	$\times 1$	3	single exposure concentration given, unclear if it is average, max, min, or single discrete value		
Domain 3: Access	bility/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Only sample and exposure type given		
Domain 4: Variability and Uncertainty Metric 7: Metadata Completeness		Low	× 1	3	Not discussed.			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.9			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Iarc, 2016. Dichloromethane. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3827786							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity: Type of Sampling:			Use Laboratory solvent vapor inhalation below LOD ( 1ppm) no details not specified in review					
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	oility Metric 1:	Methodology	Low	$\times 1$	3	IARC 2016 - references Nomura et al. 2006 method not speci- fied in IARC		
Domain 2: Repres	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	Medium High Medium Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	2 2 4 3	data from Japan (OECD country) Lab uses in scope data older than 10 years but after PEL Olny indicated as below LOD, no range, statistics, number of samples, etc.		
Domain 3: Accessibility/Clarity Metric 6: Metadata Completeness			Low	× 1	3	Only sample and exposure type given		
Domain 4: Variability and Uncertainty Metric 7: Metadata Completeness		Low	$\times 1$	3	Not discussed.			
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.2				

\* MWF = Metric Weighting Factor

Source Citation:IaType of Data SourceOHero ID38	Iarc, 2016. Dichloromethane. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3827786							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descriptio	on (Subca	tegory of Use):	All					
Number of Workers:			1.4 millio	n workers	s in USA	A in 1980s and 1990s		
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliability	v							
M	letric 1:	Methodology	High	$\times 1$	1	IARC document assumed to use appropriate methodology for data gathering		
Domain 2: Represent	tative							
M	letric 2:	Geographic Scope	High	$\times 1$	1	US data		
Μ	letric 3:	Applicability	High	$\times 2$	2	applies to US workers		
Μ	letric 4:	Temporal Representativeness	Low	$\times 2$	6	data over 20 years old		
M	letric 5:	Sample Size	Low	$\times 1$	3	Only states "over 1.4 million workers" no other quantitative data given		
Domain 3: Accessibil	litv/Clari	tv						
М	letric 6:	Metadata Completeness	Low	$\times 1$	3	industry breakdown not provided, only gives total US workers exposed		
Domain 4: Variabilit	w and Ur	agortainty						
M	letric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.		
Overall Quality Dete	erminatio	n†	Medium		2.1			

\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT -	DO NOT	CITE OR	<b>QUOTE</b>
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Source Citation:	Benaise, L. G., Harrison, J. M., Pearce, T. A 2006. Health hazard evaluation report no. HETA-2003-0300-2993, West Virginia Department of Health and Human Resources - Webster Springs District Office.								
Type of Data Source Hero ID	Occupation 3859371	Occupational Exposure; Monitoring Data; 3859371							
EXTRACTION Parameter	Data								
Life Cycle Stage:	Environment								
Life Cycle Descrip	otion (Subca	tegory of Use):	Office Work						
Physical Form:			vapor						
Route of Exposure	e:		inhalation						
Exposure Concent	ration (Uni	t):	lower than esti	mated lir	nit of q	atification of 1 ppb			
Type of Sampling:	:		area						
Sampling Location	1:		general office						
Analytic Method:	Analytic Method: NIOSH Method 2549								
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliabi	ility								
	Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method 2549			
Domain 2: Repres	entative								
_	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Not an applicable work scenario			
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2003, 15 years old			
	Metric 5:	Sample Size	Low	$\times 1$	3	only indicated lower than LOD			
Domain 3: Access	ibility/Clari	tv							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Very basic metadata			
Domain 4: Variab	ility and Ur	ncertainty							
	Metric 7:	Metadata Completeness	Low	× 1	3	None addressing data			
Overall Quality Determination <sup><math>\dagger</math></sup>			Unacceptable		4	Metric Mean Score: 2.6.			
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		P	Personal P				
Source Citation:	Benaise, L. G., Harrison, J. M., Pearce, T. A Department of Health and Human Resource	2006. Health ces - Webster S	n hazard ev prings Dis	valuation rep strict Office.	port no. HETA-2003-0300-2993, West Virginia		
Type of Data Source	Occupational Exposure; Monitoring Data;						
Hero ID	3859371						
EVALUATION							
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		

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\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Love, J. F Washingto	R.,Kern, M 1981. Health haz	zard evalua	tion repo	ort no.	HETA-81-065-938, METRO Bus Maintenance Shop,		
Type of Data Source Hero ID	Occupation 3859376	nal Exposure; Monitoring Data;						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	ption (Subca	ategory of Use):	Dip tank	Cleaning				
Physical Form:			vapor					
Route of Exposur	e:		Inhalation	1				
Exposure Concent	tration (Uni	t):	None Det	ected				
Number of Sampl	es:		33					
Number of Sites:			1					
Worker Activity:			Painting a	and degre	easing p	parts at a bus maintenance shop		
Number of Worke	ers:		17					
Type of Sampling			personal,	area .	*** 1 1.	1 11 1		
Sampling Locatio	n:		ramit, Degreasing, weiding, and soldering rooms.					
Exposure Duratio	on:		Varies					
Exposure Frequer	icy:	t Euroque Poduction	Varies Dotton vo	ntilation		tad in all opportions		
Analytic Method:	roi & percei	it Exposure Reduction:	NIOSH M	Inthation	suggese 320	ted in an operations.		
Analytic Method.			MIOSII IV	lethou 5-	-329			
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	oility		TT· 1	1	-			
	Metric 1:	Methodology	High	× 1	1	NIOSH Method S-329		
Domain 9. Doma	antatina							
Domain 2: Repres	Motrie 2.	Coographic Scope	High	$\sim 1$	1	IIC		
	Metric 2.	Applicability	High	$^{\land 1}$ $^{\lor 2}$	1 9	US Workplage that has potential expecting to employees		
	Metric 4:	Temporal Representativeness	Low	$\sim 2$ $\times 2$	6	1081 37 years old and prior to most recent PEL		
	Metric 5:	Sample Size	High	$\times 1$	1	discrete samples given		
		Sample one		~ <b>1</b>	<u> </u>	access sumples given		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Missing exposure frequency and exposure duration per day but has other key metadata (sample type and exposure type)		
Continued on next page								

Source Citation:	Love, J. F Washingto	R.,Kern, M 1981. H n, DC.	ealth hazard e	evaluation re	port no.	HETA-81-065-938	, METRO Bus Maintenance Shop,
Type of Data Source	Occupation	nal Exposure; Monitori	ng Data;				
Hero ID	3859376						
EVALUATION							
Domain		Metric	Rat	ting MWF	Score		Comments
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completen	ess Low	· × 1	3	Not discussed.	
Overall Quality D	Determinatio	n†	Med	lium	1.8		

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\* MWF = Metric Weighting Factor

Source Citation:	n: Love, J. R., Kern, M. 1981. Health hazard evaluation report no. HETA-81-065-938, METRO Bus Maintenance Shop, Weakington DC								
Type of Data Source Hero ID	Occupatio 3859376	nal Exposure; Monitoring Data;							
EXTRACTION Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	otion (Subc	ategory of Use):	Painting						
Physical Form:	puon (puon		vapor						
Route of Exposur	e:		Inhalation	1					
Exposure Concent	tration (Uni	it):	None Det	ected					
Number of Sampl	es:		33						
Number of Sites:			1						
Worker Activity:			Painting a	and degre	easing p	parts at a bus maintenance shop			
Number of Worke	ers:		17						
Type of Sampling	;:		personal,	area					
Sampling Locatio	n:		Paint, Degreasing, Welding, and soldering rooms.						
Exposure Duratio	Exposure Duration:		varies Veries						
Exposure Frequer	ncy:		Varies						
Engineering Cont	rol & percei	nt Exposure Reduction:	Better ver	ntilation	suggese	eted in all operations.			
Analytic Method:			NIOSH M	letnod S-	329				
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Damain 1. Dallah	:1:4								
Domain 1: Kellad	Motrie 1.	Methodology	High	$\sim 1$	1	NIOSII Mathad C 220			
	metric 1.	Methodology	Ingn	× 1	1	NIOSH Method S-329			
Domain 2. Benree	sentative								
Domain 2. Ropro	Metric 2:	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1981. 37 years old and prior to most recent PEL			
	Metric 5:	Sample Size	High	$\times 1$	1	discrete samples given			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Missing exposure frequency and exposure duration per day but has other key metadata (sample type and exposure type)			
Continued on next page									

Source Citation:	Love, J. R Washingto	t.,Kern, M 1981. Health h	nazard evaluat	tion repo	ort no.	HETA-81-065-938, METRO Bus Maintenance Shop,
Type of Data Source Hero ID	Occupation 3859376	nal Exposure; Monitoring Data	a;			
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not discussed.
Overall Quality D	Determination	n†	Medium		1.8	

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\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	2017. Poll Occupatio 3860453	2017. Pollution prevention search results, envirofacts database. Occupational Exposure; Environmental Release Data; 3860453							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use):		Everythir Everythir	ng ng						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility								
	Metric 1:	Methodology	High	$\times 1$	1	Envirofacts, US EPA			
Domain 2: Repre	sentative								
Domain 2. Hopfo	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Many workplaces relating to the scope of this occupational sce- nario			
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	Variety of releases documented from 2015 and earlier.			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Variety of release numbers from various companies with details regarding industry and previous year's releases			
Domain 3: Access	sibility/Clar	itv							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Maybe a 2. Release data is quantified per year, but has some details about past year and process changes.			
Domain 4: Variat	Motrie 7	Metadata Completeness	Low	× 1	9	N. Comment			
	metric 7:	metadata Completeness	LOW	× 1	ა	no Comment.			
Overall Quality I	eterminatio	$\mathrm{n}^\dagger$	High		1.6				

\* MWF = Metric Weighting Factor

Source Citation:	1994. National emission standards for hazardous air pollutants: Halogenated solvent cleaning – Background information for final standards								
Type of Data Source	Occupatio	Occupational Exposure: Reports for Data or Information Other than Exposure or Release Data:							
Hero ID	3860538		01 111101111001010		in Enpo				
EXTRACTION									
Parameter			Data						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Demein 1. Delieb	:1:4								
Domain 1: Reliad	Motric 1.	Mathadalagy	Unaccontable	$\sim 1$	4	No methodology			
	metho 1.	Methodology	Unacceptable	~ 1	4	No methodology			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Discussion and Public Comment on 1994 NESHAP Halo- genated Solvent Rules			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1994			
	Metric 5:	Sample Size	Low	$\times 1$	3	no exposure data			
Domain 2. Accord	sibility /Clan	:+							
Domain 5. Access	Metric 6	Metadata Completeness	Unacceptable	× 1	4	no exposure data			
	Methe 0.	Metadata Completeness	enacceptable	~ 1	1				
Domain 4: Variab	oility and U	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	no exposure data			
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 3.2.			
••••			-						

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, three of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	1994. Che Occupation 3860545	1994. Chemical summary for methylene chloride (dichloromethane). Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3860545							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Descrij	ption (Subca	ategory of Use):	EPA Chemic	al Summ	ary				
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	EPA - though there is a line that states: No attempt has been made to verify information in these databases and secondary sourced.			
Domain 2: Repre	sentative								
Domani 2. Ropio	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	Low	$\times 2$	6	Overview of the DCM, production use, fate, etc.			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1994, 24 years old			
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No Comment.			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No Comment.			
Overall Quality D	Determinatio	$\mathrm{n}^\dagger$	Low		2.6				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	1991. Was Occupation 3860552	1991. Waste minimization assessment for a manufacturer of outdoor illuminated signs. Occupational Exposure; Monitoring Data; 3860552							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Descrip Physical Form:	otion (Subca	ategory of Use):	Use Sign Painting liquid						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	EPA study			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	Medium	$\times 2$	4	Workplace that has potential exposure to employees			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1991, 27 years old and prior to most recent PEL			
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	Unacceptable	$\times 1$	4	No sampling was done.			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No Comment.			
Overall Quality D	eterminatio	n <sup>†</sup>	Unacceptable		4	Metric Mean Score: 2.4.			

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:U.S, E. P. A 1995. Determination of landfill gas composition and pollutant emission rates at Fresh Kills Landfill.Type of Data SourceOccupational Exposure; Monitoring Data; 3970170								
EXTRACTION								
Parameter		Data						
Life Cruele Stame		Deat us						
Life Cycle Stage:	atomomy of Lico).	Fost-us	e					
Physical Form:	ategory of Use):	Landin						
Boute of Exposure:		inhalati	on					
Exposure Concentration (Uni	it):	ND - 11	000					
Number of Samples:		100+	noo ppin					
Number of Sites:		1						
Worker Activity:		None -	landfill					
Type of Sampling:		Area						
Sampling Location:		Landfill						
Exposure Duration:		Constar	nt					
Exposure Frequency:		Constar	Constant					
EVALUATION								
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Demoirs 1. Delishilitas								
Domain 1: Renability Motrie 1:	Methodology	Low	$\sim 1$	2	Nore Neted			
Metric 1.	Methodology	LOW	× 1	ა	Nofie Noted			
Domain 2: Representative								
Metric 2:	Geographic Scope	High	× 1	1	US			
Metric 3:	Applicability	Low	$\times 2$	6	Focuses on air quality leaving landfill			
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1995, 13 years old and prior to most recent PEL			
Metric 5:	Sample Size	Low	$\times 1$	3	Limited			
Domain 3: Accessibility/Clar	ity							
Metric 6:	Metadata Completeness	Low	$\times 1$	3	Limited			
Domain 4: Variability and Uncertainty			× 1	9	T 114 - 1			
	metadata Completeness	LOW	× 1	ა	Limited			
Overall Quality Determination	$\mathrm{on}^\dagger$	Low		2.8				
	Con	tinued or	next pa	ıge				

	continued from previous page							
Source Citation: Type of Data Source Hero ID	U.S, E. P. A. 1995. Determination of la Occupational Exposure; Monitoring Data 3970170	ndfill gas c a;	ompositio	on and pol	lutant emission rates at Fresh Kills Landfill.			
EVALUATION								
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			

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\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	ToxNet Hazardous Substances Data, Bank. 2017. HSDB: Methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3970276							
EXTRACTION			_					
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descri	otion (Subca	ategory of Use):	All					
Number of Worke	ers:		$1,\!438,\!196$	workers	in USA	1981-1983		
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1, Polish	;1;+							
Domain 1. Kenau	Metric 1.	Methodology	High	$\times 1$	1	HSDB (per NOFS 1081 1083)		
	Meetile 1.	Wethodology	IIIgii	~ 1	1	(bei 10E5 1361-1365)		
Domain 2: Repre	sentative							
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Medium	$\times 2$	4	Total workers in USA		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1981-1983		
	Metric 5:	Sample Size	Low	$\times 1$	3	no exposure data		
Domain 2. Accord	alle:liter/Class	:						
Domain 5: Access	Metric 6:	Metadata Completeness	Low	× 1	3	no exposure data		
	11100110 01	inetadata compretences	1011					
Domain 4: Variat	oility and U	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	no exposure data		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation:	Kanwal, R., Boylstein, R. J 2006. Health hazard evaluation report no. HETA 2006-0059-3009, DaimlerChrysler Jefferson North Assembly Plant, Detroit, Michigan						
Type of Data Source Hero ID	Occupatio 3970547	nal Exposure; Monitoring Data;					
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Use	.1	1. 1		
Dire Cycle Descrip	otion (Subca	ategory of Use):	Automob	ne assem	biy		
P hysical Form. Boute of Exposur	۵.		Inhalation	n			
Exposure Concent	tration (Uni	t).	0.001 ppr	n			
Worker Activity:			Field blaı	nks for m	anual w	velding, welding repair	
						G) and G T	
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1, Poliah	:1:+						
Domain 1. Kenab	Metric 1:	Methodology	High	$\times 1$	1	NIOSH	
			0				
Domain 2: Repres	sentative						
	Metric 2:	Geographic Scope	High	$\times 1$	1	US	
	Metric 3:	Applicability	Medium	$\times 2$	4	autmotive assembly	
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2006	
	Metric 5:	Sample Size	High	$\times 1$	1	Individual data points	
Domain 3: Access	ibility/Clar	ity					
Domain 0. Meees.	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	instantaneous sample	
Domain 4: Variab	ility and U	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	no discusion of uncertainty and variability	
		1					
Overall Quality D	eterminatio	n'	Medium		1.8		

\* MWF = Metric Weighting Factor

Source Citation:	Tubbs, R. L., Miller, A. K. 1994. Health hazard evaluation report no. HETA 93-0608-2423 Unitron Industires, Inc., P Huron Michigan							
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 3970555							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	otion (Subca	ategory of Use):	Hearing a	id mold :	making			
Physical Form:			liquid, va	por				
Route of Exposur	e:		inhalation	1				
Exposure Concent	tration (Uni	t):	9.76-74.60	) ppm				
Number of Sampl	es:		4					
Number of Sites:			1					
Type of Measurer	nent or Met	hod:	TWA					
Worker Activity:			Hearing a	id mold	making			
Number of Worke	ers:		12					
Type of Sampling	:		personal					
Sampling Location	n:		hearing aid mold making areas					
Exposure Duratio	on:		8 hour shift					
Exposure Frequen	ncy:		daily					
Engineering Contr	rol & percer	it Exposure Reduction:	exhaust fans NIOCH Matha la 1002					
Analytic Method:			NIOSH M	letnods 1	.003			
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
	•1•4							
Domain 1: Reliab	Meterie 1	Mathadala	TT:1.	1	1			
	Metric 1:	Methodology	High	× 1	1	NIOSH Methods 1003,		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1994, 24 years old and prior to most recent PEL		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Were not provided with each data point		
Domain 3: Access	sibility/Clari	ity						
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Basic Meta data given.		
		Con	tinued on r	ext page	:			

Source Citation:	Tubbs, R. L.,Miller, A. K 1994. Healt Huron, Michigan.	h hazard eva	luation	report no	o. HETA 93-0608-2423 Unitron Industires, Inc., Port
Type of Data Source	Occupational Exposure; Monitoring Data	ι;			
Hero ID	3970555				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 4: Variab	ility and Uncertainty Metric 7: Metadata Completeness	Medium	$\times 1$	2	Uncertainty addressed in NIOSH Method
Overall Quality D	$\operatorname{Petermination}^{\dagger}$	Medium		1.8	

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\* MWF = Metric Weighting Factor

Source Citation:	Litation: Kiefer, M., Driscoll, R. J 1998. Health hazard evaluation report no. HETA 97-0185-2675, McGregor Loudspeaker Manufac- turing Company, Prarie du Chien, Wisconsin							
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 3970559							
EXTRACTION								
Parameter	Data							
Life Cycle Stage			Uso					
Life Cycle Descrip	tion (Subca	tegory of Use).	Loudspea	ker Man	ufacture	2		
Exposure Concent	ration (Uni	t).	0-LOD	act man	unacture	~		
Number of Sample	s.		21					
Number of Sites:			1					
Type of Measurem	ent or Met	hod:	TWA					
Worker Activity:			Speaker A	Assembly	variou	s		
Number of Worker	s:		160	v	,			
Type of Sampling:			Personal					
Sampling Location	Sampling Location:							
Exposure Duration	n:		workday					
Exposure Frequence	cy:		continuous					
PPE:			infrequent glove use					
Analytic Method:			NIOSH 1	300, 1500	), 1005 s	and/or 1501		
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliabi	lity							
	Metric 1:	Methodology	High	$\times 1$	1	NIOSH 1300, 1500, 1005 and/or 1501		
Domain 2. Repres	entative							
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	1998, 20 years old but after most recent PEL		
	Metric 5:	Sample Size	High	$\times 1$	1	Data is well characterized.		
	1.11. (01							
Domain 3: Accessi	bility/Clari	ity	TT: 1	1	1	~		
	Metric 6:	Metadata Completeness	Hıgh	$\times 1$	1	Complete Metadata		
Domain 4: Variabi	lity and Ur	ncertainty						
		Con	tinued on 1	next page	<u>)</u>			

Source Citation:	Kiefer, M.,Driscoll, R. J 1998. Health hazard evaluation report no. HETA 97-0185-2675, McGregor Loudspeaker Manufac- turing Company, Prarie du Chien, Wisconsin.								
Type of Data Source	Occupation	nal Exposure; Monitoring Da	ata;						
Hero ID	3970559								
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	EPA methods used discuss variability and uncetainty.			
Overall Quality I	Determination	$\mathrm{n}^\dagger$	High		1.3				

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\* MWF = Metric Weighting Factor

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Source Citation:	McCammon, C. 1990. Health hazard evaluation report no.HETA 89-199-2033, Enesco, Inc., Rocky Mountain Analytical Laboratory, Arvada, Colorado.								
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 3970566								
EXTRACTION Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrit	otion (Subca	tegory of Use):	Standard	s Prepara	tion (I	(aboratory)			
Physical Form:	(		vapor		(				
Route of Exposur	e:		Inhalatio	n					
Exposure Concent	tration (Uni	t):	.8-8.5ppn	n with pe	ak at 4	.000ppm			
Number of Sampl	es:	,	23 breath	ning zone,	2 area				
Number of Sites:			1						
Type of Measurer	ment or Met	hod:	TWA and	d short te	$\mathbf{rm}$				
Worker Activity:			Standard	s prepara	tion				
Type of Sampling			Personal,	Area					
Sampling Location	n:		Waste D	ump, Was	sh Sink	, Sample Storage Refrigerators			
Exposure Duratio	on:		8 hour shift						
Exposure Frequer	ncy:		Varies						
Engineering Cont	rol & percer	t Exposure Reduction:	Laboratory Hood Fans						
PPE: Analytia Mathada			Varies						
Analytic Method:			NIOSII Methods						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility								
Domain 1, 100nuo	Metric 1:	Methodology	High	$\times 1$	1	NIOSH Methods			
			0						
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1989, 29 years old and prior to most recent PEL $$			
	Metric 5:	Sample Size	High	$\times 1$	1	Data is well characterized.			
Domain 3: Access	sibility/Clari	ity							
	Metric 6:	Metadata Completeness	High	$\times 1$	1	Complete Metadata			
Continued on next page									

				•			
Source Citation:	McCammo	on, C 1990. Health h	nazard evaluation re	port no.	HETA 8	89-199-2033, Enesco, Inc., Rocky Mountain Analytical	
	Laboratory, Arvada, Colorado.						
Type of Data Source	Occupational Exposure; Monitoring Data;						
Hero ID	3970566	<b>x</b> ,	<u> </u>				
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	$\mathbf{Score}$	Comments	
Domain 4: Variability and Uncertainty							
	Metric 7:	Metadata Completene	ess Low	$\times 1$	3	Variability and uncertainty not discussed.	
Overall Quality D	Determination	$\mathbf{n}^{\dagger}$	Medium		1.7		

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\* MWF = Metric Weighting Factor

Source Citation:	Burr, G. A., Richardson, F. D., 1988. Health hazard evaluation report no. HETA 87-250-1888, GTE Products Corporation, Williamsport, Pennsylvania.							
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 3970567							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Description (Subcategory of Use):			SEM Assembly and Testing					
Physical Form:			vapor		0			
Route of Exposur	e:		Inhalation	Inhalation				
Number of Samples:			0, looked at company's previous IH sampling data					
Number of Sites:			1					
Number of Worke	ers:		45					
Analytic Method:			Accepted Industrial Hygiene Procedures					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	oility				0			
	Metric 1:	Methodology	Low	$\times 1$	3	Accepted Industrial Hygiene Procedures		
Domain 2: Benre	sentative							
Domain 2. Repres	Metric 2.	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1988. 30 years old and prior to most recent PEL		
	Metric 5:	Sample Size	Low	$\times 1$	3	Only referenced results from a private industrial hygenist, but		
						no specific samples mentioned.		
Domain 2. Accossibility (Clarity								
Domain 5. Access	Metric 6:	Metadata Completeness	Unacceptable	$\times 1$	4	A couple points of data were pulled from private IH dataset, but with no background data.		
Domain 4: Variab	т	1	0					
	Metric 7:	Metadata Completeness	Low	× 1	3	Variability and uncertainty not discussed.		
Overall Quality Determination <sup><math>\dagger</math></sup>			Unacceptable		4	Metric Mean Score: 2.4.		
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Source Citation:	Burr, G. A.,Richardson, F. D., 1988. Health hazard evaluation report no. HETA 87-250-1888, GTE Products Corporation, Williamsport, Pennsylvania.					
Type of Data Source	Occupational Exposure; Monitoring Data;					
Hero ID	3970567					
EVALUATION						
Domain	Metric	Rating	$MWF^*$	Score	Comments	

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\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: H t Type of Data Source	Kiefer, M.,Driscoll, R. J 1998. Health hazard evaluation report no. HETA 97-0185-2675, McGregor Loudspeaker Manufac- turing Company, Prarie du Chien, Wisconsin, Part 2. Occupational Exposure; Monitoring Data;													
Hero ID 3	8970568													
EXTRACTION														
Parameter			Data											
Life Cycle Stage:			Use											
Life Cycle Description (Subcategory of Use):			Solvent use											
Physical Form:			Vapor											
Route of Exposure:	<i>(</i>		Inhalation	n										
Exposure Concentra	ation (Uni	t):	conc. bel	ow detect	able lin	nit								
Number of Samples	:		11											
Number of Sites:		, ,												
Type of Measureme	nt or Met	hod:	TWA Crosslean /											
Worker Activity:			Speaker F	Assembly										
Type of Sampling:	Number of Workers:													
Sampling Location:	Type of Sampling:			reisonal, Alea workers on the assembly line										
Exposure Duration:			8 hour shift											
Exposure Frequency	· ·		M-F											
Analytic Method:	•		NIOSH Methods											
EVALUATION														
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments								
יויויו חויי ח														
Domain 1: Reliabili	ty Tatala 1	Matha dala ma	II:l.	1	1									
I	Metric 1:	Methodology	High	× 1	1	NIOSH method								
Domain 2. Bepreser	ntative													
Domain 2. Represer	Metric 2.	Geographic Scope	High	× 1	1	US								
Ĩ	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees								
-	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	1997. 21 years old but after most recent PEL								
Ν	Metric 5:	Sample Size	High	$\times 1$	1	11 samples taken								
Domain 3: Accessib	ility/Clari	ity												
Metric 6: Metadata Completeness			Medium	$\times 1$	2	Was not documented how long workers were working with Methylene Chloride.								
		Cor	tinued on r	next page										
Source Citation:	Kiefer, M.,Driscoll, R. J., 1998. Health h turing Company, Prarie du Chien, Wisco	Kiefer, M.,Driscoll, R. J 1998. Health hazard evaluation report no. HETA 97-0185-2675, McGregor Loudspeaker Manufac- turing Company, Prarie du Chien, Wisconsin, Part 2. Occupational Exposure; Monitoring Data;												
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Type of Data Source	Securational Exposure, Monitoring Data,													
Hero ID	3970568													
EVALUATION														
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments									
Domain 4: Variab	pility and Uncertainty Metric 7: Metadata Completeness	Medium	$\times 1$	2	Expressed uncertainty regarding conditions at different times of the year.									
Overall Quality I	High		1.4											

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\* MWF = Metric Weighting Factor

Source Citation:	Reh, C. M Illinois.	.,Lushniak, B. D 1990. Healt	h hazard e	valuation	report	no. HETA 87-350-2084, Trailmobile, Inc., Charleston,						
Type of Data Source Hero ID	Occupation 3970570	nal Exposure; Monitoring Data;										
EXTRACTION			_									
Parameter			Data									
Life Cycle Stage:			Use									
Life Cycle Descrip	otion (Subca	tegory of Use):	Polyureth	nane Foar	n Blowi	ng						
Physical Form:	(		Liquid, v	apor		0						
Route of Exposure	e:		Inhalatio	n								
Exposure Concent	tration (Uni	t):	1.3-5.1 pp	om								
Number of Sample	es:		5									
Number of Sites:			1									
Worker Activity:			foam ope	rators								
Type of Sampling	:		Personal									
Sampling Location	n:		Foaming	Foaming								
Exposure Duratio	n:		8 hour sh	8 hour shift								
PPE:			Coveralls	, Gloves,	half fac	e respirators with organic vapor cartridges						
Analytic Method:			NIOSH N	lethod 1	005							
EVALUATION												
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments						
Domain 1: Reliab	ility											
	Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method 1005						
Domain 9. Domas	antatina											
Domain 2: Repres	Motria 2:	Coographic Scope	High	$\vee 1$	1	TIC .						
	Metric 3:	Applicability	High	$^{\wedge 1}$ $^{\vee 2}$	2	Workplace that has potential exposure to employees						
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990 28 years old and prior to most recent PEL						
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given						
		r	0									
Domain 3: Access	ibility/Clari	ity										
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Not clear how frequently foaming operation (exposure activity) is being done.						
Domain 4: Variab	ility and Ur	ncertainty										
		Con	tinued on i	next page	9							

Source Citation:	Reh, C. M Illinois.	.,Lushniak, B. D	1990. Hea	lth hazard ev	aluation	report	no. HETA 87-350-2084, Trailmobile, Inc., Charle	eston,						
Type of Data Source	Occupation	nal Exposure; Monit	toring Data	a;										
Hero ID	3970570	0570												
EVALUATION														
Domain		Metric		Rating	$\mathrm{MWF}^{\star}$	Score	Comments							
	Metric 7:	Metadata Comple	teness	Medium	$\times 1$	2	Unceratainty addressed in NIOSH Method							
Overall Quality D		Medium		1.7										

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\* MWF = Metric Weighting Factor

Source Citation:	Kiefer, M. Warner Bo	Bresler, F.,Salisbury, 1993. H	lealth hazard eva	aluation	report 1	no. HETA 92-0101-2341, Robins Air Force Base,						
Type of Data Source Hero ID	Occupation 3970572	nal Exposure; Monitoring Data;										
EXTRACTION												
Parameter			Data									
Life Cycle Stager			TT									
Life Cycle Stage:	tegory of Use).	Degreasing and	l Metal (	leaning	o for Aircraft							
Number of Sites:		tegory of ese).	1	i Mictai (	Jicannie	, for Aneran						
EVALUATION												
Domain		Metric	Rating $MWF^*$ Score			Comments						
Domain 1: Boliah	ility											
	Metric 1:	Methodology	Unacceptable	$\times 1$	4	Does not test for Methylene Chloride						
Domain 2: Repres	sentative											
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US						
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Methylene Chloride not referenced.						
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993, 25 years old and prior to most recent PEL						
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.						
Domain 3: Access	sibility/Clar	ity										
	Metric 6:	Metadata Completeness	Unacceptable	× 1	4	No Comment.						
Domain 4: Variab	oility and Ur	ncertainty										
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.						
Overall Quality Determination <sup>†</sup>			Unacceptable		4	Metric Mean Score: 3.2.						

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, three of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Harney, J. company, 7	Harney, J. M., Hess, J., Reh, C. M., Trout, D 2002. Health hazard evaluation report no. HETA 2000-0410-2891, STN Cusion company, Thomasville, North Carolina.												
Type of Data Source Hero ID	Occupation 3970574	nal Exposure; Monitoring Data;												
EXTRACTION														
Parameter			Data											
Life Could Sterry			TT											
Life Cycle Stage:	togory of Use).	Use Sofa Cushiona												
Number of Sites:	Number of Sites:													
Number of Sites.			T											
EVALUATION														
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments								
	•1•,													
Domain 1: Reliab	Motrie 1.	Mathadalam	Unaccontable	~ 1	4									
	Metric 1:	Methodology	Unacceptable	X 1	4	Does not test for Methylene Chloride								
Domain 2: Repres	sentative													
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US								
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Methylene Chloride not referenced.								
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2002, 16 years old								
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.								
	.1.1	•,												
Domain 5: Access	Matria 6	Notadota Commistenada	Unaccontable	V 1	4									
	Metric 0:	Metadata Completeness	Unacceptable	× 1	4	No Comment.								
Domain 4: Variab	oility and Ur	ncertainty												
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.								
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Unacceptable		4	Metric Mean Score: 3.0.								

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, three of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Bicknell, R.,McManus, K. P.,Kaiser, E. A.,Konig, J. Fidler A. T., 1989. Health hazard evaluation report no. HETA 87-075- 1988, American cyanamid, Wallingford, Connecticut.
Type of Data Source	Occupational Exposure; Monitoring Data;
Hero ID	3970576

#### EXTRACTION Parameter

Parameter	Data
Life Cycle Stage:	Use
Life Cycle Description (Subcategory of Use):	Epoxy carrier (5 percent by volume), used on graphite fibers
Physical Form:	Vapor
Route of Exposure:	Inhalation
Exposure Concentration (Unit):	Air Concentration from $13.9-74.4 \text{ mg/m}$ . Respirators were used so does
	not represent worker exposure
Number of Samples:	6 Breathing Zone, 8 area
Number of Sites:	1
Type of Measurement or Method:	8 hr TWA
Worker Activity:	Accessing mixing booth and sizing tanks that contain methylene chloride
Number of Workers:	56 participated in study, 19 currently exposed, 6 previously exposed.
Type of Sampling:	Personal, Area
Sampling Location:	8 locations around process unit
Exposure Duration:	Various
Exposure Frequency:	Not on daily basis, but as needed for special orders
Engineering Control & percent Exposure Reduction:	Air Supplied Respirators
PPE:	Hard Hat, Glasses, Safety Shoes, Air Supplied Respirators, Gloves, Dis-
	posable Coveralls, and Aprons
Analytic Method:	NIOSH 1003

#### **EVALUATION**

EVALUATION						
Domain	Metric	Rating	$MWF^*$	Score	Comments	
Domain 1: Reliability						
Metric 1:	Methodology	High	$\times 1$	1	NIOSH 1003	
Domain 2: Representative						
Metric 2:	Geographic Scope	High	$\times 1$	1	US	
Metric 3:	Applicability	High	$\times 2$	2	metal coated fibers	
Metric 4:	Temporal Representativeness	Low	$\times 2$ 6 1989, 28 years old and prior to most recent PEL			
	Cor	tinued on a	next page	;		

Source Citation:	Bicknell, F	R., McManus, K. P., Kaiser, E.	A.,Konig, J. 1	Fidler A.	T. 198	89. Health hazard evaluation report no. HETA 87-075-
	1988 Ame	erican cyanamid Wallingford	Connecticut			1
Type of Data Source	Occupation	nal Erroguno: Monitoring Dat				
Type of Data Source	Occupatio	nai Exposure; Monitoring Dat	a,			
Hero ID	3970576					
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
	Metric 5: Sample Size					Sampling was done from a variety of places and workers, but only on one occasion.
Domain 3: Access	sibility/Clar	ity				
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	all methods and equipment used are described and seem legit-
						Imate
Domain 4: Variat	oility and Ui	ncertainty				
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Variability and uncertainty not discussed.
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		1.8		
• 0						

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\* MWF = Metric Weighting Factor

PEER REVIEW	<sup>7</sup> DRAFT -	DO NOT	CITE OR	QUOTE
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Source Citation:	Ahrenholz Springs Co	, S. H	1980.	Health	hazard	evaluation	n report	t no.	HHE 80-18-691	, Looart	Press	Incorporate,	Colorado	
Type of Data Source Hero ID	Occupation 3970580	nal Expos	sure; Mo	nitoring	Data;									
EATRACTION Parameter						Data								
						Data								
Life Cycle Stage:						Use								
Life Cycle Descri	ption (Subca	ategory of	Use):			Printing F	Plate Cle	aning						
Physical Form:	Physical Form:							0						
Route of Exposur	e:					Inhalation	L							
Exposure Concen	tration (Uni	t):				$17 \text{mg/M}\hat{3}$								
Number of Sampl	les:	,				2								
Number of Sites:						1								
Type of Measurer	ment or Met	hod:				TWA								
Worker Activity:						Cleaning t	the step	and rep	beat machine					
Number of Workers:						4								
Type of Sampling:						Personal								
Sampling Locatio	n:					workers using the step and repeat machine								
Exposure Duratic	on:					Unkown								
Exposure Frequer	ncy:					once/day								
Analytic Method:						NIOSH P&CAM 127								
EVALUATION														
Domain			Metr	ric		Rating	$\rm MWF^{\star}$	Score		С	ommen	its		
Domain 1. Daliah	:1:4													
Domain 1: Kellan	Motrio 1.	Mathad	alamr			II: mb	× 1	1	NIOGU DI GAN	F 107				
	Metric 1:	method	ology			IIIgii	× 1	1	NIOSH P&CAN	1 127				
Domain 2. Benre	sentative													
	Metric 2	Geogram	phic Sco	ne		High	× 1	1	data from US					
	Metric 3:	Applica	hility	po		High	$\times 2$	2	Workplace that	has notenti	ial expo	sure to employe	265	
	Metric 4:	Tempor	al Repre	esentative	eness	Low	$\times 2$	6	1980. 37 years of	ld, and pric	or to me	ost recent PEL		
	Metric 5:	Sample	Size			High	$\times 1$	1	discrete data gi	zen				
		*				2								
Domain 3: Access	sibility/Clar	ity												
	Metric 6:	Metadat	ta Comp	oleteness		Medium	$\times 1$	2	Most metadata	given, missi	ng expo	sure frequency a	and duration	
					<i>a</i>	1								

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Source Citation:	Ahrenholz, Springs,Co	, S. H lorado.	1980.	Health	hazard	evaluation	report	no.	HHE	80-18-691,	Looart	Press	Incorpo	rate, Co	lorado
Type of Data Source Hero ID	Occupation 3970580	nal Expos	ure; Mo	onitoring	Data;										
EVALUATION															
Domain	Metric					Rating	$MWF^{\star}$	Score		Comments					
Domain 4: Variability and Uncertainty Metric 7: Metadata Completeness						Medium	$\times 1$	2	Unc	ertainty addr	essed in N	NIOSH 1	Method		
Overall Quality Determination <sup><math>\dagger</math></sup>						Medium		1.7							

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\* MWF = Metric Weighting Factor

Source Citation:	Sussell, A.	L.,Lushniak, B. D., 1990. Hea	lth hazard	evaluatio	n repor	t no. HETA 90-172-2076, Bussman/Cooper Industries,				
Type of Data Source Hero ID	Type of Data Source Occupational Exposure; Monitoring Data; Hero ID 3970589									
EXTRACTION										
Parameter			Data							
Life Cruele Stame			Uae							
Life Cycle Stage:	ion (Suba	togory of Use).	Use Drint Bol	lor Close	ing					
Physical Form:	ion (Subca	tegory of Use).	Liquid /V	apor	iing					
Boute of Exposure			Inhalation	n						
Exposure Concentr	ation (Uni	t).	4 02-4 24	mø/mĝ						
Number of Samples	8:		2	1116/1110						
Number of Sites:			1							
Worker Activity:			Clean Pri	nt Roller	s					
Number of Workers	Number of Workers:									
Type of Sampling:	Type of Sampling:									
Sampling Location:	Sampling Location:			Blister Pack Machine						
Exposure Duration	:		8 hrs							
Exposure Frequenc	y:		varies							
Analytic Method:			NIOSH N	lethod 1	500					
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliabil	ity									
	Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method 1500 (on review, it seems this method is not currently used for Methylene Chloride).				
Domain 2: Represe	ntative									
Domain 2. Represe	Metric 2:	Geographic Scope	High	$\times 1$	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990, 28 years old and prior to most recent PEL				
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given				
Domain 3: Accessil	oility/Clar	ity								
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Unclear how frequently workers are performing part cleaning activities				
		Cor	ntinued on r	next page	è					

Source Citation:	Sussell, A. MPH, Eliz	Sussell, A. L.,Lushniak, B. D., 1990. Health hazard evaluation report no. HETA 90-172-2076, Bussman/Cooper Industries, MPH, Elizabethtown, Kentucky.							
Type of Data Source	Occupation	Occupational Exposure: Monitoring Data:							
Hero ID	3970589	3970589							
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Variability and uncertainty not discussed.			
		1				0 0			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.8				

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\* MWF = Metric Weighting Factor

Source Citation:	Ruhe, R. I Collegeville	. Health hazard evaluation report no. HHE 80-49-808, Superior Tube Company,						
Type of Data Source Hero ID	Occupation 3970617	nal Exposure; Monitoring Data;						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Uso					
Life Cycle Descrit	otion (Subca	tegory of Use):	Vapor De	greasing				
Physical Form:			Liquid, va	apor				
Route of Exposur	e:		Inhalatio	n				
Exposure Concent	tration (Uni	t):	undetecta	able - 141	$mg/M\hat{3}$			
Number of Sampl	es:	,	6 breathi	ng zone,	1 area s	ample		
Number of Sites:			1					
Type of Measurer	ment or Met	hod:	8-hour T	WA and s	short te	rm		
Worker Activity:			operators					
Type of Sampling	:		Personal,	Area				
Sampling Location	n:		Hot and cold degreasers					
Exposure Duratio	n:		Assumed 8 hour shift					
Exposure Frequen	icy:		varies					
Engineering Cont	rol & percer	t Exposure Reduction:	Suggests new ventilation system.					
Analytic Method:			NIOSH P	& CAM	127			
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility		TT' 1	1	1			
	Metric 1:	Methodology	Hign	× 1	1	NIOSH Method P & CAM 127		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1980, 38 years old and prior to most recent PEL		
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given		
Domain 3: Access	sibility/Clari	ity	N. 1.	1	0			
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Unclear how trequently workers are performing degreasing ac- tivities		
Continued on next page								

			1	1.9.	
Source Citation:	Ruhe, R. L., Watanabe, A., Stein, G., 1981. Collegeville, Pennsylvania.	. Health l	nazard ev	aluation	n report no. HHE 80-49-808, Superior Tube Company,
Type of Data Source	Occupational Exposure; Monitoring Data;				
Hero ID	3970617				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 4: Variab	ility and Uncertainty Metric 7: Metadata Completeness	Medium	× 1	2	Uncertainty addressed in NIOSH Method
	*				
Overall Quality D	$etermination^{\dagger}$	Medium		1.7	

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\* MWF = Metric Weighting Factor

Source Citation:	Vandervort, R., Polakoff, P. L. 1973. Health hazard evaluation report no. HHE 72-84-31, Dunham-Bush, Incroprated, West Hartford Connecticut Part 2							
Type of Data Source Hero ID	Occupatio 3970657	nal Exposure; Monitoring Data;						
	0010001							
Parameter			Data					
			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	otion (Subca	ategory of Use):	Spray Pai	nting				
Physical Form:			aerosol					
Route of Exposure	e:		inhalation	L				
Exposure Concent	tration (Uni	it):	1-74 mg/1	n3				
Number of Sample	es:		Area: 15F	ersonal:	28			
Number of Sites:				,	,	41		
Worker Activity:	_		Spray par	nting in s	spray b	ootns		
Type of Sampling	: 		personal,	area +b				
Sampling Location			spray boo	611				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Damain 1. Daliah	:1:4							
Domain 1: Reliab	Metric 1:	Methodology	High	$\times 1$	1	Method described and NIOSH HHE; therefore, assumed to be a NIOSH method		
Domain 9. Donna	antatina							
Domain 2: Repres	Motric 2.	Geographic Scope	High	$\times 1$	1	116		
	Metric 2.	Applicability	High	$^{\land 1}$ $^{\lor 2}$	2	Workplace that has potential exposure to employees		
	Metric 4.	Temporal Representativeness	Low	$\times 2$	6	1977 41 years old and prior to most recent PEL		
	Metric 5:	Sample Size	High	× 1	1	discrete data given		
		r r r	0					
Domain 3: Access	ibility/Clar	ity						
	Metric 6:	Metadata Completeness	High	$\times 1$	1	Complete Metadata		
<b>.</b>								
Domain 4: Variab	ility and U	ncertainty	т	1	9			
	Metric 7:	Metadata Completeness	Low	× 1	3	No uncertainty addressed		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.7			
		Con	tinued on r	ext page				

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Source Citation:	Vandervort, R.,Polakoff, P. L. 197 Hartford, Connecticut, Part 2.	73. Health hazard evaluation report no. HHE 72-84-31, Dunham-Bush, Incroprated	l, West
Type of Data Source	Occupational Exposure; Monitoring	ng Data;	
Hero ID	3970657		
EVALUATION			
Domain	Metric	Rating $MWF^{\star}$ Score Comments	

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\* MWF = Metric Weighting Factor

Source Citation:	Vandervort, R., Polakoff, P. L. 1973. Health hazard evaluation report no. HHE 72-84-31, Dunham-Bush, Incroprated, West Hartford Connecticut Part 2							
Type of Data Source	Occupatio	nal Exposure; Monitoring Data;						
Hero ID	3970657							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	ption (Subc	ategory of Use):	Spray Pa	inting				
Physical Form:			aerosol	0				
Route of Exposur	e:		inhalation	n				
Exposure Concen	tration (Un	it):	1-74 mg/	m3				
Number of Sampl	les:		Area: 15	Personal:	28			
Number of Sites:			1					
Worker Activity:			Spray pa	inting				
Type of Sampling	g:		personal,	area				
Sampling Locatio	n:		spray boo	$\operatorname{oth}$				
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Beliah	vility							
	Metric 1:	Methodology	High	$\times 1$	1	Method described and NIOSH HHE; therefore, assumed to be a NIOSH method		
Domain 2: Benre	sentative							
Domani 2. Ropio	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1977, 41 years old and prior to most recent PEL		
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given		
Domain 3: Access	sibility/Clar	Nete dete Generaleter ere	TT:l.	<b>1</b>	1			
	Metric 6:	Metadata Completeness	High	× 1	1	Complete Metadata		
Domain 4: Varial	pility and U	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	None addressing data		
		<u>^</u>						
Overall Quality I	Determinatio	$\mathrm{on}^{\dagger}$	Medium		1.7			
Continued on next page								

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Source Citation:	Vandervort, R.,Polakoff, P. L. 1973 Hartford, Connecticut, Part 2.	Health hazard evaluation report no. HHE 72-84-31, Dunham-Bush, Incropr	ated, West
Type of Data Source	Occupational Exposure; Monitoring	Data;	
Hero ID	3970657		
EVALUATION			
Domain	Metric	Rating MWF* Score Comments	

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\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Echa,. 201 Occupation 3970727	7. Uses at industrial sites: Dich nal Exposure; Monitoring Data;	loromethane.			
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Manufacturo I	Teo and	Evnosu	ro Boviow
Physical Form:			Varies	JSC, and	Exposu	
Route of Exposur	e:		Varies			
Worker Activity:			Varies			
EVALUATION						
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments
Damain 1. Daliah	:1:					
Domain 1: Kellad	Metric 1:	Methodology	Unacceptable	$\times 1$	4	No Comment.
		87	I IIIII			
Domain 2: Repres	sentative					
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	European Chemicals Agency
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Synopsis of where the chemical is used, not an occupational scenario
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	No Comment.
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.
Domain 3: Access	zibility/Clar	ity				
Domain 5. Access	Metric 6:	Metadata Completeness	Unacceptable	$\times 1$	4	No Comment.
		X	1			
Domain 4: Variab	oility and U	ncertainty				
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.
		+				
Overall Quality D	eterminatio	'n'	Unacceptable		4	Metric Mean Score: 3.3.

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, three of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Echa,. 201 Occupation 3970728	7. Uses by professional workers: nal Exposure; Monitoring Data;	Dichloromethan	ie.		
EXTRACTION						
Parameter			Data			
				- 1	Б	
Life Cycle Stage:			Manufacture, U	Jse, and	Exposu	re Review
Physical Form:			Varies			
Worker Activity	e:		Varies			
worker Activity:			varies			
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Damain 1. Daliah	:1:4					
Domain 1: Reliad	Metric 1:	Methodology	Unacceptable	× 1	4	No Comment.
Domain 2: Repres	sentative					
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	European Chemicals Agency
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Synopsis of where the chemical is used, not an occupational scenario
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	No Comment.
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.
Damain 2. Assess	:1::1::/Cl	·				
Domain 3: Access	Motrie 6	Motadata Completeness	Unaccontable	$\sim 1$	4	No Comment
	Metric 0.	Metadata Completeness	Unacceptable	× 1	4	No Comment.
Domain 4: Variab	ility and Ur	ncertainty				
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 3.3.

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, three of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Niosh, 19 Occupation 3974864	Niosh, 1978. Occupational health guideline for methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3974864						
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure:			Use Health Guidline liquid, vapor inhalation, dermal, ingestion					
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA		
Domain 2: Repres	sentative		TT· 1	1	-			
	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	Low	$\times 2$	6	Occupational Health Guidline for Methylene Chloride in the workplace.		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1978, 40 years old		
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.		
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Medium	× 1	2	Well documented, but little to no citations inline with the text.		
Domain 4: Variab	ility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	N/a		
Overall Quality Determination <sup>†</sup>		Low		2.4				

\* MWF = Metric Weighting Factor

Source Citation:Niosh, 1980. Extent of exposure survey of methylene chloride.Type of Data SourceOccupational Exposure; Monitoring Data;Hero ID3974901							
EXTRACTION							
Parameter		Data					
Life Creek Sterre		II					
Life Cycle Stage:	tomore of Lize).	Deint Stu					
Physical Form:	aregory of Use).	Faint Str.	npping				
Boute of Exposure:		inhalation	por				
Exposure Concentration (Uni	t).	Personal	157-26	38 nnm	(avg conc 64 ppm)		
Number of Samples:		Personal:	12.12	o ppm	(avg. conc. of ppin)		
Number of Sites:		1	12				
Type of Measurement or Met	hod:	8 Hour T	WA				
Worker Activity:		Stripping	paint				
Number of Workers:		106	•				
Type of Sampling:		personal					
Sampling Location:		around ai	rcraft				
Exposure Duration:		8 hr/day					
Exposure Frequency:		everyday					
Engineering Control & percer	nt Exposure Reduction:	Better ventilation in new facility					
PPE:		Coveralls, monogoggles, rubber gloves, etc.					
Analytic Method:		NIOSH S	239				
EVALUATION							
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliability							
Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method		
Domain 2: Representative							
Metric 2:	Geographic Scope	High	$\times 1$	1	US		
Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
Metric 4: Temporal Representativeness		Low	$\times 2$	6	1980, 38 years old and prior to most recent PEL		
Metric 5: Sample Size		High	$\times 1$	1	Excellent charcterization of all measurements and data points		
Domain 3: Accessibility/Clar	ity						
Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Durations of shifts/exposure were not completely captured		
	Cor	tinued on r	next page	) )			

Source Citation: Type of Data Source Hero ID	Niosh, 1980. Extent of exposure sur Occupational Exposure; Monitoring I 3974901	vey of methylene Data;	chloride.		
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 4: Variab	ility and Uncertainty Metric 7: Metadata Completeness	High	$\times 1$	1	Variability is addressed within the experiment in regards to some of the sampling. Variability and uncertainty is further addressed by the NIOSH method.
Overall Quality D	$etermination^{\dagger}$	High		1.6	

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\* MWF = Metric Weighting Factor

Source Citation:Niosh, 1980. Extent of exposure survey of methylene chloride.Type of Data SourceOccupational Exposure; Monitoring Data;								
Hero ID	3974901							
EXTRACTION Parameter			Data					
Life Cycle Stage:			Manufact	ure				
Life Cycle Descrip	tion (Subca	tegory of Use):	Triacetate	e fiber pr	oductio	n		
Physical Form:			liquid, va	por				
Route of Exposure	e:		inhalation	1				
Exposure Concent	ration (Uni	t):	Personal:	31-561 p	pmArea	a: 409-950ppm		
Number of Sample	es:		Personal:	46Area:	16			
Number of Sites:			1					
Type of Measuren	nent or Met	hod:	8 Hour T	WA				
Worker Activity:			Exposure	to solver	nt direct	tly or through residue left on textile.		
Number of Worke	rs:		1950 (920	potentia	ally expo	osed to Methylene Chloride)		
Type of Sampling			personal	<b>D</b> .	· .			
Sampling Location	1:		Productio	on, Extru	sion, Bo	obbin Stores, and Textile work area		
Exposure Duration	n:		variable up to 8hr/day					
Exposure Frequen	cy:	t Francisco De la stirma	Variable					
Engineering Conti	of & percer	it Exposure Reduction:	Ventilation, negative pressure areas					
PPE: Applytic Mothod:			Varies from none to occasional use of gloves, aprons, goggles, etc.					
Analytic Method.			N10511 5259					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Roliab	lity							
Domain 1. Renab	Metric 1	Methodology	High	× 1	1	NIOSH Method		
		hiethodology	111,911	~ 1	-			
Domain 2: Repres	entative							
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1980, 38 years old and prior to most recent PEL		
Metric 5: Sample Size				$\times 1$	1	Excellent charcterization of all measurements and data points		
Domain 3. Access	ibility/Clari	t.v.						
Domain 9. Access	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Durations of shifts/exposure were not completely captured		
		Con	tinued on r	next page	;			
Continued on next page								

Source Citation: Type of Data Source Hero ID	Niosh, 1980. Extent of exposure sur Occupational Exposure; Monitoring I 3974901	vey of methylene Data;	chloride.		
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 4: Variab	ility and Uncertainty Metric 7: Metadata Completeness	High	$\times 1$	1	Variability is addressed within the experiment in regards to some of the sampling. Variability and uncertainty is further addressed by the NIOSH method.
Overall Quality D	$etermination^{\dagger}$	High		1.6	

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\* MWF = Metric Weighting Factor

Source Citation:Niosh, 19Type of Data SourceOccupationHero ID3974901	Source Citation: Niosh, 1980. Extent of exposure survey of methylene chloride.   Type of Data Source Occupational Exposure; Monitoring Data;   Hero ID 3974901								
EXTRACTION Parameter		Data							
Life Cycle Stage:		Use							
Life Cycle Description (Subc	ategory of Use):	Decaffena	ation of C	offee					
Physical Form:		liquid, va	por						
Route of Exposure:		inhalatior	1						
Exposure Concentration (Un	it):	Personal:	0.3-33.2	ppm (a	wg. conc. 2.9 ppm)Area: 0.05 - 2.08 ppm				
Number of Samples:		Personal:	36Short	Term:	3Area: 7				
Number of Sites:				,					
Type of Measurement or Met	shod:	8 nour, si	iort term	, peak	en fo cilitar				
Number of Workers:		Kunning 55 58	the decar	lematin	ig facility				
Type of Sampling:		Dorsonal	9709						
Type of Sampling: Sampling Location:			area ating faci	lity					
Exposure Duration:	Exposure Duration:			variable up to 8hr/day					
Exposure Frequency:		everyday							
PPE:		Company supplied work clothing, safety glasses, hard hats, etc.							
Analytic Method:		NIOSH S239							
EVALUATION									
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments				
Domain 1: Reliability									
Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method				
Domain 2: Representative									
Metric 2:	Geographic Scope	High	$\times 1$	1	US				
Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees				
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1980, 38 years old and prior to most recent PEL				
Metric 5:	Sample Size	High	$\times 1$	1	Excellent charcterization of all measurements and data points				
Domain 3: Accessibility/Clar	ity								
Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Durations of shifts/exposure were not completely captured				
Continued on next page									

Source Citation: Type of Data Source Hero ID	Niosh, 198 Occupation 3974901	Niosh, 1980. Extent of exposure survey of methylene chloride. Occupational Exposure; Monitoring Data; 3974901					
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 4: Variab	ility and Un Metric 7:	acertainty Metadata Completeness	High	$\times 1$	1	Variability is addressed within the experiment in regards to some of the sampling. Variability and uncertainty is further addressed by the NIOSH method.	
Overall Quality D	etermination	n <sup>†</sup>	High		1.6		

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\* MWF = Metric Weighting Factor

Source Citation:Niosh,. 19Type of Data SourceOccupationHero ID3974903	90. Preliminary survey report: C nal Exposure; Monitoring Data;	Control of	methylei	ne chlori	ide in furniture stripping at Strip-Ease Co. Of Cincinnati.
EXTRACTION Parameter		Data			
Life Cycle Stage:		Use			
Life Cycle Description (Subca	ategory of Use):	Furnitu	re Stripp	ing	
Physical Form:		liquid, v	vapor		
Route of Exposure:		inhalati	on		
Exposure Concentration (Uni	it):	200-150	0 ppm		
Number of Samples:		6			
Number of Sites:		1			
Number of Workers:		3 Strippin	ig iurnitt	fte	
Type of Sampling:		J aroa			
Type of Sampling.		area			
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 1. Reliability					
Metric 1:	Methodology	Low	$\times 1$	3	NIOSH survey, but had limited qualitative sampling available.
Domain 2: Representative	Communitie Commu	II:l.	1	1	
Metric 2: Motrie 3:	Appliesbility	High	$\times 1$	1	US Werkelage that uses Mathedaya Chlorida
Metric 3.	Temporal Representativeness	Low	$^{\land 2}$ $^{\lor 2}$	6	1000 28 years old and prior to most recent PEI
Metric 5:	Sample Size	Low	$\times 1$	3	Poorly characterized
	Sample Size	How	<u> </u>	0	roony characterized
Domain 3: Accessibility/Clar	ity				
Metric 6:	Metadata Completeness	Low	$\times 1$	3	Missing sample durations and other metadata
Domain 4: Variability and Ui	Mata data Canadatan ara	τ	1	9	
Metric 7:	Metadata Completeness	LOW	× 1	ა	None addressing data
Overall Quality Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3	

\* MWF = Metric Weighting Factor

Source Citation: Niosh, 2004. In-depth survey report: Assisting furniture strippers in reducing the risk from methylene chloride stripping fomulations at The Strip Joint Inc.							
Type of Data SourceOccupationHero ID3974904	nal Exposure; Monitoring Data;						
EXTRACTION							
Parameter		Data					
Life Cycle Stage		Use					
Life Cycle Description (Subc	ategory of Use):	Furniture	Strippin	g			
Physical Form:		liquid, va	por	0			
Route of Exposure:		inhalation	n				
Exposure Concentration (Un	it):	11-1052 p	opmTWA	: 38 - 4	96 ppm		
Number of Samples:		13 person	al, 9 are	a			
Number of Sites:		1					
Type of Measurement or Me	chod:	TWA					
Worker Activity:		Stripping	furnitur	е			
Type of Sampling:		personal,	area	005			
Analytic Method:		NIOSH N	letnod 1	005			
EVALUATION							
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Beliability							
Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method 1005		
Domain 2: Roprosontativo							
Metric 2:	Geographic Scope	High	× 1	1	US		
Metric 3:	Applicability	High	$\times 2$	2	Workplace that uses Methylene Chloride		
Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2004, 14 years old		
Metric 5:	Sample Size	Medium	$\times 1$	2	Reasonably well characterized.		
	:						
Domain 3: Accessibility/Clai	Motodata Completeness	Modium	× 1	0	The baseline material		
	Metadata Completeness	meurum	~ 1	2			
Domain 4: Variability and U	ncertainty						
Metric 7:	Metadata Completeness	High	$\times 1$	1	Discussion addresses some of the limitations and variability in the test. NIOSH method also contains this discussion.		
Continued on next page							

Source Citation:	Niosh,. 2004. In-depth survey report: A fomulations at The Strip Joint, Inc.	ssisting fur	niture sti	ippers in	reducing the risk from methylene chloride stripping				
Type of Data Source	Occupational Exposure; Monitoring Data	Occupational Exposure: Monitoring Data:							
Hero ID	3974904	,							
EVALUATION									
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments				
Overall Quality I	$\operatorname{Determination}^\dagger$	High		1.4					

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 $^{*}$  MWF = Metric Weighting Factor  $^{\dagger}$  If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High:  $\geq 1$  to < 1.7; Medium:  $\geq 1.7$  to < 2.3; Low:  $\geq 2.3$  to  $\leq 3$ .

Source Citation:NType of Data SourceO	Citation: Niosh, 1985. Health hazard evaluation report no. HETA-84-214-1633, Sheldahl, Inc., Northfield, Minnesota. f Data Source Occupational Exposure; Monitoring Data;							
Hero ID 39	974905							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Description	on (Subca	tegory of Use):	Use of A	dhesives i	n Flexil	ble circuit board Mfg		
Physical Form:			Liquid, v	apor				
Route of Exposure:	. /== .	、 、	Inhalatio	n, dermal	_			
Exposure Concentra	tion (Uni	t):	TWA 25-	132ppm,	short te	erm 112-1752 ppm		
Number of Samples:			14					
Number of Sites:			1					
Type of Measuremer	nt or Met	hod:	8-hour T	WA, shor	t term	.,		
Worker Activity:			Laminati	on of nex	ible circ	cutry		
Number of workers:			000 Dama a 1	A				
Sampling Location			Fersonal,	Area	wo Mire	or Tono Machina		
Exposure Duration:			Lammator, Adnesive Mixer, Tape Machine,					
Exposure Duration.	& percen	t Exposure Reduction	local exhaust ventilation at several processes					
PPE.	a percen	a Exposure Reduction.	Safey Glasses Inadequate air purifying respirators and neoprene gloves					
11			for various tasks.					
Analytic Method:			NIOSH P & CAM 127					
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliabilit	V							
Ν	Ietric 1:	Methodology	High	$\times 1$	1	NIOSH Method P & CAM 127		
Domain 2: Represen	tative							
N	fetric 2:	Geographic Scope	High	$\times 1$	1	US		
N	letric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
N	fetric 4:	Temporal Representativeness	Low	$\times 2$	6	1985, 33 years old and prior to most recent PEL $$		
Metric 5: Sample Size High				$\times 1$	1	discrete samples given		
Domain 3: Accessibi	lity/Clari	tv						
N	Ietric 6:	Metadata Completeness	High	$\times 1$	1	all metadata given		
			tinued on t	novt page		5		
Continued on next page								

Source Citation: Type of Data Source Hero ID	Niosh, 1985. Health hazard evaluation report no. HETA-84-214-1633, Sheldahl, Inc., Northfield, Minnesota. Occupational Exposure; Monitoring Data; 3974905						
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Medium	$\times 1$	2	Uncertainty addressed in NIOSH Method	
Overall Quality D	eterminatio	n <sup>†</sup>	High		1.6		

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\* MWF = Metric Weighting Factor

Source Citation:	Wages, R. obert, Markowitz, S. teven, Kieding, S. ylvia, Griffon, M. ark, Ellenbecker, M. ichael. 1998. Former worker medical surveillance program at Idaho National Engineering and Environmental Laboratory (INEEL) Phase I: Needs assessment.								
Type of Data Source Hero ID	Occupation 3974967	Occupational Exposure; Completed Exposure or Risk Assessments; 3974967							
EXTRACTION									
Parameter	Data								
Life Cycle Stage:			Uso						
Life Cycle Descrit	otion (Subca	tegory of Use).	Laboratory and	d Researd	rh Facil	ity			
Worker Activity:	Stion (Suber	legory of obo).	Parts degreasir	ng, painti	ng.				
Number of Worke	ers:		11	-8, F					
Type of Sampling			General Survy	of past e	employe	es			
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ollity		TT: 1	1	1				
	Metric 1:	Methodology	High	× 1	1	DOE contractor			
Domain 2: Repres	sentative								
1	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Retroactive look at a workplace scenario			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1998, but uses survey data			
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.			
		.,							
Domain 3: Access	Matrie C	Ity Matadata Completeness	Unaccontable	× 1	4				
	Metric 0:	Metadata Completeness	Unacceptable	× 1	4	No sampling technique used - no metadata as a result.			
Domain 4: Variab	oility and Ur	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.9.			

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, two of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Doe,. 2003. A needs assessment for medical screening of construction workers at the Portsmouth and Paducah gaseous diffusion plants.							
Type of Data Source Hero ID	Occupation 3974976	nal Exposure; Reports for Data	or Information (	Other tha	n Expo	sure or Release Data;		
EXTRACTION								
Parameter			Data					
Life Charle Sterrey			T.T.					
Life Cycle Stage:	ation (Subas	torowy of Uso).	Use Casacus Diffus	ion Dlan	+ Const	mustion		
Number of Sites		itegory of Ose).	2	IOII I IAII	t Const.	luction		
Worker Activity:			Degreasing					
Number of Worke	ers:		>1000					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	oility		TT: 1	1	1			
	Metric 1:	Methodology	High	× 1	1	University of Cincinnati, NIOSH, DOE		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Retroactive look at a workplace scenario		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	2003, but uses old data		
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.		
		•,						
Domain 3: Access	Sibility/Clar	Ity Mata lata Gammalatan an	Mallin	1	0			
	Metric 6:	Metadata Completeness	Medium	× 1	Ζ	Well documented, but little to no citations inline with the text.		
Domain 4: Variah	oility and Ur	acertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.		
		*						
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.7.		
• 0								

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Doe,. 1999. Advanced mixed waste treatment project: Appendices. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3974977							
EXTRACTION			Data					
1 al allietei			Data					
Life Cycle Stage:			Disposal					
Life Cycle Description (Subcategory of Use):			Waste Incineration					
Physical Form:			Vapor					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	oility				2			
	Metric 1:	Methodology	Medium	$\times 1$	2	Contractor for DOE		
Domain 2: Repres	sentative							
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Estimations for future incineration emissions - not related to direct worker exposure.		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1999, 19 years old		
	Metric 5:	Sample Size	Low	$\times 1$	3	No Comment.		
Domain 3: Accessibility/Clarity								
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Not well documented.		
Domain 4: Variability and Uncertainty								
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.		
Overall Quality Determination <sup>†</sup>			Unacceptable		4	Metric Mean Score: 2.9.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:Doe, 1992. Summary of clean up site at Glass Melter thermal Treatment Unit at Monsanto Research Corporation.Type of Data SourceOccupational Exposure; Reports for Data or Information Other than Exposure or Release Data;Hero ID3974994								
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Disposal					
Life Cycle Description (Subcategory of Use):			Waste Incineration					
Physical Form:			Vapor					
Number of Sites:			1					
Engineering Control & percent Exposure Reduction:			Controls to prevent inefficient waste burning					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliability Meta	ic 1: Methodo	logy	High	× 1	1	DOE, EPA, DOI		
					-	202, 211, 201		
Domain 2: Representat	ve							
Metr	ic 2: Geograph	nic Scope	High	$\times 1$	1	US		
Metr	ic 3: Applicab	ility	Unacceptable	$\times 2$	8	Synopsis of a scenario where methylene chloride could be in- troduced in the workplace, but focused solely on efficiency of the incinerator		
Metr	ic 4: Tempora	l Representativeness	Low	$\times 2$	6	1988, 30 years old		
Met	ic 5: Sample S	Size	Low	$\times 1$	3	No Comment.		
Domain 3: Accessibility/Clarity Metric 6: Metadata Completeness			High	× 1	1	Well documented		
	ic 0. Metadata	a Completeness	IIIgii	~ 1	1	Wen documented		
Domain 4: Variability and Uncertainty								
Met	ic 7: Metadata	a Completeness	Low	$\times 1$	3	None addressing data		
Overall Quality Determination <sup><math>\dagger</math></sup>			Unacceptable		4	Metric Mean Score: 2.6.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,,Niosh, 2013. Hazard alert methylene chloride hazards for bathtub refinishers. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978131							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Worker Activity: Engineering Control & percent Exposure Reduction: PPE:			Use Bathtub Refinishing/Stripping Liquid, Vapor Inahaltion, Dermal Bathtub refinishing Test the air, provide local exhaust ventilation Full face respirator, PE or EVOH gloves, DCM resistant clothing, goggles					
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Unacceptable	$\times 1$	4	No methodology		
Domain 2: Repres	sentative		TT: 1	-				
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	NIOSH Methylene Chloride Hazard Alert - Focused on health effects and PPE		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2012		
	Metric 5:	Sample Size	Low	$\times 1$	3	no exposure data		
Domain 3: Accessibility/Clarity Metric 6: Metadata Completeness Una				× 1	4	no exposure data		
	Methe 0.	Metadata Completeness	onacceptable	~ 1				
Domain 4: Variability and Uncertainty								
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	no exposure data		
Overall Quality Determination <sup>†</sup>			Unacceptable		4	Metric Mean Score: 2.8.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, three of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor
Source Citation: Type of Data Source Hero ID	Source Citation:Niosh, 2014. Methylene chloride current intelligence bulletin.Type of Data SourceOccupational Exposure; Reports for Data or Information Other than Exposure or Release Data;Hero ID3978133						
EXTRACTION							
Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit):			Use Film Base Manufacturing vapor Inhalation 0 to 350 ppm; mean exposure of 118.8 ppm in 1966 to 40.3 ppm in 197 (reported in other sources citing Friedlander et al, 1978				
<b>EVALUATION</b> Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	NIOSH Intelligence Bulletin - references Friedlander 1978	
Domain 2: Repres	Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Medium	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1\\ 2\\ 6\\ 2\end{array}$	US CTA film manufacturing 1956-1976 range provided	
Domain 3: Accessibility/Clarity Metric 6: Metadata Completeness			Low	× 1	3	personal samples	
Domain 4. Variau	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion on uncertainty and variability	
Overall Quality D	eterminatio	n <sup>†</sup>	Medium		2.2		

Source Citation:Niosh, 2Type of Data SourceOccupatiHero ID3978133	Niosh, 2014. Methylene chloride current intelligence bulletin. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978133								
EXTRACTION		D (							
Parameter		Data	Data						
Life Cycle Stage:		Use	Use						
Life Cycle Description (Sub	category of Use):	Manufact	ure of sy	nthetic	fibers				
Physical Form:		vapor	5						
Route of Exposure:		Inhalation	n						
Exposure Concentration (U	nit):	5 to 900 p	opm (rep	orted b	y other sources citing Ott et al, 1983)				
EVALUATION									
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1. Baliability									
Metric 1:	Methodology	Low	$\times 1$	3	NIOSH Intelligence Bulletin - references Ott 1983				
Domain 2: Representative									
Metric 2:	Geographic Scope	High	$\times 1$	1	US				
Metric 3:	Applicability	High	$\times 2$	2	CTA film manufacturing				
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1954-1977				
Metric 5:	Sample Size	Medium	$\times 1$	2	range provided				
Domain 3: Accessibility/Cla	rity Mata data Gammalatan ara	τ	1	9	, ,				
Metric 6:	Metadata Completeness	Low	× 1	3	personal samples				
Domain 4. Variability and I	Incontainty								
Metric 7	Metadata Completeness	Low	× 1	3	No discussion on uncertainty and variability				
	metadata Completeness	LOW	~ 1	0	ivo discussion on uncertainty and variability				
Overall Quality Determination	$\mathrm{on}^\dagger$	Medium		2.2					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Niosh, 2014. Methylene chloride current intelligence bulletin. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978133						
EXTRACTION			Data				
			Data				
Life Cycle Stage:			All				
Life Cycle Descrip	otion (Subca	ategory of Use):	Mfg, use	as solver	it, aeros	ol propellant or fumigant, and blowing agent	
			in flexible	urethan	e foams		
Number of worke	rs:		1 million	(1980)			
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Demein 1. Delieb	:1:						
Domain 1: Kenab	Metric 1:	Methodology	Low	$\times 1$	3	NIOSH Intelligence Bulletin	
Domain 2: Repres	sentative		TT. 1				
	Metric 2:	Geographic Scope	High	$\times 1$	1	US	
	Metric 3:	Applicability	Medium	$\times 2$	4	Total workers in USA	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1986	
	Metric 5:	Sample Size	N/A		N/A	n/a - not exposure data	
Domain 3: Access	sibility/Clar	ity					
Domain 9. Reces	Metric 6:	Metadata Completeness	N/A		N/A	n/a - not exposure data	
D . 4 W . 1	.1., 1.1.						
Domain 4: Variat	onlity and U	ncertainty	DT / A		<b>NT / A</b>		
	Metric 7:	Metadata Completeness	N/A		N/A	n/a - not exposure data	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3		

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 201 Occupation 3978279	Osha, 2012. Occupational safety and health standards: Toxic and hazardous substances: Methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978279						
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Descrip	otion (Subca	ategory of Use):	Regulation OSHA 29 CFR	Part 19	10			
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Unacceptable	$\times 1$	4	No Comment.		
Domain 2: Benres	sontativo							
Domain 2. Repres	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	OSHA standard discussing workplace safety. No exposure data.		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	n/a - not exposure data		
	Metric 5:	Sample Size	Low	$\times 1$	3	n/a - not exposure data		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	Unacceptable	$\times 1$	4	n/a - not exposure data		
Domain 4: Variab	ility and Ui Motric 7:	ncertainty Matadata Completeness	Low	× 1	3	n/a nat avraguna data		
	MEULIC 1.	metadata Completeness	LOW	^ 1	J	n/a - not exposure data		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Unacceptable		4	Metric Mean Score: 3.2.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, three of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:				ture ture of D( n	СМ			
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Final Rule		
Domain 2: Repres	Matria 2.	Caamankia Saana	II: mb	× 1	1	TIG .		
	Metric 2:	Applicability	піgli High	$\times 1$	1	US Manufacture of DCM		
	Metric 4:	Temporal Representativeness	Low	$\times 2^{\times 2}$	6	manufacture of DOM		
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided		
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	methodology unclear		
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:				Processing/Use Pesticide Manufacturing and Formulation Inhalation 60 120				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Final Rule		
Domain 9. Donna								
Domain 2. Repres	Motric 2	Coographic Scope	High	× 1	1	TIC		
	Metric 3:	Applicability	High	$\times 2$	2	Pesticide Manufacturing and Formulation		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997		
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variat	Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed		
Overall Quality Determination <sup>†</sup>			Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation:Osha,.Type of Data SourceOccupaHero ID397829	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298						
EXTRACTION							
Parameter		Data					
Life Cycle Stage: Life Cycle Description (Su Route of Exposure: Number of Sites: Number of Workers:	Processin Distribut Inhalatio 320 1,701	Processing Distribution/Formulation Inhalation 320 1,701					
EVALUATION							
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliability Metric	1: Methodology	High	× 1	1	OSHA - Final Rule		
Domain 2: Representative		··· 1	_				
Metric	2: Geographic Scope	High	$\times 1$	1	US		
Metric	3: Applicability	High	× 2	2	Distribution/Formulation		
Metric	4: Temporal Representativeness	Low	× 2	0 9	pre 1997		
Metric	5: Sample Size	LOW	X 1	3	no statistics provided		
Domain 3. Accessibility/	larity						
Metric	6: Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variability and Metric	Uncertainty 7: Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality Determina	$tion^{\dagger}$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation:Osha,Type of Data SourceOccupHero ID39782	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter		Data						
Life Cycle Stage: Life Cycle Description (S Route of Exposure: Number of Sites: Number of Workers:	Processin Aerosol I Inhalatio 52 520	ng Packaging n						
EVALUATION								
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliability Metric	1: Methodology	High	× 1	1	OSHA - Final Rule			
		0						
Domain 2: Representativ			_	_				
Metri	2: Geographic Scope	High	$\times 1$	1	US			
Metri	3: Applicability	High	$\times 2$	2	Aerosol Packaging			
Metri	4: Temporal Representativeness	Low	× 2	6	pre 1997			
Metrie	5: Sample Size	Low	× 1	3	no statistics provided			
Domain 3: Accessibility/	Clarity							
Metrie	6: Metadata Completeness	Low	$\times 1$	3	methodology unclear			
Domain 4: Variability an Metric	l Uncertainty 7: Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed			
Overall Quality Determin	$\operatorname{ation}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298						
EXTRACTION							
Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:				Processing Paint Remover Manufacturing Inhalation 80 200			
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Final Rule	
			0				
Domain 2: Repres	Motrie 2.	Coorranhia Soona	Uich	× 1	1	110	
	Metric 2: Metric 3:	Applicability	High	$\times 1$ $\times 2$	1	US Paint Romovor Manufacturing	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997	
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided	
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	methodology unclear	
		A					
Domain 4: Variab	ility and Ui Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed	
Overall Quality D	eterminatio	n <sup>†</sup>	Medium		2.1	, , , , , , , , , , , , , , , , , , ,	

\* MWF = Metric Weighting Factor

Source Citation:OshaType of Data SourceOccuHero ID39782	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter		Data						
Life Cycle Stage: Life Cycle Description ( Route of Exposure: Number of Sites: Number of Workers:	Processin Paint Ma Inhalatio 49 229	g .nufacturi n	ng					
EVALUATION								
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliability Metri	c 1: Methodology	High	× 1	1	OSHA - Final Rule			
	6							
Domain 2: Representati	e	*** 1	_					
Metri	e 2: Geographic Scope	High	$\times 1$	1	US			
Metri	c 3: Applicability	High	$\times 2$	2	Paint Manufacturing			
Metri	2 4: Temporal Representativeness	Low	× 2	6	pre 1997			
Metri	c 5: Sample Size	Low	× 1	3	no statistics provided			
Domain 3: Accessibility	Clarity							
Metri	e 6: Metadata Completeness	Low	$\times 1$	3	methodology unclear			
Domain 4: Variability an Metri	d Uncertainty c 7: Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed			
Overall Quality Determi	nation <sup>†</sup>	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation:OshaType of Data SourceOccuHero ID3978	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION		-						
Parameter		D	ata					
Life Cycle Stage: Life Cycle Description ( Route of Exposure: Number of Sites: Number of Workers:	Pr A In 16 49	rocessing dhesive P halation 35 97	roductio	on				
EVALUATION								
Domain	Met	ric F	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliability Metr	c 1: Methodology	Н	igh	$\times 1$	1	OSHA - Final Rule		
			0					
Domain 2: Representati	ve				_			
Metr	c 2: Geographic Sco	ope H	igh	× 1	1	US		
Metr	c 3: Applicability	H	ıgh	$\times 2$	2	Adhesive Production		
Metr	c 4: Temporal Repr	esentativeness Lo	ow	× 2	6	pre 1997		
Metr	c 5: Sample Size	Le	OW	× 1	3	no statistics provided		
Domain 3: Accessibility	Clarity							
Metr	c 6: Metadata Com	pleteness Lo	ow	$\times 1$	3	methodology unclear		
Domain 4: Variability a Metr	d Uncertainty c 7: Metadata Com	pleteness Le	ow	× 1	3	variability or uncertanity not discussed		
Overall Quality Determ	nation <sup>†</sup>	М	Iedium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Processin	lo.				
Life Cycle Descrit	otion (Subca	ategory of Use):	Ink and I	nk Solver	nt Manı	ifacturing		
Route of Exposur	e:		Inhalatio	n				
Number of Sites:			15					
Number of Worke	rs:		58					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1. Daliah	:1:4							
Domain 1. Kenab	Metric 1:	Methodology	High	× 1	1	OSHA - Final Rule		
		inethe delegy			-			
Domain 2: Repres	sentative							
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Ink and Ink Solvent Manufacturing		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997		
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided		
<b>D</b>								
Domain 3: Access	sibility/Clar	ity	т	1	0			
	Metric 6:	Metadata Completeness	Low	× 1	3	methodology unclear		
Domain 4: Variah	ility and U	ncortainty						
Domain 4. Vallat	Metric 7:	Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed		
			20.1	~ ±	,			
Overall Quality Determination <sup>†</sup>					2.1			
	000111110010		manuff		2.1			

\* MWF = Metric Weighting Factor

Source Citation:Osha,Type of Data SourceOccupHero ID39782	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION		D (						
Parameter		Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Recovery n					
EVALUATION								
Domain	Metric	Rating	$\mathbf{MWF}^{\star}$	Score	Comments			
Domain 1: Reliability Metri	: 1: Methodology	High	× 1	1	OSHA - Final Rule			
	6							
Domain 2: Representativ	e							
Metri	2: Geographic Scope	High	× 1	1	US			
Metri	3: Applicability	High	$\times 2$	2	Solvent Recovery			
Metri	4: Temporal Representativeness	Low	$\times 2$	6	pre 1997			
Metri	5: Sample Size	Low	× 1	3	no statistics provided			
Domain 3: Accessibility/	Clarity							
Metri	e 6: Metadata Completeness	Low	$\times 1$	3	methodology unclear			
Domain 4: Variability ar Metri	d Uncertainty 27: Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed			
Overall Quality Determine	$\operatorname{ation}^{\dagger}$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation:OType of Data SourceOHero ID39	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Use Open Top Vapor Degreasing Inhalation 278 608					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliabilit N	y Ietric 1:	Methodology	High	× 1	1	OSHA - Final Rule		
		0,	0					
Domain 2: Represen	tative							
N	fetric 2:	Geographic Scope	High	× 1	1	US		
N	letric 3:	Applicability	High	$\times 2$	2	Open Top Vapor Degreasing		
IV.	letric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997		
IV.	letric 5:	Sample Size	Low	× 1	3	no statistics provided		
Domain 3: Accessibi	ilitv/Clari	tv						
N	letric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variabilit	ty and Un Ietric 7:	certainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality Dete	erminatio	n <sup>†</sup>	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation:OType of Data SourceOHero IDS	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION			<b>D</b> /					
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Use Conveyorized Vapor Degreasing Inhalation 45 75					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliabili	ity Metric 1:	Methodology	High	$\times 1$	1	OSHA - Final Rule		
Domain 2: Represe	ntative		TT: 1	1	-			
1	Metric 2:	Geographic Scope	High Hish	× 1	1	US		
ן יי	Metric 3:	Applicability	High	$\times 2$	2	Conveyorized Vapor Degreasing		
1	Metric 5.	Sample Size	Low	$\times 2$ $\times 1$	0 3	pre 1997		
1	Metric 5.	Sample Size	LOW	~ 1	0	no statistics provided		
Domain 3. Accessib	oility/Clari	ty						
lonnam 9. Accessio	Metric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variabili	ity and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality Det	terminatio	n <sup>†</sup>	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: C Type of Data Source C Hero ID S	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION			_					
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Use Cold Degreasing and Other Cold Cleaning: Inhalation 23717 94,537					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliabili	ity Metric 1:	Methodology	High	$\times 1$	1	OSHA - Final Rule		
			_					
Domain 2: Represen	ntative Motrie 2.	Coorrenkie Soone	II: mla	× 1	1	TIG .		
1	Metric 2:	Applicability	підп Цієр	× 1 × 2	1	US Gald Demonstration and Other Gald Characteria		
1	Motric 4:	Tomporal Boprosontativonoss	Low	$\times 2$ $\times 2$	2 6	Cold Degreasing and Other Cold Cleaning:		
]	Metric 5:	Sample Size	Low	$ \times 2 \times 1 $	3	no statistics provided		
Domain 3: Accessib	oility/Clari Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variabil	ity and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality Determination <sup>†</sup>		Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION			<b>D</b> /					
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Use Adhesive Inhalation 1753 5,269	Use n				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Final Rule		
		0.						
Domain 2: Repres	Matria 2.	Coormanhia Soona	II: mh	× 1	1	11g		
	Metric 2: Motric 3:	Applicability	підп High	$\times 1$ $\times 2$	1	US Adhesiya Usa		
	Metric $4$ :	Temporal Representativeness	Low	$\sim 2$ $\times 2$	6	pro 1007		
	Metric 5:	Sample Size	Low	$\times 1^{2}$	3	no statistics provided		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	methodology unclear		
		~						
Domain 4: Variab	ility and Un Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed		
Overall Quality D	eterminatio	n <sup>†</sup>	Medium		2.1	• •		

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Use Paint Str Inhalation 300 2,470	Use Paint Stripping: Aircraft Inhalation 300 2,470				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA - Final Rule		
Domain 2: Repres	sentative		TT. 1					
	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	× 2	2	Paint Stripping: Aircraft		
	Metric 4: Motrie 5:	Sample Size	LOW	× 2 × 1	0 9	pre 1997		
	metric 5:	Sample Size	LOW	× 1	3	no statistics provided		
Domain 3. Access	sibility/Clar	ity						
Domain 0. Hooos	Metric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality D	eterminatio	n <sup>†</sup>	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Use Furniture Stripping Inhalation 6152 7,872					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliabi	lity Metric 1:	Methodology	High	× 1	1	OSHA - Final Rule		
Domain 2: Repres	entative		TT: 1	1	-			
	Metric 2:	Geographic Scope	High	× 1	1	US De la catal		
	Metric 3:	Applicability	High	× 2	2	Furniture Stripping		
	Metric 4:	Composal Representativeness	LOW	× 2	0	pre 1997		
	Metric 5:	Sample Size	LOW	× 1	3	no statistics provided		
Domain 3: Accessi	ibility/Clar	ity						
Domain 0. Hocoss	Metric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality Do	eterminatio	n†	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation:OsType of Data SourceOcHero ID39	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Description	n (Subca	tegory of Use):	Other Inc	lustrial P	aint Sti	ripping		
Route of Exposure:			Inhalation	1				
Number of Sites:			35041					
Number of Workers:			46,605					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Beliability	Domain 1: Paliability							
Me	etric 1:	Methodology	High	$\times 1$	1	OSHA - Final Rule		
Domain 2: Represent	ative							
Me	etric 2:	Geographic Scope	High	$\times 1$	1	US		
Me	etric 3:	Applicability	High	$\times 2$	2	Other Industrial Paint Stripping		
Me	etric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997		
Me	etric 5:	Sample Size	Low	$\times 1$	3	no statistics provided		
Domain 3. Accossibili	ity/Clari	tar						
Me	etric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4. Variabilit	u and II							
Domain 4: Variability	y and Un etric 7:	Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
		included completeness	101	// <b>1</b>	0	variability of differentity not discussed		
Overall Quality Deter	rmination	$\mathbf{n}^{\dagger}$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298								
EXTRACTION			_						
Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Use Flexible Polyurethane Foam Manufacturing Inhalation 100 600						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliabi	lity Metric 1:	Methodology	High	× 1	1	OSHA - Final Rule			
Domain 2: Represe	entative	a	*** 1	_					
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	× 2	2	Flexible Polyurethane Foam Manufacturing			
	Metric 4:	Comporal Representativeness	LOW	× 2	0	pre 1997			
	Metric 5:	Sample Size	Low	× 1	3	no statistics provided			
Domain 3: Accessi	bility/Clar	ity							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear			
Domain 4: Variabi	lity and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed			
Overall Quality Determination <sup>†</sup>		Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation:CType of Data SourceCHero ID3	Source Citation:Osha, 1997. Final rules: Occupational exposure to methylene chloride.Type of Data SourceOccupational Exposure; Reports for Data or Information Other than Exposure or Release Data;Hero ID3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites:		Use Electronics Inhalation 239						
Worker Activity: Number of Workers:			semicondi 1,392	uctor				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliabilit	y Ietric 1:	Methodology	High	× 1	1	OSHA - Final Rule		
Domain 2: Represen	tative	0.						
Ν	letric 2:	Geographic Scope	High	$\times 1$	1	US		
N	Aetric 3:	Applicability	High	$\times 2$	2	Electronics		
N	letric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997		
N	letric 5:	Sample Size	Low	× 1	3	no statistics provided		
Domain 3: Accessibi	ility/Clari	ty						
N	Ietric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variabilit N	ty and Un Ietric 7:	certainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality Dete	ermination	1 <sup>†</sup>	Medium		2.1			

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Worker Activity: Number of Workers:			Use Electronics Inhalation 141 Printed Circuit Boards 298					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Final Rule		
Domain 2: Repre	sentative		0					
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Electronics		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997		
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided		
Domain 3: Access	ibility/Clari Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality I	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1			

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298								
EXTRACTION									
Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Processing/Use Pharmaceutical Manufacturing Inhalation 108 1,431						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA - Final Rule			
			_						
Domain 2: Repres	Motria 2.	Coographic Scope	High	$\vee$ 1	1	IIC			
	Metric 2.	Applicability	High	$\times 1$ $\times 2$	2	US Pharmaceutical Manufacturing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997			
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	methodology unclear			
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Use Film Bas Inhalation 1 500	Use Film Base Manufacturing Inhalation 1 500				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliabi	lity Metric 1:	Methodology	High	× 1	1	OSHA - Final Rule		
			0					
Domain 2: Represe	entative	~	*** 1	_	_			
	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Film Base Manufacturing		
	Metric 4:	Temporal Representativeness	Low	× 2	6	pre 1997		
	Metric 5:	Sample Size	Low	× 1	3	no statistics provided		
Domain 3: Accessi	bility/Clar	itv						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variabi	lity and Ui Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality De	eterminatio	n <sup>†</sup>	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation:Osha, 1997. Final rules: Occupational exposure to methylene chloride.Type of Data SourceOccupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION							
Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Worker Activity: Number of Workers:			Use Plastics M Inhalation 80 Injection 240	Use Plastics Manufacturing Inhalation 80 Injection Molding 240			
EVALUATION							
Domain		Metric	Rating	MWF*	Score	Comments	
Domain 1: Reliability Me	tric 1:	Methodology	High	$\times 1$	1	OSHA - Final Rule	
Domain 2: Representa	tive						
Me	tric 2:	Geographic Scope	High	$\times 1$	1	US	
Me	tric 3:	Applicability	High	$\times 2$	2	Plastics Manufacturing	
Me	tric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997	
Me	tric 5:	Sample Size	Low	$\times 1$	3	no statistics provided	
Domain 3: Accessibilit Me	y/Clar tric 6:	ity Metadata Completeness	Low	$\times 1$	3	methodology unclear	
Domain 4: Variability Me	and Uı tric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed	
Overall Quality Detern	ninatio	$\mathbf{n}^{\dagger}$	Medium		2.1		

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Worker Activity: Number of Workers:			Use Plastics Manufacturing Inhalation 1323 Lamination 4,070					
EVALUATION								
Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA - Final Rule		
Domain 2: Repre	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Plastics Manufacturing		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997		
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.1			

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Worker Activity: Number of Workers:			Use Plastics Manufacturing Inhalation 165 Mold Release 497					
EVALUATION								
Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA - Final Rule		
Domain 2: Repre	sentative		0					
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Plastics Manufacturing		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997		
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.1			

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:		Use	Use						
Life Cycle Descrip	otion (Subca	ategory of Use):	Polycarbo	onate Ma	nufactu	ring			
Route of Exposur	e:		Inhalatio	n					
Number of Sites:			4						
Number of Worke	rs:		67						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1, Poliah	:1:+								
Domain 1. Renau	Metric 1:	Methodology	High	$\times 1$	1	OSHA - Final Rule			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Polycarbonate Manufacturing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997			
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided			
Damain 9. Aaraa	:1:::/Ol								
Domain 3: Access	Motrie 6	Ity Motodoto Completeness	Low	× 1	9				
	Metric 0.	Metadata Completeness	LOW	× 1	0	methodology unclear			
Domain 4. Variah	ility and U	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed			
		<u>م</u>				- •			
Overall Quality Determination <sup>†</sup>		Medium		2.1					
- · · · · · · · · · · · · · · · · · · ·									

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Route of Exposure: Number of Sites: Number of Workers:			Use Ink Solvent Use in Printing Inhalation 11869 39,481					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA - Final Rule		
			0					
Domain 2: Repres	sentative	~	··· ·					
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Ink Solvent Use in Printing		
	Metric 4:	Temporal Representativeness	Low	× 2	6	pre 1997		
	Metric 5:	Sample Size	Low	× 1	3	no statistics provided		
Domain 3: Access	ibility/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Occupation 3978298	97. Final rules: Occupational exp nal Exposure; Reports for Data	posure to m or Informat	ethylene tion Othe	chlorid er than	e. Exposure or Release Data;
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Use			
Life Cycle Descrip	tion (Subca	ategory of Use):	construct	ion		
Route of Exposure	);		Inhalatio	1		
Number of Sites:			9504	-		
Worker Activity:			paint stri	pping and	d foamb	lowing are essential operations of many of the
			iobs in w	hich they	are use	ed
Number of Worker	rs:		24,896			
			,			
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 1. Raliabi	litz					
Domain 1. Reliabl	Metric 1	Methodology	High	× 1	1	OSHA - Final Bule
	Meene 1.	Methodology	111511	~ 1	1	Optini - I mai itule
Domain 2: Repres	entative					
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US
	Metric 3:	Applicability	High	$\times 2$	2	construction
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1997
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided
		•,				
Domain 3: Access	Matula C	Ity Mata data Gammilatan ara	т	v 1	9	
	Metric 6:	Metadata Completeness	Low	× 1	3	methodology unclear
Domain 4: Variab	ility and Ur	ncertainty				
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1	
• 0						

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Descrip Route of Exposur Number of Sites: Number of Worke	otion (Subca e: rs:	ategory of Use):	Use Shipyards Inhalation 25 3,040	1				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Final Rule		
Domain 2: Repres	sentative		TT: 1	-				
	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	× 2	2	Shipyards		
	Metric 4: Motrie 5:	Sample Size	LOW	× 2 × 1	0 9	pre 1997		
	metric 5:	Sample Size	LOW	× 1	3	no statistics provided		
Domain 3: Accoss	ibility/Clar	its						
Domain 5. Access	Metric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality D	eterminatio	n <sup>†</sup>	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	European Occupation 3982133	European Chlorinated Solvents, Association. 2015. Health profile on dichloromethane. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3982133							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use):			Industry Assoc European Chlo	Industry Association Brief European Chlorinated Solvent Assoc.					
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	Unacceptable	$\times 1$	4	No Comment.			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	Medium	× 1	2	Europe			
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Industry advocacy brief, no data.			
	Metric 4: Metric 5:	Sample Size	Hign Low	$\times 2$ $\times 1$	2	2015 no exposure data			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Unacceptable	× 1	4	no exposure data			
Domain 4: Variab	oility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	no exposure data			
Overall Quality D	eterminatio	n <sup>†</sup>	Unacceptable		4	Metric Mean Score: 2.9.			

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, three of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Hsia,. 2013. TSCA work plan chemicals program. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3982141							
EXTRACTION								
Parameter			Data					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility							
	Metric 1:	Methodology	Unacceptable	$\times 1$	4	No methodology		
Domain 2: Repres	sentative							
1	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	An industry argument against regulation of trichloroethylene.		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2013		
	Metric 5:	Sample Size	Low	$\times 1$	3	no exposure data		
Domain 3: Access	ibility/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	no exposure data		
Domain 4: Variab	ility and Ui	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	no exposure data		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.7.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, two of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation:	Atsdr., 2009. Health consultation: Indoor air quality: Raytheon area: St. Petersburg, Pinellas County, Florida: EPA facility ID: FLD004100152, Part 2.							
Type of Data Source Hero ID	Occupation 3982212	nal Exposure; Monitoring Data;						
EXTRACTION Parameter			Data					
Life Cycle Stage:			Ambient	Environn	nent			
Life Cycle Descript	ion (Subca	tegory of Use):	Disposal	(hazardo	us waste	e site)		
Physical Form:			vapor					
Route of Exposure:	:		inhalatior	n, ingestie	on, derr	nal		
Exposure Concentr	ation (Uni	t):	None-Det	ected - 2	4  ug/m	3		
Number of Samples	3:		23					
Number of Sites:	NT	h - J	10 h					
Type of Measurement or Method: Worken Activity			12-nour	indoor oi	r tostin	a		
Type of Sampling			Ambient .	indoor ai	i testin	8		
Sampling Location:			Multiple buildings adjacent to former Ratheon production site.					
Exposure Duration:			varies					
Exposure Frequency:			everyday					
Analytic Method:	Analytic Method:			hod Tota	l Organ	nic 15		
EVALUATION Domain		Metric	Rating	MWF*	Score	Comments		
			0					
Domain 1: Reliabil	ity							
·	Metric 1:	Methodology	High	$\times 1$	1	EPA Methods		
Domain 2: Represe	ntative		TT: 1	1	1			
	Metric 2:	Geographic Scope	H1gh Louis	$\times 1$		US		
	Metric 3:	Applicability	Low	× 2	0	Focuses on ambient indoor air quality surrounding a former manufacturing site.		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2008, 10 years old		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Limited data characterization - not necessarily relatable to work scenario		
Domoin 2. Accesi	.:::::::::::::::::::::::::::::::::::::							
Domain 5: Accessit	Metric 6	Metadata Completeness	Medium	× 1	9	Detailed metadata is non existent due to limited relevance of		
·	MEULIC U.	motadata Completelless	meannin	^ 1	<u>ک</u>	the sample set to workplace exposure.		
Continued on next page								

Source Citation: Type of Data Source Hero ID	Atsdr,. 2009. Health consultation: Indoo ID: FLD004100152, Part 2. Occupational Exposure; Monitoring Dat 3982212	or air quality: a;	Raytheo	on area:	St. Petersburg, Pinellas County, Florida: EPA facility
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 4: Variab	ility and Uncertainty Metric 7: Metadata Completeness	Medium	× 1	2	Sample addresses the variability and limitations of the analysis well.
Overall Quality D	$\operatorname{Petermination}^\dagger$	Medium		2.0	

– continued from previous page

\* MWF = Metric Weighting Factor
Source Citation:	Oehha, 2007. Occupational health hazard risk assessment project for California: Identification of chemicals of concern, possible risk assessment methods, and examples of health protective occupational air concentrations							
Type of Data Source Hero ID	Occupation 3982225	Occupational Exposure; Completed Exposure or Risk Assessments; 3982225						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			California Risk	Assessm	nent			
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility							
	Metric 1:	Methodology	High	$\times 1$	1	Mixed, NIOSH,OEHHA,OSHA		
Domain 2: Benres	entative							
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Does not address Methylene Chloride in study.		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2007		
	Metric 5:	Sample Size	Low	$\times 1$	3	no exposure data		
Domain 3: Access	ibility/Clar	itv						
Domain 5. Access	Metric 6:	Metadata Completeness	Unacceptable	$\times 1$	4	no exposure data		
Domain 4: Variab	Motrie 7	Metadata Completeness	Low	× 1	9			
	metric 7:	Metadata Completeness	LOW	× 1	ა	no exposure data		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.7.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, two of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih,. 2016 Occupatio 3982330	5. Report on carcinogens: Dichlo nal Exposure; Monitoring Data;	romethan	ie.		
EXTRACTION			Data			
Parameter			Data			
Life Cycle Stage:			Disposa	l		
Life Cycle Descrip	otion (Subca	ategory of Use):	Waste I	Repackag	ging	
Route of Exposur	e:	,	Inhalati	ion	, 0	
Exposure Concent	tration (Uni	it):	$<\!573$ pj	pm (exha	aled brea	ath
Type of Sampling	;:		Persona	ıl		
EVALUATION						
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments
Domain 1. Daliah	:1:4					
Domain 1: Reliad	Motrie 1	Mathadalam	Low	$\vee$ 1	2	references Threll et al 2001
	metric 1.	Wethodology	LOW	~ 1	5	references 1 firan et al 2001
Domain 2: Repres	sentative					
1	Metric 2:	Geographic Scope	High	$\times 1$	1	US
	Metric 3:	Applicability	High	$\times 2$	2	waste repackaging
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre-2001
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided
Domain 3: Access	sibility/Clar	ity	_		_	
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear
Demeirs 4, W 11	:1:41 TT					
Domain 4: Variat	Matria 7	Metadata Completeness	Low	~ 1	2	
	Metric 7:	Metadata Completeness	LOW	× 1	ა	variability or uncertaiity not discussed
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Low		2.3	

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih, 2016. Report on carcinogens: Dichloromethane. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3982330								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:	( <b>-</b> ) -	>	All						
Life Cycle Descrip	otion (Subca	tegory of Use):	All						
Route of Exposur	e:		Inhalati	on					
Worker Activity:			All						
Number of Worke	rs:		1,438,18	90					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
	•1•,								
Domain 1: Reliab	Ility	Matha dalama	τ	<b>1</b>	9				
	Metric 1:	Methodology	Low	× 1	3	based on NIOSH 1990			
Domain 2. Benres	sentative								
Domain 2. Roprox	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	overall DCM industry			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre-1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided			
Domain 3: Access	Matula C	Ity Mata lata Gammlatan an	τ	<b>1</b>	9				
	Metric 6:	Metadata Completeness	Low	× 1	3	methodology unclear			
Domain 4. Variah	ility and Ur	cortainty							
Domain 4. Variau	Metric 7.	Metadata Completeness	Low	× 1	3	variability or uncortanity not discussed			
	MEULIC 1.	metadata Completeness	LOW	^ 1	J	variability of ullertality not discussed			
Overall Quality D	eterminatio	$n^{\dagger}$	Low		23				
Overall Quality D			TOW		2.9				

\* MWF = Metric Weighting Factor

Source Citation:Atsdr., 2000. Toxicological profile for methylene chloride.Type of Data SourceOccupational Exposure; Reports for Data or Information Other than Exposure or Release Data;Hero ID3982337							
EXTRACTION							
Parameter		Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Worker Activity: Type of Sampling:			Use general work area and breathing zone (1968-1982) Vapor Inhalation 0.086-1411 ppm general work area and breathing zone (1968-1982) personal, area				
EVALUATION Domain	Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliability Metric 1:	Methodology	Low	× 1	3	references IARC 1986		
Domain 2: Representative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High Medium Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1 \\ 4 \\ 6 \\ 3 \end{array}$	US no specific workplace (general work area) pre 1982 no statistics provided		
Domain 3: Accessibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variability and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality Determinatio	$\mathbf{n}^{\dagger}$	Low		2.6			

\*  $\mathrm{MWF} = \mathrm{Metric}$  Weighting Factor

Source Citation:Osha,. 19Type of Data SourceOccupatiHero ID3982430	991. Proposed rules: Occupationa onal Exposure; Reports for Data	l exposure or Informa	to methy tion Othe	lene chl er than	loride. Exposure or Release Data;
EXTRACTION Parameter		Data			
Life Cycle Stage: Life Cycle Description (Sub Physical Form: Route of Exposure: Number of Sites: Worker Activity: Engineering Control & perc PPE:	category of Use): ent Exposure Reduction:	Manufact Manufact Vapor Inhalatio 6 Drum fill Provides lists stand	cure cure of D0 n ing various o dard PPI	CM ptions f	For engineernig control to reach OSHA PEL
<b>EVALUATION</b> Domain	Metric	Rating	MWF*	Score	Comments
Domain 1: Reliability Metric 1:	Methodology	High	× 1	1	OSHA - Proposed Rule
Domain 2: Representative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	1 2 6 3	US Manufacture of DCM pre 1991 no statistics provided
Domain 3: Accessibility/Cla Metric 6:	rity Metadata Completeness	Low	× 1	3	methodology unclear
Domain 4: Variability and U Metric 7:	Incertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed
Overall Quality Determinat	$\mathrm{on}^\dagger$	Medium		2.1	

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Occupatio 3982430	91. Proposed rules: Occupationa nal Exposure; Reports for Data	l exposure or Informa	to methy tion Othe	lene chl er than	loride. Exposure or Release Data;
EXTRACTION Parameter			Data			
Life Cycle Stage: Life Cycle Descrip Physical Form: Route of Exposur Number of Sites: Number of Worke Engineering Cont PPE:	otion (Subca e: rs: rol & percen	ategory of Use): nt Exposure Reduction:	Use Aerosol F Aerosol Inhalation 217 2,182 Provides lists stand	Packing n various o dard PPH	ptions f	for engineernig control to reach OSHA PEL
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Proposed Rule
Domain 2: Repres	Sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1\\ 2\\ 6\\ 3\end{array}$	US Aerosol Packing pre 1991 no statistics provided
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	methodology unclear
Domain 4: Variab	ility and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1	

 $\star MWF = Metric Weighting Factor$ 

Source Citation: Type of Data Source Hero ID	Osha,. 199 Occupatio 3982430	91. Proposed rules: Occupationa nal Exposure; Reports for Data	l exposure or Informa	to methy tion Othe	lene chl er than	loride. Exposure or Release Data;
EXTRACTION Parameter			Data			
Life Cycle Stage: Life Cycle Descrip Physical Form: Route of Exposur Number of Sites: Number of Worke Engineering Cont PPE:	otion (Subca e: rs: rol & percen	ategory of Use): nt Exposure Reduction:	Processin Manufact Vapor Inhalation 390 2 Provides lists stand	g nure of Pa various o dard PPE	uints ptions f	for engineernig control to reach OSHA PEL
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Proposed Rule
Domain 2: Repres	Sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	1 2 6 3	US Manufacture of Paints pre 1991 no statistics provided
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	methodology unclear
Domain 4: Variab	ility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1	

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Occupatio 3982430	91. Proposed rules: Occupationa nal Exposure; Reports for Data	l exposure or Informa	to methy tion Othe	lene chl er than	loride. Exposure or Release Data;
EXTRACTION Parameter			Data			
Life Cycle Stage: Life Cycle Descrip Physical Form: Route of Exposur Number of Sites: Number of Worke Engineering Contr PPE:	otion (Subca e: rs: rol & percer	ategory of Use): nt Exposure Reduction:	Processin Manufact Vapor Inhalation 293 760 Provides lists stand	g ure of Pa n various o dard PPH	uint Rer ptions f	novers for engineernig control to reach OSHA PEL
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Proposed Rule
Domain 2: Repres	Metric 2: Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1\\ 2\\ 6\\ 3\end{array}$	US Manufacture of Paint Removers pre 1991 no statistics provided
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	methodology unclear
Domain 4: Variab	ility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1	

\* MWF = Metric Weighting Factor

Source Citation:Osha, 1991. Proposed rules: Occupational exposure to methylene chloride.Type of Data SourceOccupational Exposure; Reports for Data or Information Other than Exposure or Release Data;Hero ID3982430							
EXTRACTION							
Parameter		Data					
Life Cycle Stage: Life Cycle Description (Subc Physical Form: Route of Exposure: Number of Sites: Number of Workers: PPE:	ategory of Use):	Proc/Use Ink Manu Vapor Inhalation 37 ink ma 143 at inh lists stand	afacturing anufactur 4 manufa 1 ard PPI	g ers cturers E			
<b>EVALUATION</b> Domain	Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliability Metric 1:	Methodology	High	× 1	1	OSHA - Proposed Rule		
Domain 2: Representative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1\\ 2\\ 6\\ 3\end{array}$	US Ink Manufacturing pre 1991 no statistics provided		
Domain 3: Accessibility/Clan Metric 6:	ity Metadata Completeness	Low	× 1	3	methodology unclear		
Domain 4: Variability and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality Determination	$^{\mathrm{on}^{\dagger}}$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation:Osha, 1991. Proposed rules: Occupational exposure to methylene chloride.Type of Data SourceOccupational Exposure; Reports for Data or Information Other than Exposure or Release Data;Hero ID3982430							
EXTRACTION							
Parameter		Data					
Life Cycle Stage: Life Cycle Description (Sub Physical Form: Route of Exposure: Number of Sites: Number of Workers: PPE:	category of Use):	Use Solvent re Vapor Inhalatio: 40 161 lists stand	ecovery n dard PPH	Ξ			
EVALUATION	Metric	Bating	MWF*	Score	Comments		
Domain 1: Reliability Metric 1	Methodology	High	× 1	1	OSHA - Proposed Rule		
Domain 2: Representative Metric 2 Metric 3 Metric 4 Metric 5	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1\\ 2\\ 6\\ 3\end{array}$	US Solvent recovery pre 1991 no statistics provided		
Domain 3: Accessibility/Ch Metric 6	arity Metadata Completeness	Low	× 1	3	methodology unclear		
Domain 4: Variability and Metric 7	Jncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality Determinat	ion <sup>†</sup>	Medium		2.1			

\*  $\mathrm{MWF} = \mathrm{Metric}$  Weighting Factor

Source Citation: Type of Data Source	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data;						
Hero ID	3982430	. , .				• '	
EXTRACTION Parameter			Data				
Life Cycle Stare:			Uso				
Life Cycle Descrip	tion (Subc	ategory of Use).	Degreasin	g and M	etal Cle	paning	
Physical Form:	tion (Subce	ategory of obey.	Vapor	ig and m		anning .	
Route of Exposure	e:		Inhalatio	1			
Number of Sites:			22,652 col	ld degrea	sers; $12$	9 open top degreasers; 111 conveyorized vapor	
			degreaser	s	,		
Number of Worke	rs:		90,293 at	cold deg	greasers	; 271 at open top degreasers; 177 at convey-	
			orized vap	oor degre	asers		
Engineering Contr	ol & percer	nt Exposure Reduction:	Provides <sup>•</sup>	various o	ptions f	for engineernig control to reach OSHA PEL	
PPE:			lists stand	lard PPE	C		
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	ility		TT. 1				
	Metric 1:	Methodology	High	× 1	1	OSHA - Proposed Rule	
Domain 2: Repres	entative						
	Metric 2:	Geographic Scope	High	$\times 1$	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Degreasing and Metal Cleaning	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1991	
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided	
Domain 3: Access	ibility/Clar	ity Mata data Gammalatan ara	τ	<b>1</b>	9		
	Metric 0:	Metadata Completeness	LOW	× 1	3	methodology unclear	
Domain 4: Variab	ility and U	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed	
		~				-	
Overall Quality D	eterminatio	$\mathrm{on}^\dagger$	Medium		2.1		
- 0							

 $^{\star}$  MWF = Metric Weighting Factor

Source Citation:Osna,: 1991. Proposed rules: OccupationType of Data SourceOccupational Exposure; Reports for DataHero ID3982430	al exposure or Informa	to methy tion Othe	lene chl er than	loride. Exposure or Release Data;
EXTRACTION	Data			
Farameter	Data			
Life Cycle Stage:	Use			
Life Cycle Description (Subcategory of Use):	Paint Str	ripping		
Physical Form:	Vapor			
Route of Exposure:	Inhalatio	n		
Number of Sites:	75 large a	aircraft st	rippers	; 225 small air craft strippers; 4,000 furniture
Number of Workers:	strippers; 1,671 at l furniture	; 1,930 in arge aircı strippers	dustrial aft strij ; 6,942	firms ppers; 799 at small air craft strippers; 5,720 at industrial firms
Engineering Control & percent Exposure Reduction:	Provides	various o	ptions f	for engineernig control to reach OSHA PEL
PPE:	lists stan	dard PPI	<u>.</u>	
EVALUATION				
Domain Metric	Rating	$MWF^{\star}$	Score	Comments
Domain 1: Reliability Metric 1: Methodology	High	× 1	1	OSHA - Proposed Bule
	8		-	
Domain 2: Representative				
Metric 2: Geographic Scope	High	$\times 1$	1	US
Metric 3: Applicability	High	$\times 2$	2	Paint Stripping
Metric 4: Temporal Representativeness	Low	$\times 2$	6	pre 1991
Metric 5: Sample Size	Low	$\times 1$	3	no statistics provided
Domain 3: Accessibility/Clarity	Ţ	_	2	
Metric 6: Metadata Completeness	Low	$\times 1$	3	methodology unclear
Domain 4: Variability and Uncortainty				
Metric 7: Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed
	LOW	^ I	0	variability of differentity not discussed
Overall Quality Determination <sup><math>\dagger</math></sup>	Medium		2.1	

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data;						
	3982430						
Parameter			Data				
			T.				
Life Cycle Stage:			Use	<b>F</b>	. Dl		
Dire Cycle Descrij	ption (Subca	ategory of Use):	Vapor	iane Foan	n Blowl	ng	
Boute of Exposur	<b>•</b> ••		Inhalation	n			
Number of Sites:	<b>.</b>		180	.1			
Worker Activity:			pouring.	cooling/c	uring		
Number of Worke	ers:		1,169	0, 1	0		
Engineering Cont	rol & percer	nt Exposure Reduction:	Provides	various o	ptions f	or engineernig control to reach OSHA PEL	
PPE:			lists stand	lard PPE			
EVALUATION							
Domain		Metric	Rating	$\rm MWF^{\star}$	Score	Comments	
	•1•7						
Domain 1: Relian	Motrie 1.	Mathadalagy	Uich	× 1	1		
	metric 1.	Methodology	Ingn	× 1	1	OSHA - Proposed Rule	
Domain 2: Repre	sentative						
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Polyurethane Foam Blowing	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1991	
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided	
Daniela 2. Access	:1::1::						
Domain 5: Access	Motrie 6:	Motadata Completeness	Low	$\sim 1$	2	methodelers un eleca	
	Metric 0.	Metadata Completeness	LOW	~ 1	5	methodology unclear	
Domain 4: Varial	oility and U	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed	
Overall Quality I	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1		

 $\star$  MWF = Metric Weighting Factor

Source Citation:Osha,Type of Data SourceOccupHero ID39824	. 1991. Proposed rules: Occupation bational Exposure; Reports for Data 30	al exposure or Informa	to methy tion Othe	lene chl er than	loride. Exposure or Release Data;		
EXTRACTION							
Parameter		Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Number of Sites: Engineering Control & percent Exposure Reduction: PPE:			Use Cellulose Triacetate and Film Base Production Vapor Inhalation 1 Provides various options for engineernig control to reach OSHA PEL lists standard PPE				
EVALUATION							
Domain	Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliability Metri	e 1: Methodology	High	$\times 1$	1	OSHA - Proposed Rule		
Domain 2. Representativ	e						
Metri	2: Geographic Scope	High	$\times 1$	1	US		
Metri	e 3: Applicability	High	$\times 2$	2	Cellulose Triacetate and Film Base Production		
Metri	e 4: Temporal Representativeness	Low	$\times 2$	6	pre 1991		
Metri	c 5: Sample Size	Low	$\times 1$	3	no statistics provided		
Domain 3: Accessibility/ Metri	Clarity c 6: Metadata Completeness	Low	× 1	3	methodology unclear		
Domain 4: Variability and Uncertainty Metric 7: Metadata Completeness		Low	$\times 1$	3	variability or uncertanity not discussed		
Overall Quality Determination <sup>†</sup>		Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Occupatio 3982430	91. Proposed rules: Occupationa nal Exposure; Reports for Data	l exposure or Informa	to methy tion Othe	lene chl er than	loride. Exposure or Release Data;	
EXTRACTION Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Number of Sites: Number of Workers: Engineering Control & percent Exposure Reduction: PPE:		Use Electronic Vapor Inhalation 1059 4,720 Provides lists stand	Use Electronics Vapor Inhalation 1059 4,720 Provides various options for engineernig control to reach OSHA PEL lists standard PPE				
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Proposed Rule	
Domain 2: Repres	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1\\ 2\\ 6\\ 3\end{array}$	US Electronics pre 1991 no statistics provided	
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	methodology unclear	
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed	
Overall Quality I	Determinatic	$\mathbf{n}^{\dagger}$	Medium		2.1		

\* MWF = Metric Weighting Factor

Source Citation:Osha,. 19Type of Data SourceOccupationHero ID3982430	91. Proposed rules: Occupationa nal Exposure; Reports for Data	l exposure or Informa	to methy tion Othe	lene chl er than l	loride. Exposure or Release Data;
EXTRACTION					
Parameter		Data			
Life Cycle Stage:		Proc/Use			
Life Cycle Description (Subc	ategory of Use):	Printing			
Physical Form:		Vapor			
Route of Exposure:		Inhalation	n		
Number of Sites:		10,482  pr	inters		
Number of Workers:		34,868 at	printers		
PPE:		lists stand	dard PPH	£	
EVALUATION					
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments
Domain 1. Poliability					
Metric 1:	Methodology	High	$\times 1$	1	OSHA - Proposed Rule
	er e e e	0			in irin in i
Domain 2: Representative					
Metric 2:	Geographic Scope	High	$\times 1$	1	US
Metric 3:	Applicability	High	$\times 2$	2	Printing
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1991
Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided
Domain 3: Accessibility/Clay	ity				
Metric 6:	Metadata Completeness	Low	× 1	3	methodology unclear
			=	, in the second	
Domain 4: Variability and U	ncertainty				
Metric 7:	Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed
Overall Quality Determination	$\mathbf{p}\mathbf{n}^{\dagger}$	Medium		2.1	

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	itation: Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Data Source Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3982430							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Number of Sites: Number of Workers: Engineering Control & percent Exposure Reduction: PPE:			Use Polycarbo Vapor Inhalation 4 67 Provides lists stand	Use Polycarbonate Resin Manufacturing Vapor Inhalation 4 67 Provides various options for engineernig control to reach OSHA PEL lists standard PPE				
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Proposed Rule		
Domain 2: Repres	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High Medium Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1 \\ 4 \\ 6 \\ 3 \end{array}$	US Polycarbonate Resin Manufacturing pre 1991 no statistics provided		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	methodology unclear		
Domain 4: Variab	Dility and University Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed		
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Occupatio 3982430	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3982430							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Number of Sites: Worker Activity: Number of Workers: Engineering Control & percent Exposure Reduction: PPE:			Processing Pharmaceuticals Manufacturing Vapor Inhalation 76 Pill coating 1,007 Provides various options for engineernig control to reach OSHA PEL lists standard PPE						
EVALUATION Domain		Metric	Bating	MWF*	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA - Proposed Rule			
Domain 2: Repres	Sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High Medium Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$egin{array}{c} 1 \\ 4 \\ 6 \\ 3 \end{array}$	US Pharmaceuticals Manufacturing pre 1991 no statistics provided			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	methodology unclear			
Domain 4: Variab	ility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3				

\* MWF = Metric Weighting Factor

Source Citation:Osha, 19Type of Data SourceOccupationHero ID3982430	on: Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Source Occupational Exposure; Reports for Data or Information Other than Exposure or Release Data; 3982430					
EXTRACTION						
Parameter		Data				
Life Cycle Stage:		Proc/Use				
Life Cycle Description (Subc	ategory of Use):	Food extr	action			
Physical Form:	,	Vapor				
Route of Exposure:		Inhalation	1			
Number of Sites:		3 food pr	ocessing	compan	ies	
PPE:		lists stand	lard PPF	2		
EVALUATION						
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliability						
Metric 1:	Methodology	High	$\times 1$	1	OSHA - Proposed Rule	
Domain 2: Representative						
Metric 2:	Geographic Scope	High	$\times 1$	1	US	
Metric 3:	Applicability	High	$\times 2$	2	Food extraction	
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	pre 1991	
Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided	
Domain 3: Accessibility/Clay	ity					
Metric 6:	Metadata Completeness	Low	$\times 1$	3	methodology unclear	
Domain 4. Variability and U	neertsinty					
Domain 4: Variability and U Motric 7:	Motadata Completeness	Low	$\sim 1$	3	wasiability on uncertanity not discussed	
	metadata Completeness	цом	^ 1	J	variability of uncertainty not discussed	
Overall Quality Determination	$\mathbf{n}^{\dagger}$	Medium		2.1		

Source Citation:	Ec,. 2009 (dichlorom	9. Recommendation from the ethane).	scientific	committe	e on o	ccupational exposure limits from methylene chloride
Type of Data Source Hero ID	Occupation 3982443	nal Exposure; Reports for Data	or Informa	tion Othe	er than l	Exposure or Release Data;
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Use			
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	EC report - References Friedlander 1978 (HEROID 65067), Hearne and Pifer 1999 (HEROID 730525), Ott et al 1983 (HERO ID29149), Gibbs 1996 (730533) (see tab)
Domain 2: Repres	sentative					
1	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Europe
	Metric 3:	Applicability	High	$\times 2$	2	Covers various industries
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	Most data $>20$ years old
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided
Domain 3: Access	ibility/Clar Motric 6:	ity Matadata Completeness	Low	× 1	2	
	metric 0:	Metadata Completeness	LOW	× 1	ა	methodology unclear
Domain 4: Variab	ility and U	ncertainty				
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	variability or uncertanity not discussed
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.2	

\* MWF = Metric Weighting Factor

Source Citation:	CalEpa,. 2005. Appendix D.3 Chronic RELS and toxicity summaries using the previous version of Hot Spots Risk Assessment guidelines (OEHHA 1999).						
Type of Data Source Hero ID	Occupatio 3982628	nal Exposure; Reports for Data	or Informat	ion Othe	er than	Exposure or Release Data;	
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Use				
Life Cycle Descrip	otion (Subca	ategory of Use):	Film Base	e Manufa	cturing		
Physical Form:			vapor		0		
Route of Exposur	e:		inhalatior	1			
Exposure Concent	tration (Uni	t):	30-125 pp	m (repor	ted in d	other sources citing Friedlander et al, 1978)	
Type of Measurer	nent or Met	hod:	8-hr TWA	1			
Number of Worke	ers:	751					
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1, Paliah	;1;+						
Domain 1. Renau	Metric 1:	Methodology	Medium	$\times 1$	2	cites Friedlander et al, 1978	
	, , <b>.</b>						
Domain 2: Repres	Sentative Motrie 2:	Coorrenhia Soona	Uich	× 1	1	110	
	Metric 2.	Applicability	High	$\times 1$ $\times 2$	2	US	
	Metric 4:	Temporal Representativeness	Low	$\times 2 \times 2$	6	pre 1978	
	Metric 5:	Sample Size	Low	$\times 1$	3	no statistics provided	
Domain 2. Agaag	sibility /Clan	:+					
Domain 5. Access	Metric 6:	Metadata Completeness	Low	× 1	3	methodology unclear	
	Metric 0.	Metadata Completeness	LOW	~ 1	5	methodology unclear	
Domain 4: Variab	oility and U	ncertainty					
	Metric 7:	Metadata Completeness	Low	× 1	3	variability or uncertanity not discussed	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.2		

\* MWF = Metric Weighting Factor

Source Citation:	Dhhs,. 199	02. In- Depth Survey Report: Th	ne Control c	of Methyl	ene Chl	oride in Furniture Stripping at The JM Murray Center,		
Type of Data Source Hero ID	Occupation 3986433	nal Exposure; Monitoring Data;						
EXTRACTION								
Parameter			Data					
Life Cycle Stage:	tion (Coller		Use	Ct				
Dire Cycle Descrij	ption (Subca	ategory of Use):	Furniture	Strippin	g.			
Route of Exposur	·o·		inhalation	por dermal				
Exposure Concen	tration (Uni	t).	Personal	1-160  pr	mArea	· 1-189 ppm		
Number of Sampl	es:		Personal:	27Area:	108	. i ios ppin		
Number of Sites:			1	2111100	100			
Type of Measurer	ment or Met	hod:	short-tern	n				
Type of Sampling	g:		Personal,	Area				
Sampling Locatio	n:		Around P	rototype	strippe	er		
Exposure Duration:		varies						
Exposure Frequency:		everyday						
Engineering Cont	Engineering Control & percent Exposure Reduction:		New Strip	oping Sta	tion wit	th better airflow		
PPE:			shoulder l	length gl	oves, ful	ll-face mask		
Analytic Method:			NIOSH 10	005				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1. Beliah	vility							
Domain 1. Henat	Metric 1:	Methodology	High	× 1	1	Niosh 1005		
	1100110 11	inethedeles,	8		-	1000		
Domain 2: Repres	sentative							
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that has potential exposure to employees		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1992, 26 years old and prior to most recent PEL $$		
	Metric 5:	Sample Size	High	$\times 1$	1	Excellent charcterization of all measurements and data points		
Domain 3. Accord	zibility /Clar	itz						
Domain 5: Access	Metric 6	Metadata Completeness	Medium	× 1	2	Was run as a proliminary test of a prototype system. Actual		
	MEDIIC 0.	metadata Completeness	meunin	^ I		was run as a premininary test of a prototype system. Actual worker exposure data was not present.		
	Continued on next page							

Source Citation:	Dhhs,. 199 Inc.	2. In- Depth Survey Report: T	The Control o	f Methyl	ene Chl	oride in Furniture Stripping at The JM Murray Center,
Type of Data Source	Occupation	nal Exposure; Monitoring Data	ı;			
Hero ID	3986433					
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 4: Variab	oility and Ur	ncertainty		4	2	
	Metric 7:	Metadata Completeness	Medium	× 1	2	NIOSH Method has uncertainty included.
Overall Quality D	Determination	n†	Medium		1.7	

– continued from previous page

\* MWF = Metric Weighting Factor

Source Citation:Cone MillType of Data SourceOccupationHero ID4213651	s, Corp. 1981. HEALTH & SAF onal Exposure; Monitoring Data;	ETY STU	DY REPO	DRT (E	PA 40 CFR PART 716).
EXTRACTION Parameter		Data			
Life Cycle Stage: Life Cycle Description (Subc Physical Form: Route of Exposure: Exposure Concentration (Un Number of Samples: Number of Sites: Type of Measurement or Me Worker Activity: Number of Workers: Type of Sampling: Sampling Location: Exposure Duration: PPE:	Industrial, commercial and consumer uses Adhesives and sealants spray, vapor from curing Inhalation from 25 - 33 ppm 3 1 NIOSH P&CAM 127 Polyurathane chair molding (pg 8 of 17) 3 personal Three job operations or locations (i.e., flexible foam mold release spray- ing, rigid foam mold release spraying (small parts and large parts)). 6 hrs not specified				
<b>EVALUATION</b> Domain	Metric	Rating	$MWF^{\star}$	Score	Comments
Domain 1: Reliability Metric 1:	Methodology	High	× 1	1	A certified occupational hygienist from the company's Indus- trial Hygiene Section conducted this study to determine expo- sure levels and appears to have followed an "EPA 40 CFR Part 716" survey protocol.
Domain 2: Representative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low High	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$egin{array}{c} 1 \\ 2 \\ 6 \\ 1 \end{array}$	North Carolina - US Use in scope More than 20 years old i.e., 1982 and prior to most recent PEL discrete data given
Domain 3: Accessibility/Clan Metric 6:	rity Metadata Completeness	High	× 1	1	all metedata described
	Cor	tinued on	next page	9	

		- conti	nued from f	brevious	page	
Source Citation: Type of Data Source Hero ID	Cone Mills, Corp. 1981. HEALTH & SAFETY STUDY REPORT (EPA 40 CFR PART 716). Occupational Exposure; Monitoring Data; 4213651					
EVALUATION						
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.7	

continued from previous page

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Cone Mills Occupatio 4213652	s, Corp. 1981. SURVEY RESUL nal Exposure; Monitoring Data;	TS OF PE	RSONAI	EXPO	SURE MONITORING WITH COVER LETTER.	
EXTRACTION Parameter			Data				
Life Cycle Stage: Life Cycle Descrip Physical Form: Route of Exposur Exposure Concen Number of Sampl Number of Sites: Type of Measurer Worker Activity: Number of Worke Type of Sampling Sampling Locatio Exposure Duratio PPE:	<pre>vcle Stage: vcle Description (Subcategory of Use): al Form: of Exposure: ure Concentration (Unit): er of Samples: er of Sites: of Measurement or Method: r Activity: er of Workers: of Sampling: ng Location: ure Duration:</pre>			Industrial, commercial and consumer uses Propellants and blowing agents spray, vapor from curing Inhalation Personal: from 4 to 280 ppmArea: from 540 to 2,130 ppm 17 1 NIOSH P&CAM 127 Polyurathane foam production (pgs 5, 7, and 9 of 10)Data on page 9 was a repeat of data from HERO ID: 4213651 not specified personal and area Job operations or locations (e.g., foam line operator, foam line assistant, cut-off saw operator, crane operator in foam storage room). Personal: from 4 and 5 hrsArea: from 1.5 to 5 hrs not specified			
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	A certified occupational hygienist from the company's Indus- trial Hygiene Section conducted this study to determine expo- sure levels and appears to have followed an "EPA 40 CFR Part 716" survey protocol.	
Domain 2: Repres	Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low High	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	1 2 6 1	North Carolina - US Use in scope More than 20 years old i.e., 1982 and prior to most recent PEL discrete data given	

Domain 3: Accessibility/Clarity

Continued on next page

Source Citation: Type of Data Source Hero ID	Cone Mills, Corp. 1981. SURVEY RESULTS OF PERSONAL EXPOSURE MONITORING WITH COVER LETTER. Occupational Exposure; Monitoring Data; 4213652						
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
	Metric 6:	Metadata Completeness	High	$\times 1$	1	all metadata given	
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty	
Overall Quality D	eterminatio	n <sup>†</sup>	Medium		1.7		

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\* MWF = Metric Weighting Factor

Source Citation:EType of Data SourceCHero ID4	Citation:Burlington Indus, Inc. 1979. Solvent exposure monitoring results with cover letters.Data SourceOccupational Exposure; Monitoring Data; 4213722								
EXTRACTION Parameter			Data						
Life Cycle Stage:			Industria	l, comme	rcial an	d consumer uses			
Life Cycle Description	on (Subca	tegory of Use):	Solvents	(for clean	ing or o	degreasing)			
Physical Form:			spray and	l vapor					
Route of Exposure:			Inhalatio	n					
Exposure Concentra	ation (Uni	t):	Personal:	from 139	9 to 213	3 ppmArea: 708 ppm			
Number of Samples:	:		10						
Number of Sites:			1						
Worker Activity:			Organic s	solvents a	re used	in various operations at the Goldsboro plant"			
			as a rust	prevetati	ve" to 1	remove grease and oil" employees are exposed			
			to the sol	vents in a	all of th	lese operations.			
Number of Workers:	•		not speci	пеа					
Sampling Logation			Job oper	personal and area					
Exposure Duration:			Job operations or locations (e.g., machine cleaning).						
Exposure Duration.			nending upon the duration of solvent usage in the operation						
PPE			"Goldsboro plant emplyees using Solvex II did use organic vapor res-						
1112.			pirators while the spraying was done, but the data indicate that these						
			respirators would have to be worn during the entire cleaning opeation to						
			provide adequate protection" an alternative is to find another solvent"						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Danain 1. Daliahili	4								
Domain 1: Kenabili	ty Motrie 1.	Mathadalagy	Uich	× 1	1	A south Call a source of the all and the former that sources and the last			
1	Metric 1.	Methodology	mgn	× 1	1	trial Hygiene Section conducted this study to determine expo-			
						sure levels and appears to have followed an "EPA 40 CFR Part			
						716 <sup>"</sup> survey protocol.			
Domain 2: Baprosor	atativo								
Domain 2. Represen	Motrie 2	Coographic Scope	High	× 1	1	North Coroling US			
L N	Metric $2$ :	Applicability	High	× 1 × 9	1 9	Ivortin Garonnia - US			
I N	Metric 4.	Temporal Representativeness	Low	$\times 2^{-2}$	6	More than 20 years old i.e., 1979 and prior to most recent PEL.			
			10	~ 4	0	Nore than 26 years out i.e., 1979 and prior to most recent r EE			
Continued on next page									

Source Citation: Type of Data Source Hero ID	Burlington Occupation 4213722	Indus, Inc. 1979. Solvent ex nal Exposure; Monitoring Da	xposure monito ata;	ring resu	ılts with	n cover letters.
EVALUATION						
Domain		Metric	Rating	$\mathbf{MWF}^{\star}$	Score	Comments
	Metric 5:	Sample Size	Low	$\times 1$	3	Sample statistics not discussed, however, since this is an IH survey it can be assumed that this was considered.
Domain 3: Access	sibility/Clari Metric 6:	ity Metadata Completeness	High	$\times 1$	1	Assessment or report clearly documents its data sources, as- sessment methods, results, and assumptions.
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Medium		1.9	

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\* MWF = Metric Weighting Factor

Source Citation:BuType of Data SourceOcHero ID421	Source Citation:Burlington Indus, Inc. 1979. Solvent exposure monitoring results with cover letters.Type of Data SourceOccupational Exposure; Monitoring Data;Hero ID4213722								
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Number of Samples: Number of Sites: Worker Activity: Number of Workers: Type of Sampling: Sampling Location: Exposure Duration: Engineering Control & percent Exposure Reduction: PPE:		Industrial, commercial and consumer uses Solvents (for cleaning or degreasing) spray and vapor Inhalation Personal: 312 ppmArea: from 117 to 227 ppm 3 1 End ring cleaning - screen engraving not specified personal and area Area sampling locations (i.e., where cleaning was done, on cover of wash tank) "the employee rotate thru this job and are exposed only one hour per day" No corrective action is required" not specified							
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments			
Domain 1: Reliability Me	etric 1:	Methodology	High	× 1	1	A certified occupational hygienist from the company's Indus- trial Hygiene Section conducted this study to determine expo- sure levels and appears to have followed an "EPA 40 CFR Part 716" survey protocol.			
Domain 2: Representative Metric 2: Geographic Scope High × 1 1 North Carolina - US   Metric 3: Applicability High × 2 2 Use in scope   Metric 4: Temporal Representativeness Low × 2 6 More than 20 years old i.e., 1980 and prior to most   Metric 5: Sample Size Low × 1 3 Sample statistics not discussed, however, since th						North Carolina - US Use in scope More than 20 years old i.e., 1980 and prior to most recent PEL Sample statistics not discussed, however, since this is an IH survey it can be assumed that this was considered.			
Continued on next page									

Source Citation: Type of Data Source Hero ID	Burlington Occupation 4213722	Burlington Indus, Inc. 1979. Solvent exposure monitoring results with cover letters. Occupational Exposure; Monitoring Data; 4213722						
EVALUATION								
Domain		Metric	Rating	$\rm MWF^{\star}$	Score	Comments		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	High	× 1	1	Assessment or report clearly documents its data sources, as- sessment methods, results, and assumptions.		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Medium	× 1	2	Limited discussion on uncertainty		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.8			

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\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Ford Motor, Co. 1981. Industrial hygi Occupational Exposure; Completed E: 4213729	iene survey - spray booths, oil house, roll weld, bonderite deck, trimline. exposure or Risk Assessments;	
EXTRACTION Parameter		Data	
Life Cycle Stage:		Industrial commercial and consumer uses	
Life Cycle Descrip	otion (Subcategory of Use):	Solvents (for cleaning or degreasing) - Aerosol spray degreaser/cleaner	
Route of Exposur	e:	Inhalation	
Exposure Concen	tration (Unit):	Kentucky Truck Plant - 1981* Spray Booths: 0.06 and 0.78 ppm (pg 21 of 25)* Oil House: 15-minute samples from 69.9 to 0.79 ppm (TWA=7.1 ppm) (pg 22 of 25).* Bonderite Car Wash Deck: 0.07 to 2.3	
Number of Sampl	es:	13	
Number of Sites:		3	
Type of Measurer	ment or Method:	breathing zone	
Worker Activity:		Spray application of a sealer to the outside of vehicle firewalls. Mixed solvent vapor employee; in many cases up to four soulvents are contained in a system.	
Number of Worke	ers:	13 total	
Type of Sampling	;:	DuPont P-125 personal sampling pump with charcoal tube. Analysis with gas chromatorgraphy.	
Sampling Locatio	n:	Spray Booths, Oil House, Car Wash Deck	
Exposure Duration	on:	ranged from all day to 15-minutes	
Engineering Cont	rol & percent Exposure Reduction:	Subsequent to initial complints, the ventilation in the work area was upgraded by positioning two man-cooling fans to blow on the affected employee at an air velocity of 50 to 500 feet per minute" the operation of the man-cooling fans did not have a significant effect on overall emplye exposures (pg 10 of 25). Oil House: impervious gloves required for paint mixers (pg 16 of 25).Bon- derite Car Wash Deck: impervious gloves with gauntlets required (pg 17 of 25).Oil House: impervious gloves were not worn buring the survey, but should be required to minimise skin contact various forms of ven- tilation are employed in this area e.g., booth controlling emissions from pot spraying (pg 18 of 25).	
EVALUATION			
Domain	Metric	Rating MWF* Score Comments	
		Continued on next page	

Source Citation: Type of Data Source Here ID	Ford Motor, Co. 1981. Industrial hygiene survey - spray booths, oil house, roll weld, bonderite deck, trimline. Occupational Exposure; Completed Exposure or Risk Assessments; 4213729							
	4210723							
EVALUATION								
Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility							
	Metric 1:	Methodology	Medium	$\times 1$	2	Data from user, who is also the author of the report		
Domain 2: Repres	sentative							
Domain <b>1</b> , 100pro,	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1982-1981		
	Metric 5:	Sample Size	Low	$\times 1$	3	Distribution characterized by no statistics.		
Domain 3: Access	sibility/Clar	ity						
Domain 5. Access	Metric 6:	Metadata Completeness	High	$\times 1$	1	Assessment or report clearly documents its data sources, as- sessment methods, results.		
Domani 4. variat	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion on uncertainty and variability		
Overall Quality D	Determinatio	$\mathrm{n}^\dagger$	Medium		2.0			

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 $\star$  MWF = Metric Weighting Factor

Source Citation:	Olin, Corp. 1977. DETERMINATI FORMULATED AUTOPAK CHEM	ON OF THE EMISSION LEVELS OF METHYLENE CHLORIDE FROM NEWLY SYSTEMS WITH COVER LETTER.
Type of Data Source Hero ID	Occupational Exposure; Monitoring E 4213766	Data;
EXTRACTION		
Parameter		Data
Life Cycle Stage:		Industrial, commercial and consumer uses
Life Cycle Descri	ption (Subcategory of Use):	Solvents (for cleaning or degreasing)
Physical Form:		spray and vapor
Route of Exposu	re:	Inhalation
Exposure Concer	tration (Unit):	Personal: from 0.14 to 241 ppmArea: from 1.3 to 10.1 ppm
Number of Samp	les:	approx-imately 50
Number of Sites:		1
Worker Activity:		Exposure from the newly formulated Autopak" Chemical Systems" Breathing zone studies were made using a Bacharach Model TLV snif- fer during simulated packaging operations (pg 5 of 68).Lab operations, purge operator, blend operator, etc. (pgs 10, 14, 19, 24, 27, 28, 30, 35, 40, 47, 51, 54, 57, 62, 64 of 68).
Number of Work	ers:	not specified
Type of Sampling	g:	personal and area
Sampling Location Engineering Cont	on: trol & percent Exposure Reduction:	Breathing zone sampling events (i.e., initial injection, package closed). "Excellent progress has and is being made in regard to alleviating air con- taminant concentrations through design and equipment changes" design changes in the foam" a new hood has been installed (pg 8 of 68)""De- velop a housekeeping plan to keep rags containing solvents in closed (preferably ventilated) containers when not in use (pg 44 of 68).""Con- tainer of methylene chloride and other solvents should be covered when not in use (pg 60 of 68)."
EVALUATION		
Domain	Metric	Rating MWF <sup>*</sup> Score Comments
Domain 1: Relia	bility Metric 1: Methodology	High × 1 1 A certified occupational hygienist from the company's Indus- trial Hygiene Section conducted these studies.

Domain 2: Representative

Metric 2: Geographic Scope

High  $\times 1$  1

US

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Source Citation:	Olin, Corp FORMUL	Olin, Corp. 1977. DETERMINATION OF THE EMISSION LEVELS OF METHYLENE CHLORIDE FROM NEWLY FORMULATED AUTOPAK CHEM SYSTEMS WITH COVER LETTER.							
Type of Data Source	Occupation	Occupational Exposure: Monitoring Data:							
Hero ID	4213766								
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1977 and prior to most recent PEL			
	Metric 5:	Sample Size	Low	$\times 1$	3	Sample statistics not discussed, however, since this is an IH survey it can be assumed that this was considered.			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	High	$\times 1$	1	Assessment or report clearly documents its data sources, as- sessment methods, results, and assumptions.			
Domain 4: Variab	oility and Ur	ncertainty							
	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Limited discussion on uncertainty			
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Medium		1.8				

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\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Olin, Corp. 1979. INDUSTRIAL HYGIENE SURVEY CORP PROTECTION AREA WITH COVER LETTER & MEMO. Occupational Exposure; Monitoring Data; 4213778									
EXTRACTION Parameter				Data						
Life Cycle Stage:			Processin	g						
Life Cycle Descrip	otion (Subca	ategory of Use):	Incorpora	ted into	formula	ation, mixture, or reaction product				
Physical Form:			vapor							
Route of Exposur	e:		Inhalatio	1						
Exposure Concent	tration (Uni	t):	Operator 487.3 ppr	exposur n (pg 13	e range of 28).	d from 0.15 to 21.77 ppmWhile drumming,				
Number of Sampl	es:		5	(PO - 3						
Number of Sites:			1							
Type of Measurer	ment or Met	hod:	charcoal t	ube						
Worker Activity:			Dichloron	nethane v	vas not	the focus of the study." The short term sample				
			taken whi	ile an em	ployee v	was drumming methyelene chlorine was a non-				
				peration	and pro	oper respiratory protection was being worn."				
Number of Worke	ers:		not specified							
Type of Sampling	;:		personal a	and area						
Exposure Duratio	n:		Short and long term samples collected (i.e., 1 and 5 hours).							
Exposure Frequer	ncy:		non-routi	ne operat	tion					
PPE:			The Safety Department should assist the Crop Protection Department							
			in a thorough review with emplyees concerning the use of respiratory protection $(p_{12}, p_{22}, p_{23})$							
			protection	n (pg 20	of 28).					
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliab	ility									
	Metric 1:	Methodology	Low	$\times 1$	3	not described				
Domain 2: Repres	sentative									
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	× 1	1	US data				
	Metric 3:	Applicability	Medium	$\times 2$	4	Use of DCM not clear in the study but assumed to be similar				
	0.	rrJ			-	to industrial uses in scope				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1979 and prior to most recent PEL				
	Metric 5:	Sample Size	High	$\times 1$	1	discrete samples given				
		Con	tinued on r	next page	<u>,</u>					
Source Citation: Type of Data Source Hero ID	Olin, Corp Occupation 4213778	o. 1979. INDUSTRIAL HYGI nal Exposure; Monitoring Dat	ENE SURVE` a;	Y CORP	PROT	ECTION AREA WITH COVER LETTER & MEMO.				
----------------------------------------------------	-------------------------------------	----------------------------------------------------------	------------------	------------------------	-------	--------------------------------------------------------------				
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Medium	× 1	2	Most metadata given, missing exposure frequency and duration				
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty				
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.2					

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\* MWF = Metric Weighting Factor

Source Citation:	Unocal, C LIMIT (T	orporation. 1986. MEMORAN OEL) FOR DICHLOROMETHA	NDUM REGARDING UNOCAL TEMPORARY OCCUPATIONAL EXPOSURE ANE WITH ATTACHMENTS AND COVER LETTER DATED 110987.						
Type of Data Source Hero ID	Occupation 4213814	nal Exposure; Monitoring Data;							
EXTRACTION Parameter			Data						
Life Cycle Stage:			Distribut	ion in coi	nmerce				
Life Cycle Descrip	otion (Subca	ategory of Use):	Distribut	ion					
Physical Form:			vapor	~					
Route of Exposure	e:		Inhalatio	nSkin exp	osure i	s minimal (pg 10 of 19)			
Exposure Concent	ration (Uni	t):	truck loa (at La M to 94 pp Unocal C	ding - les iranda ar m, with a Chemical l	s than 3 1d Oakl a mean Divisior	30 ppm for drum loading, less than 3 ppm for and LCL plants)truck loading - from 0.1 ppm of 28 ppm (from less than 25 percent of the as LLC).			
Number of Sample	es:		7			)			
Number of Sites:	Number of Sites:			s handled	at all 2	5 chemical distribution centers in the company.			
Worker Activity:	Worker Activity:			filling drums/loading trucks; drumming solvent; transfer loading; truck					
				loading					
Number of Worke	rs:		86 plant workers and 109 truck drivers						
Type of Sampling	:		personal and area						
Exposure Duration	n:		8 hrs						
PPE:			gloves, bi	ut respria	tors ma	y not be routinely used. The use of respiratory			
			protectio	n and glo	oves du	ring truck loading has been recommented to			
			piant ma	nagement	Dased	on these monitoring results.			
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Boliah	ility								
Domain 1. Renad	Metric 1	Methodology	Low	× 1	3	Not Specified			
	Medile 1.	Methodology	TOW	× 1	0	Not Specifica			
Domain 2: Repres	entative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US data			
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1979 and prior to most recent PEL $$			
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given			

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Source Citation:	Unocal, C LIMIT (T	nocal, Corporation. 1986. MEMORANDUM REGARDING UNOCAL TEMPORARY OCCUPATIONAL EXPOSURE MIT (TOEL) FOR DICHLOROMETHANE WITH ATTACHMENTS AND COVER LETTER DATED 110987.				
Type of Data Source	Occupation	nal Exposure; Monitoring Data	ı;			
Hero ID	4213814					
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	$\mathbf{Score}$	Comments
Domain 3: Access	sibility/Clari Metric 6:	ity Metadata Completeness	Medium	$\times 1$	2	Most metadata given, missing exposure frequency and duration
Domain 4: Variat	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.0	

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\* MWF = Metric Weighting Factor

Type of Data Source     Occupational Exposure; Monitoring Data; 4213837       EXTRACTION	Source Citation:	Olin, Chemicals. 1977. ENVIRONMENTAL HYGIENE SURVEY OF THE OLIN CHEMICALS BRO PLANT.					OF THE OLIN CHEMICALS BROOK PARK, OHIO				
EXTRACTION	Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 4213837									
	EXTRACTION										
Parameter Data	Parameter			Data							
Life Charle Channel In Justice Landscore and a supervision of the supe	Life Carela Channe			Ter deserter in	1		1				
Life Cycle Stage: Industrial, commercial and consumer uses	Life Cycle Stage:	otion (Suba	togony of Use).	Solvente	i, comme	rcial an	da consumer uses				
Physical Form: vapor	Physical Form:		tregory of Ose).	vanor							
Route of Exposure: Inhalation	Route of Exposu	e:		Inhalatio	n						
Exposure Concentration (Unit): From 0.1 to 633 ppm (pg 5 of 17)	Exposure Concen	tration (Uni	t):	From 0.1	to 633 p	om (pg	5  of  17)				
Number of Samples: 14	Number of Samp	les:		14		. (18					
Number of Sites: 1	Number of Sites:			1							
Worker Activity: purge operations, cylinder cleaing, blending, laboratory operations, ket-	Worker Activity:			purge ope	erations,	cylinder	r cleaing, blending, laboratory operations, ket-				
tle area, filter cleaning				tle area, i	filter clea	ning					
Number of Workers: not specified	Number of Worke	Number of Workers:			fied						
Type of Sampling: not specified	Type of Sampling	Type of Sampling:			not specified						
Sampling Location: see worker activity	Sampling Locatio	n:		see worker activity							
Exposure Duration: not specified	Exposure Duratio	on:		not specified							
Exposure Frequency: not specified	Exposure Frequer	ncy:		not specified							
Engineering Control & percent Exposure Reduction: Recommend installing a self cleaning filter to overcome the necessity of	Engineering Cont	rol & percei	it Exposure Reduction:	Recomme	end instal	ling a s	self cleaning filter to overcome the necessity of				
opening and cleaning the system, laboratory work should be done in the				bood of a	and clean	ng the	system, laboratory work should be done in the				
noou, etc.				noou, etc	•						
EVALUATION	EVALUATION										
Domain Metric Bating MWF* Score Comments	Domain		Metric	Rating	MWF*	Score	Comments				
				Tating		Beore	Commente				
Domain 1: Reliability	Domain 1. Beliał	vility									
Metric 1: Methodology Medium $\times 1$ 2 Described, but not named	Domain 1. Renar	Metric 1:	Methodology	Medium	× 1	2	Described, but not named				
Domain 2: Representative	Domain 2: Repre	sentative									
Metric 2: Geographic Scope High $\times 1$ 1 Ohio - US		Metric 2:	Geographic Scope	High	$\times 1$	1	Ohio - US				
Metric 3: Applicability High $\times 2$ 2 Use in scope		Metric 3:	Applicability	High	$\times 2$	2	Use in scope				
Metric 4: Temporal Representativeness Low $\times 2$ 6 More than 20 years old i.e., 1977 and prior to most recent PEI		Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1977 and prior to most recent PEL $$				
Metric 5: Sample Size High × 1 1 discrete data given		Metric 5:	Sample Size	High	$\times 1$	1	discrete data given				
Domain 3: Accessibility/Clarity	Domain 3: Access	sibility/Clar	ity								
Continued on next page			Cor	tinued on i	next page	;					

				-		
Source Citation:	Olin, Cher PLANT.	Dlin, Chemicals. 1977. ENVIRONMENTAL HYGIENE SURVEY OF THE OLIN CHEMICALS BROOK PARK, OHIO PLANT.				
Type of Data Source	Occupation	nal Exposure; Monitoring Data;				
Hero ID	4213837	· , 0 ,				
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	missing sample durations but indicated as a full-shift TWA, other metadata given
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty
Overall Quality D	Determinatio	$\mathrm{n}^\dagger$	Medium		1.9	

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\* MWF = Metric Weighting Factor

Type of Data Source       Occupational Exposure; Monitoring Data; 4213838         ExtractTiON Parameter       Data         Life Cycle Stage:       Industrial, commercial and consumer uses         Life Cycle Stage:       Industrial, commercial and consumer uses         Life Cycle Stage:       Industrial, commercial and consumer uses         Life Cycle Description (Subcategory of Use):       Solvents (for cleaning or degreasing)         Physical Form:       vapor         Route of Exposure:       Inhalation         Exposure Concentration (Unit):       From 1.3 to 57.6 ppm (pg 4 of 5)         Number of Sites:       1         Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory technician, caravan storage, lunch room         Number of Workers:       not specified         Type of Sampling:       personal and area         Sampling Location:       see worker activity         Exposure Duration:       not specified         Raynewine Frequency:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EvALUATION       Metric 1:       Metric Sample Scope         Domain 1: Reliability       Metric 1:       Metric 2:       Comments         Metric 2:       Geographic Scope       High	Source Citation:	Olin, Chemicals. 1982. ENVIRONMENTAL HYGIENE SURVEY OF THE BROOK PARK, OHIO OLIN CHEMICALS PLANT									
EXTRACTION Parameter     Data       Life Cycle Stage: Life Cycle Description (Subcategory of Use): Physical Form: Route of Exposure: Exposure Concentration (Unit): Number of Samples: Number of Stamples: Number of Stamp	Type of Data Source Hero ID	a Source Occupational Exposure; Monitoring Data; 4213838									
Parameter     Data       Life Cycle Stage:     Industrial, commercial and consumer uses       Life Cycle Description (Subcategory of Use):     Solvents (for cleaning or degreasing)       Physical Form:     uapor       Route of Exposure:     Inhalation       Exposure Concentration (Unit):     From 1.3 to 57.6 ppm (pg 4 of 5)       Number of Sites:     1       Number of Sites:     1       Number of Sites:     1       Worker Activity:     blender operator, purge operator, shipper, cylinder cleaner, laboratory technician, caravan storage, lunch room       Number of Workers:     not specified       Type of Sampling:     personal and area       Sampling Location:     see worker activity       Exposure Duration:     not specified       Exposure Duration:     not specified       Exposure Duration:     not specified       Exposure Control & percent Exposure Reduction:     Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.       EVALUATION     Metric 1: Methodology     Medium × 1     2       Domain 1: Reliability     Metric 2: Geographic Scope     High × 1     1     Ohio - US       Metric 2: Geographic Scope     High × 1     1     Ohio - US       Metric 3: Applicability     High × 1     3     characterized	EXTRACTION										
Life Cycle Stage:       Industrial, commercial and consumer uses         Life Cycle Description (Subcategory of Use):       Solvents (for cleaning or degreasing)         Physical Form:       vapor         Route of Exposure:       Inhalation         Exposure Concentration (Unit):       Prom 1.3 to 57.6 ppm (pg 4 of 5)         Number of Samples:       11         Number of Sites:       1         Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory technician, caravan storage, lunch room         Number of Workers:       not specified         Type of Sampling:       personal and area         sampling Location:       see worker activity         exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Domain 1: Reliability         Metric 1:       Methodology       Medium × 1       2       Data from manufacturer, who is also the author of the report         Domain 2:       Representative       High × 1       1       Ohio - US       High × 2       2       Use in acope         Metric 3:       Applicability       Metric 4:       Temporal Representativeness       L	Parameter			Data							
Life Cycle Stage:       Industrial, commercial and consumer uses         Life Cycle Description (Subcategory of Use):       Solvents (for cleaning or degreasing)         Physical Form:       vapor         Route of Exposure:       Inhalation         Exposure Concentration (Unit):       From 1.3 to 57.6 ppm (pg 4 of 5)         Number of Sites:       1         Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory technician, caravan storage, lunch room         Number of Workers:       not specified         Type of Sampling:       personal and area         Sampling Location:       see worker activity         Exposure Duration:       not specified         Exposure Frequency:       not specified         Exposure Duration:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Metric 1: Methodology       Medium       x 1       2       Data from manufacturer, who is also the author of the report         Domain 1: Reliability       Metric 3: Applicability       Metric 5:       Supple       Lift y       Lift y         Metric 4: Temporal Representativees       Lifty       1       Ohor - US											
Life Cycle Description (Subcategory of Use):       Solvents (for cleaning or degreasing)         Physical Form:       vapor         Route of Exposure:       Inhalation         Exposure Concentration (Unit):       From 1.3 to 57.6 ppm (pg 4 of 5)         Number of Samples:       11         Number of Samples:       1         Number of Samples:       1         Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory technician, caravan storage, lunch room         Number of Workers:       not specified         Type of Sampling:       gersonal and area         Sampling Location:       see worker activity         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Metric 1: Methodology       Medium × 1 2       Data from manufacturer, who is also the author of the report         Domain 1: Reliability       Metric 2: Geographic Scope       High × 1 1       Onio - US         Metric 3: Applicability       High × 2 2       Use in scope         Metric 4: Temporal Representativeness       Low × 2 6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5: Sample S	Life Cycle Stage:			Industria	l, comme	rcial an	d consumer uses				
Physical Form:       vapor         Route of Exposure (Oncentration (Unit):       From 1.3 to 57.6 ppm (pg 4 of 5)         Number of Samples:       11         Number of Sites:       1         Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory         Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory         Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory         Wurber of Workers:       not specified         Type of Sampling:       personal and area         Sampling Location:       see worker activity         Exposure Duration:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing as self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         Domain 1: Reliability       Metric 1: Methodology       Medium × 1       2       Data from manufacturer, who is also the author of the report         Domain 1: Reliability       High × 2       2       Use in scope       Metric 4: Temporal Representativ	Life Cycle Descrip	ption (Subca	ategory of Use):	Solvents	(for clean	ing or a	degreasing)				
Route of Exposure:       Inhalation         Exposure Concentration (Unit):       From 1.3 to 57.6 ppm (pg 4 of 5)         Number of Samples:       11         Number of Sites:       1         Worker Activity:       bender operator, purge operator, shipper, cylinder cleaner, laboratory technician, caravan storage, lunch room         Number of Workers:       not specified         Type of Sampling:       personal and area         Sampling Location:       see worker activity         Exposure Portation:       not specified         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       not specified         Domain       Metric       Rating       MWF*         Bomain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       Ohio - US         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Samplic Scope       High       × 2       2       Use in ascope         Metric 5:       Samplic Scope       <	Physical Form:			vapor							
Exposure Concentration (Unit):       From 1.3 to 57.6 ppm (pg 4 of 5)         Number of Samples:       11         Number of Sites:       1         Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory technician, caravan storage, lunch room         Number of Workers:       not specified         Type of Sampling:       personal and area         Sampling Location:       see worker activity         Exposure Duration:       not specified         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Netric 1:       Metric Rating       MWF*       Score         Domain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL Metric 4:         Domain 3: Accessibility/Clarity       Low       × 1       3	Route of Exposur	e:		Inhalatio	Inhalation						
Number of Samples:       11         Number of Sites:       1         Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory technician, cravan storage, lunch room         Number of Workers:       not specified         Type of Sampling:       personal and area         Sampling Location:       see worker activity         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Netric 1:       Metric         Domain 1: Reliability       Metric       Rating       MWF*       Score       Comments         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       Ohio - US         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Samplic Size       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Domain 3: Accessibility/	Exposure Concen	tration (Uni	t):	From 1.3	to 57.6 p	pm (pg	g 4 of 5)				
Number of Sites:       1         Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory technician, caravan storage, lunch room         Number of Workers:       not specified         Type of Sampling:       see worker activity         Sampling Location:       see worker activity         Exposure Duration:       not specified         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION         Domain 1: Reliability       Metric 1:         Metric 1:       Metric       Rating       MWF*       Score         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       Ohio - US         Metric 2:       Geographic Scope       High       × 2       2       Use in scope         Metric 3:       Applicability       High       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.	Number of Sampl	les:		11							
Worker Activity:       blender operator, purge operator, shipper, cylinder cleaner, laboratory technician, caravan storage, lunch room         Number of Workers:       not specified         Type of Sampling:       personal and area         Sampling Location:       see worker activity         Exposure Duration:       not specified         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Metric 1: Methodology       Medium × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 3: Applicability       High × 1       1       Ohio - US         Metric 3: Applicability       High × 2       2       Use in scope         Metric 4: Temporal Representativeess       Low × 1       3       characterized but no statistics.         Domain 3: Accessibility/Clarity       Low × 1       a characterized but no statistics.	Number of Sites:			1							
Number of Workers:       not specified         Type of Sampling:       personal and area         Sampling Location:       see worker activity         Exposure Duration:       not specified         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Number 1:       Metric       Rating       MWF* Score       Comments         Domain 1:       Reliability       Metric       x 1       2       Data from manufacturer, who is also the author of the report         Domain 2:       Representative       High       x 1       1       Ohio - US         Metric 3:       Applicability       High       x 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       x 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       x 1       3       characterized but no statistics.         Domain 3:       Accessibility/Clarity       Size       Low       x 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample	Worker Activity:			blender o	perator,	purge o	operator, shipper, cylinder cleaner, laboratory				
Number of Workers:       not specified         Type of Sampling:       personal and area         Sampling Location:       see worker activity         Exposure Duration:       not specified         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Netric 1:       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability       Metric 2:       Geographic Scope       High       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.         Domain 3: Accessibility/Clarity       Low       × 1       3       characterized but no statistics.				technicia	n, carava	n storag	ge, lunch room				
Type of Sampling:       personal and area         Sampling Location:       see worker activity         Sampling Location:       not specified         Exposure Duration:       not specified         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Netric       Rating       MWF*       Score       Comments         Domain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 1       3       characterized but no statistics.         Domain 3: Accessibility/Clarity       Jona in 3: Accessibility/Clarity       Jona in 3: Accessibility/Clarity       Jona in 3: Accessibility/Clarity	Number of Worke	Number of Workers:			fied						
Sampling Location:       see worker activity         Exposure Duration:       not specified         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Netric       Rating       MWF* Score       Comments         Domain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 3:       Applicability       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL Metric 5:         Domain 3: Accessibility/Clarity       Low       × 1       3       characterized but no statistics.	Type of Sampling	Type of Sampling:			personal and area						
Exposure Duration:       not specified         Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Netric       Rating       MWF*       Score       Comments         Domain       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 1       3       characterized but no statistics.         Domain 3: Accessibility/Clarity       Graptimed b       i       1       Ohio- tatistics	Sampling Locatio	n:		see worke	see worker activity						
Exposure Frequency:       not specified         Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning filter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Netric       Rating       MWF*       Score       Comments         Domain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 3:       Applicability       High       × 1       1       Ohio - US         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Domain 3: Accessibility/Clarity       Low       × 1       3       characterized but no statistics.	Exposure Duratio	on:		not specified							
Engineering Control & percent Exposure Reduction:       Recommend installing a self cleaning hiter to overcome the necessity of opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Domain       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.         Domain 3: Accessibility/Clarity       Grating the state       Implement to statistics       Implement to statistics	Exposure Frequer	ncy:		not speci	fied						
opening and cleaning the system, laboratory work should be done in the hood, etc.         EVALUATION       Domain       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.	Engineering Cont	rol & percer	t Exposure Reduction:	Recommend installing a self cleaning filter to overcome the necessity of							
nood, etc.         EVALUATION         Domain       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.				opening a	and clean	ng the	system, laboratory work should be done in the				
EVALUATION         Domain       Metric       Rating       MWF*       Score       Comments         Domain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Domain 3: Accessibility/Clarity       Low       × 1       3       characterized but no statistics.				nood, etc	•						
DomainMetricRatingMWF*ScoreCommentsDomain 1: Reliability Metric 1:MethodologyMedium× 12Data from manufacturer, who is also the author of the reportDomain 2: Representative Metric 2:Geographic ScopeHigh× 11Ohio - USMetric 3:ApplicabilityHigh× 22Use in scopeMetric 4:Temporal RepresentativenessLow× 13characterized but no statistics.Domain 3: Accessibility/ClarityLow× 13characterized but no statistics.	EVALUATION										
Domain 1: Reliability       Metric 1: Methodology       Medium × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 2: Geographic Scope       High × 1       1       Ohio - US         Metric 3: Applicability       High × 2       2       Use in scope         Metric 4: Temporal Representativeness       Low × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5: Sample Size       Low × 1       3       characterized but no statistics.	Domain		Metric	Rating	MWF*	Score	Comments				
Domain 1: Reliability       Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2: Representative       Metric 2:       Geographic Scope       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL Low         Domain 3: Accessibility/Clarity       Low       × 1       3       characterized but no statistics.				0							
Domain 1: Tendomy Metric 1:       Methodology       Medium       × 1       2       Data from manufacturer, who is also the author of the report         Domain 2:       Representative       Metric 2:       Geographic Scope       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.	Domain 1. Beliah	oility									
Domain 2: Representative       Metric 2: Geographic Scope       High       × 1       1       Ohio - US         Metric 3: Applicability       High       × 2       2       Use in scope         Metric 4: Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.	Domain 1. Roman	Metric 1:	Methodology	Medium	× 1	2	Data from manufacturer, who is also the author of the report				
Domain 2: Representative       Metric 2: Geographic Scope       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.			internetacios,	mountin		_					
Metric 2:       Geographic Scope       High       × 1       1       Ohio - US         Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.	Domain 2: Repre	sentative									
Metric 3:       Applicability       High       × 2       2       Use in scope         Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.         Domain 3:       Accessibility/Clarity       Curtimed a       -       -	*	Metric 2:	Geographic Scope	High	$\times 1$	1	Ohio - US				
Metric 4:       Temporal Representativeness       Low       × 2       6       More than 20 years old i.e., 1982 and prior to most recent PEL         Metric 5:       Sample Size       Low       × 1       3       characterized but no statistics.         Domain 3:       Accessibility/Clarity       Curtimed a       it		Metric 3:	Applicability	High	$\times 2$	2	Use in scope				
Metric 5:     Sample Size     Low     × 1     3     characterized but no statistics.       Domain 3:     Accessibility/Clarity     Continued a     4		Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1982 and prior to most recent PEL				
Domain 3: Accessibility/Clarity	Metric 5: Sample Size			Low	$\times 1$	3	characterized but no statistics.				
Continued a fi	Domain 3: Access	sibility/Clar	ity								
Continued on next page			Cor	ntinued on	next page	;					

Source Citation:	Olin, Cher PLANT.	micals. 1982. ENVIRONMEN	TAL HYGI	ENE SUI	RVEY (	OF THE BROOK PARK, OHIO OLIN CHEMICALS
Type of Data Source	Occupation	nal Exposure; Monitoring Data	ı;			
Hero ID	4213838					
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
	Metric 6:	Metadata Completeness	Low	× 1	3	Assessment or report provides results, but the underlying methods, data sources, and assumptions are not fully trans- parent.
Domain 4: Variab	oility and Uı Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.2	

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\* MWF = Metric Weighting Factor

Source Citation:	General Electric, Co. 1989. MOR USING A COMPUTERIZED SURV	BIDITY STUDY OF OCCUPATIONAL EXPOSURE TO METHYLENE CHLORIDE /EILLANCE SYSTERM (FINAL REPORT) WITH COVER LETTER DATED 073189.						
Type of Data Source Hero ID	Occupational Exposure; Monitoring 4213908	Data;						
EXTRACTION								
Parameter		Data						
Life Cycle Stage:		Processing						
Life Cycle Descri	ption (Subcategory of Use):	Plastic Processing						
Physical Form:	polon (Subcattigory of Coo).	vapor						
Route of Exposu	e:	Inhalation						
Exposure Concen	tration (Unit):	Workers at a plastic polymer plant were grouped into four exposure groups (i.e., 49 ppm, 10.9 ppm, 3.3 ppm, and $<1.0$ ppm); see page 21 for specific job categories. The heat exchanges require filter changes every 6 hours; up to 150 ppm has been measured during this separation. Air concentrations from 1-8 ppm have been measured during the final extrusion process.						
Number of Samp	es:	=65+56+29(pg 23 of 95)						
Number of Sites:		2						
Type of Measurer Worker Activity:	ment or Method:	most personal air samples were performed using a 3M organic vapor monitor $\#3500$ personal dosimeter (pg 22 of 95). Several plants manufacure plastic polymers. Two of the plants use DMC.						
Number of Worke	ers:	<ol> <li>BPA (bisphenol A) plant<sup>**</sup> Most occupational exposure occurs during sampling or maintenance and repair work.</li> <li>Resin plant major exposures are around the centrifuges and heat exchanges.</li> <li>1,300 people were employed at several plastic polymer plants.</li> <li>896 work- ers were included in an occupational exposure study.</li> </ol>						
Type of Sampling	f:	personal and area						
Exposure Duratio	) n:	We focused our analysis on a sampling duration of most of an entire 8- hr work day, calculated as an 8-hr TWA. Shorter-term monitoring often reflects a task-specific peak exposure.						
EVALUATION								
Domain	Metric	Rating MWF* Score Comments						
Domain 1: Reliab	ility Metric 1: Methodology	High $\times 1$ 1 method described and appears to be equivalent to NIOSH						
		Continued on next page						

			aca nom j	<b>PI 0110 U</b>	Page		
Source Citation:	General E USING A	General Electric, Co. 1989. MORBIDITY STUDY OF OCCUPATIONAL EXPOSURE TO METHYLENE CHLORIDE JSING A COMPUTERIZED SURVEILLANCE SYSTERM (FINAL REPORT) WITH COVER LETTER DATED 073189.					
Type of Data Source	Occupatio	nal Exposure; Monitoring Data;				,	
Hero ID	4213908	· , , ,					
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 2: Repres	sentative						
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	× 1	1	Indiana - US	
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1989 and prior to most recent PEL	
	Metric 5:	Sample Size	Low	$\times 1$	3	means given but no other statistics.	
Domain 3: Access	sibility/Clar	ity					
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Most metadata given, missing exposure frequency and duration	
Domain 4: Variab	ility and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty	
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.0		

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\* MWF = Metric Weighting Factor

Source Citation:	Vulcan, Cl HYGIENE	nemicals. 1991. LETTER FROM C MONITORING REPORT ON	I VULCAN METHYL	CHEMI	CALS T	TO USEPA SUBMITTING ENCLOSED INDUSTRIAL E WITH ATTACHMENT.			
Type of Data Source Hero ID	Occupation 4213935	nal Exposure; Monitoring Data;							
EXTRACTION Parameter			Data						
Life Cycle Stage:			Industria	l comme	rcial an	d consumer uses			
Life Cycle Descrir	otion (Subca	ategory of Use):	Propellan	ts and b	owing a	agents			
Physical Form:	(Suber	seeger, er ese).	sprav. vai	oor from	curing	-0			
Route of Exposure	e:		Inhalation	n	8				
Exposure Concent	tration (Uni	t):	Personal TWA was	TWA sa s 414 ppr	mples r	anged from 188 to 223 and the area sample of $7$ )			
Number of Sample	es:		16	5 111 ppi	ii (PS 1	011).			
Number of Sites:			1						
Type of Measuren	nent or Met	hod:	Air samp	les were	collected	d by charcoal tubes			
Worker Activity:			Trinity Fo	Trinity Foams uses DMC as an auxiliary blowing agent in the production					
			of flexible	e foam sl	abstock	. Three job classes were monitored: quality			
			contol op	erator, fl	at top o	operator, saw operator.			
Number of Worke	rs:		3						
Type of Sampling	:		personal and area						
Engineering Contr	rol & percer	t Exposure Reduction:	recommen	ndations:	redesig	n exhaust system, add additional fans, use an			
			emplyee	education	and tra	aining proram to reduce exposure, etc (pg 5 of			
			7).						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility								
	Metric 1:	Methodology	Medium	$\times 1$	2	Described, but not named			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	North Carolina - US			
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1989 and prior to most recent $\operatorname{PEL}$			
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given			
Domain 3: Access	ibility/Clar	ity							

Continued on next page

		– contin	ued from	previous	s page		
Source Citation:	Vulcan, Cl HYGIENE	Ulcan, Chemicals. 1991. LETTER FROM VULCAN CHEMICALS TO USEPA SUBMITTING ENCLOSED INDUSTRIAL					
Type of Data Source	Occupation	nal Exposure; Monitoring Data;	;				
Hero ID	4213935						
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	missing sample durations but indicated as a full-shift TWA, other metadata given	
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty	
Overall Quality I	Determinatio	$\mathrm{n}^\dagger$	Medium		1.9		

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\* MWF = Metric Weighting Factor
† If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

Source Citation:	Texaco, Inc. 1993. I.h. monit. for pentane, ethyl ether, chloroform, acetone, t-butyl alcohol, carbon tetrachloride, total hydrocarbons, gasoline, isooctane, hexane, methylene chloride & toluene.
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 4213966
EXTRACTION Parameter	Data

Life Cycle Stage:	Industrial, commercial and consumer uses
Life Cycle Description (Subcategory of Use):	Other Uses - Laboratory chemicals - all other chemical product and
	preparation manufacturing
Exposure Concentration (Unit):	<1ppm (pg 24 of 69). Full shift results for DMC were less than detectable
	$(pg \ 5 \ of \ 69).$
Number of Samples:	16
Type of Measurement or Method:	3M organic vapor monitors and through the use of 600 milligram charcoal
	media and calibrated sampling pumps.
Worker Activity:	Research lab staff
Type of Sampling:	personal
PPE:	"" a recommendation has been made with regards to work practices"
	Management should encourage workers to wear appropriate personal
	protective equipment (i.e., laboratory coats""

EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 1: Reliab	oility			_		
	Metric 1:	Methodology	Medium	× 1	2	Methodology described and appears to be equivalent to NIOSH/OSHA methods
Domain 2: Repre	sentative					
	Metric 2:	Geographic Scope	High	$\times 1$	1	US
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1993 and prior to most recent PEL
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given
Domain 3: Acces	sibility/Clar	ity				
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Most metadata given, missing exposure frequency and duration $% \left( {{{\rm{D}}_{{\rm{B}}}} \right)$
Domain 4: Varial	bility and U	ncertainty				
		Cor	tinued on 1	next page	9	

Source Citation: Type of Data Source Hero ID	Texaco, In hydrocarbo Occupation 4213966	ic. 1993. I.h. monit. for poons, gasoline, isooctane, hexa nal Exposure; Monitoring Da	entane, ethyl e ne, methylene .ta;	ther, ch	loroform & tolue	n, acetone, t-butyl alcohol, carbon tetrachloride, total ne.
EVALUATION		Motria	Pating		Secre	Commonto
Domani		Metric	Rating	IVI VV F	Score	Comments
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Medium		1.9	

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\* MWF = Metric Weighting Factor

Source Citation:	Vulcan, Cl METHYL	hemicals. 1993. INDUSTRIAL CHLOROFORM BLENDED AI	HYGIENE EROSOL B	STUDY RAKE C	OF ME LEANE	ETHYLENE CHLORIDE/PERCHLOROETHYLENE/ ERS.
Type of Data Source Hero ID	Occupation 4213974	nal Exposure; Monitoring Data;				
EXTRACTION Parameter			Data			
Life Cycle Stage:			Industria	l, comme	rcial an	d consumer uses
Life Cycle Descrip	ption (Subca	ategory of Use):	Automoti	ve care p	roducts	5
Exposure Concert	tration (Uni	t):	all exposi	ires were	under	17 ppm
Number of Sampl	es:		28(pg 32	of 36)		
Type of Measurer	nent or Met	hod:	<sup>1</sup> 3M charc	oal moni	toring h	padges ( $\#3520$ passive dosimeters)
Worker Activity:			Break pao normal u a balance 655 gram	d technic se (formu e of meth s per day	ans using a stans using a stans using a standard standa standard standard stan standard standard stan	ng an aerosol brake cleaner were studied under contained 5, 10, and 20 percent DMC with oform). The max. total DMC discharge was proximatly six 20 ounce cans of the 20 percent
Number of Worke	ers:		5Subjects	A throu	gh E	
Type of Sampling	;		personal		0	
Engineering Cont	rol & percer	nt Exposure Reduction:	recommen	ndations:	No mor	re than 106 grams of methylene chloride should
PPE:			be discha recommen glasses ar	rged into ndations: nd gloves	the exp PPE during	posure zone during one 15 minute period. recommendations such as the use of safety application is advised.
EVALUATION						
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments
Domain 1: Reliab	ility					
	Metric 1:	Methodology	Medium	$\times 1$	2	Data from manufacturer, who is also the author of the report
Domain 2: Repres	sentative					
	Metric 2:	Geographic Scope	High	$\times 1$	1	USThe study was conducted at a single nationally franchised
	Metric 3.	Applicability	High	× 2	2	brake and muffler repair shop located in Wichita, Kansas.
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1992 and 1993 and prior to most
			т	1	0	recent PEL
	Metric 5:	Sample Size	LOW	× 1	3	characterized but no statistics.
		Cor	tinued on 1	next page	<u>,</u>	

		001	timuca nom p	nevious	page	
Source Citation: Type of Data Source	Vulcan, Cl METHYL Occupation	nemicals. 1993. INDUSTRI CHLOROFORM BLENDEI nal Exposure; Monitoring D	AL HYGIENE D AEROSOL Bl ata;	STUDY RAKE C	OF ME LEANE	ETHYLENE CHLORIDE/PERCHLOROETHYLENE/ ERS.
	4213974					
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 3: Access	sibility/Clari Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	Assessment or report provides results, but the underlying methods, data sources, and assumptions are not fully trans- parent.
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.2	

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\* MWF = Metric Weighting Factor

Source Citation: ho IN Type of Data Source O Here ID	oechst cel NARY IN N ROCK occupation	anese, corp. 1988. LETTER FI FORMATION ON A MORTAL HILL, SC. nal Exposure; Monitoring Data;	ROM HOEG ITY STUD	CHST CI Y REGA	ELANE: RDING	SE CORP TO THE USEPA SUBMITTING PRELIM- G WORKERS AT CELRIVER TRIACETATE PLANT
Hero ID 42	214005					
EXTRACTION			Data			
Parameter			Data			
Life Cycle Stage: Life Cycle Descriptio Exposure Concentrat Number of Sites:	on (Subca tion (Unit	tegory of Use): t):	Industrial CTA man 140 - 475 1	, comme ufacturir ppm froi	rcial and ng n a surv	d consumer uses vey in the late 1970s (pg 23 of 66)
Worker Activity:			Preparati	on and e	extrusion	n (spinning) areas.Focus is long term health
Number of Workers:			impact. 1,271 emp ment betw	oloyees w veen 1954	orked for 4 and 19	or at least 3-months in the extrusion depart- 986.
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Domain 1: Reliability	y Lataila 1		M	v 1	0	
M	letric 1:	Methodology	Medium	× 1	2	Data from manufacturer, who is also the author of the report
Domain 2: Represent	tative					
M	fetric 2:	Geographic Scope	High	$\times 1$	1	Rock Hill, North Carolina - US
Μ	fetric 3:	Applicability	High	$\times 2$	2	Use in scope
Μ	fetric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1970 and prior to most recent PEL $$
M	fetric 5:	Sample Size	Low	$\times 1$	3	characterized but no statistics.
Domain 3. Accessibil	lity/Clari	tx				
M	letric 6:	Metadata Completeness	Low	$\times 1$	3	Assessment or report provides results, but the underlying methods, data sources, and assumptions are not fully transparent.
Domain 4: Variabilit	y and Un	acertainty	т	1	9	
M	letric 7:	Metadata Completeness	LOW	× 1	3	No discussion of variability or uncertainty
Overall Quality Dete	erminatio	n <sup>†</sup>	Medium		2.2	
		Con	tinued on r	ext page	!	

	- contin	ued from	previous	page	
Source Citation:	hoechst celanese, corp. 1988. LETTER I INARY INFORMATION ON A MORTA IN ROCK HILL, SC.	FROM HOE LITY STUI	CHST CI DY REGA	ELANESE RDING	E CORP TO THE USEPA SUBMITTING PRELIM- WORKERS AT CELRIVER TRIACETATE PLANT
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data 4214003	;			
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments

\* MWF = Metric Weighting Factor

Source Citation:	Us, E. P. A	A 1985. OCCUPATIONAL EXI DE CONTRACT NO 68 02 3035	POSURE	AND EN	VIRON	NMENTAL RELEASE ASSESSMENT OF METHYLENE
Type of Data Source Hero ID	Occupatio 4214063	nal Exposure; Monitoring Data;	•			
EXTRACTION						
Parameter			Data			
Life Cruele Stame			Manufa	otuning		
Life Cycle Stage:	ntion (Sube	atorory of Uso).	Domost	ic manuf	acturin	a.
Physical Form:		ategory of Ose).	sprav v	apor	acturing	5
Route of Exposur	·e:		Inhalati	on		
Exposure Concen	tration (Uni	it):	Calcula	ted expos	sure fro	m 12.6 to 13.950 ppm
Number of Sites:			6			
Type of Measurer	ment or Met	hod:	Calcula	ted; assu	mptions	s include flowrate and area.
Worker Activity:			Exposu	re calcula	ated for	4 operations: 1) drum filling, 2) tank filling, 3)
Number of Worke	ers:		tank ca 1200pg	r filling, a 181 of 20	and 4) † )1	tap sampling.
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
	.1.					
Domain 1: Reliat	Metric 1:	Methodology	High	$\times 1$	1	US EPA
Domain 2: Repre	sentative		TT: 1	-	1	
	Metric 2:	Geographic Scope	High Hish	× 1	1	US .
	Metric 3:		High	× 2	Z C	Use in scope
	Metric 4: Motrie 5:	Sample Size	LOW High	$\times 2$ $\times 1$	0	More than 20 years old i.e., 1985 and prior to most recent PEL
	Metric 5.	Sample Size	IIIgii	~ 1	1	Discrete samples given in appendix
Domain 3. Access	sibility/Clar	ity				
Domain 9. 110005	Metric 6:	Metadata Completeness	High	× 1	1	fully transparent.
		F	8			
Domain 4: Varial	oility and U	ncertainty				
	Metric 7:	Metadata Completeness	High	$\times 1$	1	discussion of variability or uncertainty
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	High		1.4	
		Con	tinued on	n next pa	ge	

	- continu	ed from	previo	us page	
Source Citation:	Us, E. P. A 1985. OCCUPATIONAL EXF CHLORIDE CONTRACT NO 68-02-3935.	OSURE	AND EN	VIRONMEN	TAL RELEASE ASSESSMENT OF METHYLENE
Type of Data Source Hero ID	Occupational Exposure; Monitoring Data; 4214063				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments

\* MWF = Metric Weighting Factor

Source Citation:	Us, E. P. A Chlori	A 1985. OCCUPATIONAL EXI DE CONTRACT NO 68-02-3935	POSURE	AND EN	IVIRON	NMENTAL RELEASE ASSESSMENT OF METHYLENE
Type of Data Source Hero ID	Occupatio 4214063	nal Exposure; Monitoring Data;				
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Process	ing		
Life Cycle Descrip	ption (Subca	ategory of Use):	Repacka mixture	aging - S	Solvents other cl	(which become part of product formulation or pemical product and preparation manufacturing
Physical Form:			spray, v	apor	other er	ionnom produce and proparation manafacturing
Route of Exposur	e:		Inhalati	ion		
Exposure Concen	tration (Uni	it):	Calcula mg/m3	ted expo	sure fro	om 101 to 1,890 with a geometric mean of $317$
Number of Sampl	les:		measure	ed: 10 pa	ackers(p	g 104)
Number of Sites:			112	_		_ ,
Type of Measurer	ment or Met	hod:	calculat	ed		
Worker Activity:			Exposu	re calcul	ated for	packerstable 2-3 (pg 24 of 201)
Number of Worke	ers:		896			
EVALUATION						
Domain		Metric	Rating	$\rm MWF^{\star}$	Score	Comments
Domain 1: Reliab	oility					
	Metric 1:	Methodology	High	$\times 1$	1	US EPA
Domain 2: Repre	sentative					
1	Metric 2:	Geographic Scope	High	$\times 1$	1	US
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1985 and prior to most recent PEL
	Metric 5:	Sample Size	High	$\times 1$	1	Discrete samples given in appendix
Domain 3: Access	sibility/Clar	ity				
	Metric 6:	Metadata Completeness	High	$\times 1$	1	fully transparent.
Domain 4: Varial	oility and U	ncertainty				
	Metric 7:	Metadata Completeness	High	$\times 1$	1	discussion of variability or uncertainty
		Cor	ntinued or	ı next pa	ıge	

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Source Citation:	Us, E. P. A 1985. OCCUPATIONAL EXF CHLORIDE CONTRACT NO 68-02-3935.	OSURE	AND EN	VIRON	MENTAL RELEASE ASSESSMENT OF METHYLENE
Type of Data Source	Occupational Exposure; Monitoring Data;				
Hero ID	4214063				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Overall Quality D	$\operatorname{Petermination}^\dagger$	High		1.4	

continued from previous page

Source Citation:	Us, E. P. A Chlori	A 1985. OCCUPATIONAL EXI DE CONTRACT NO 68-02-3935	POSURE	AND EN	IVIRON	IMENTAL RELEASE ASSESSMENT OF METHYLENE
Type of Data Source Hero ID	Occupatio 4214063	nal Exposure; Monitoring Data;				
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Industr	ial comr	nercial a	and consumer uses
Life Cycle Descri	ption (Subca	ategory of Use):	Solvent	s (for cle	aning of	r degreasing) - Aerosol spray degreaser/cleaner
Physical Form:			spray, v	apor	0.0	
Route of Exposur	e:		Inhalati	on		
Exposure Concen	tration (Uni	t):	Calcula	ted expo	sure from	m 7 to 270 with a geometric mean of $51 \text{ mg/m}$
*	,	,	for all j	ob catego	ories.	C 3,
Type of Measurer	ment or Met	hod:	calculat	ed		
Worker Activity:			Exposu	re calcul	ated for	r 3 job categories: 1) spray painter , 2) mold
			release,	and $3)$ c	other wo	orker.table 2-5 (pg 27 of 201)
Number of Worke	ers:		$14,\!296$	spray	painters	, 25,972  mold release, and $50,343  other$
			worker.	Table 3-2	2 (pg 89)	of 201)
EVALUATION						
Domain		Matria	Datima	MANE*	Coone	Commonto
Domain		Metric	nating	IVI VV F	Score	Comments
	.1.,	Metric	nating	IVI VV F	Score	Comments
Domain 1: Reliab	bility	Metric	Rating	MI VV F **	Score	Comments
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	US EPA
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	US EPA
Domain 1: Reliab	bility Metric 1: sentative Metric 2:	Methodology Geographic Scope	High	× 1	1 1	US EPA
Domain 1: Reliab Domain 2: Repre	bility Metric 1: sentative Metric 2: Metric 3:	Methodology Geographic Scope	High High High	× 1 × 1 × 2	1 1 2	US EPA
Domain 1: Reliab	bility Metric 1: sentative Metric 2: Metric 3: Metric 4:	Metric Methodology Geographic Scope Applicability Temporal Representativeness	High High High Low	$ \begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \end{array} $	1 1 2 6	US EPA US Use in scope More than 20 years old i.e. 1985 and prior to most recent PEL
Domain 1: Reliab	bility Metric 1: sentative Metric 2: Metric 3: Metric 4: Metric 5:	Metric Methodology Geographic Scope Applicability Temporal Representativeness Sample Size	High High High Low High	$ \begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \end{array} $	1 1 2 6 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix
Domain 1: Reliab	bility Metric 1: sentative Metric 2: Metric 3: Metric 4: Metric 5:	Methodology Geographic Scope Applicability Temporal Representativeness Sample Size	High High High Low High	$\begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \end{array}$	1 1 2 6 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix
Domain 1: Reliab Domain 2: Repre	oility Metric 1: sentative Metric 2: Metric 3: Metric 4: Metric 5: sibility/Clar	Metric Methodology Geographic Scope Applicability Temporal Representativeness Sample Size	High High High Low High	$\begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \end{array}$	1 1 2 6 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix
Domain 1: Reliab Domain 2: Repre	bility Metric 1: sentative Metric 2: Metric 3: Metric 4: Metric 5: sibility/Clar Metric 6:	Metric Methodology Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness	High High High Low High High	$ \begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \\ \end{array} $	1 1 2 6 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent.
Domain 1: Reliab Domain 2: Repre	bility Metric 1: Sentative Metric 2: Metric 3: Metric 3: Metric 5: Sibility/Clar Metric 6:	Metric Methodology Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness	High High High Low High High	$\begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \\ \times 1 \end{array}$	1 1 2 6 1 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent.
Domain 1: Reliab Domain 2: Repre	pility Metric 1: Sentative Metric 2: Metric 3: Metric 4: Metric 5: Sibility/Clar Metric 6: Dility and Un	Metric Methodology Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness meertainty	High High High Low High High	$\begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \\ \times 1 \end{array}$	1 1 2 6 1 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent.
Domain 1: Reliab Domain 2: Repre Domain 3: Access Domain 4: Variab	bility Metric 1: Sentative Metric 2: Metric 3: Metric 4: Metric 5: Sibility/Clar Metric 6: Dility and Un Metric 7:	Metric Methodology Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness neertainty Metadata Completeness	High High Low High High	$\begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \\ \end{array}$ $\times 1 \\ \times 1 \end{array}$	1 1 2 6 1 1 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent.
Domain 1: Reliab Domain 2: Repre Domain 3: Access Domain 4: Variab	pility Metric 1: Sentative Metric 2: Metric 3: Metric 4: Metric 5: Sibility/Clar Metric 6: Dility and Un Metric 7:	Methodology Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness ncertainty Metadata Completeness	High High Low High High High	$\begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \\ \times 1 \\ \times 1 \end{array}$	1 1 2 6 1 1 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent. discussion of variability or uncertainty
Domain 1: Reliab Domain 2: Repre Domain 3: Access Domain 4: Variab Overall Quality D	pility Metric 1: sentative Metric 2: Metric 3: Metric 4: Metric 5: sibility/Clar Metric 6: pility and Un Metric 7: Determinatio	Methodology Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness ncertainty Metadata Completeness	High High Low High High High	$\begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \\ \end{array}$	1 1 2 6 1 1 1 1.4	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent. discussion of variability or uncertainty
Domain 1: Reliab Domain 2: Repre Domain 3: Access Domain 4: Variab Overall Quality E	pility Metric 1: Sentative Metric 2: Metric 3: Metric 3: Metric 5: Sibility/Clar Metric 6: Dility and Un Metric 7: Determinatio	Methodology Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness neertainty Metadata Completeness n <sup>†</sup>	High High High Low High High High High	$\begin{array}{c} \times 1 \\ \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \\ \end{array}$ $\times 1 \\ \end{array}$	1 1 2 6 1 1 1 1.4	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent. discussion of variability or uncertainty

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Source Citation:	Us, E. P. A 1985. OCCUPATIONAL EXPOSURE AND ENVIRONMENTAL RELEASE ASSESSMENT OF METHYLENE CHLORIDE CONTRACT NO 68-02-3935.
Type of Data Source	Occupational Exposure; Monitoring Data;
Hero ID	4214063
EVALUATION	
Domain	Metric Rating MWF <sup>*</sup> Score Comments

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\* MWF = Metric Weighting Factor

Source Citation:	Us, E. P. A	1985. OCCUPATIONAL EXI DE CONTRACT NO 68-02-3935	POSURE	AND EN	VIRON	IMENTAL RELEASE ASSESSMENT OF METHYLENE	
Type of Data Source	Occupation	nal Exposure; Monitoring Data;	•				
Hero ID	4214063						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Industri	ial. comn	nercial a	and consumer uses	
Life Cycle Descrip	otion (Subca	ategory of Use):	Paints a	and coati	ngs incl	uding paint and coating removers for commercial	
		/	furnitur	e strippi	ng		
Physical Form:			spray, v	apor			
Route of Exposur	e:		Inhalati	on			
Exposure Concen	tration (Uni	t):	Calcula	ted expo	sure fro	m 7 to 3,897 with a geometric mean of 106 mg/ $$	
Number of Comm			m3 for a	all job ca	itegories	5.	
Number of Sites:	es:		1980	ed: op pa	unt strij	ppers, 20 water wash, 6 other (pg 104)	
Type of Measurer	nent or Met	hod	calculat	ed			
Worker Activity:		nou.	Exposu	re calcul	ated for	r 3 job categories: 1) spray painter, 2) water	
			wash, a	nd 3) oth	ner worl	xer.table 2-8 (pg 33 of 201)	
Number of Worke	rs:		per plant: 6 paint strippers, 20 water wash, 3 other				
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
	•1•,						
Domain I: Reliab	Ility Motrie 1.	Mathadalagy	High	$\sim 1$	1		
	methe 1.	Methodology	Iligii	~ 1	1	US EFA	
Domain 2: Repres	sentative						
	Metric 2:	Geographic Scope	High	$\times 1$	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Use in scope	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	More than 20 years old i.e., 1985 and prior to most recent $\operatorname{PEL}$	
	Metric 5:	Sample Size	High	$\times 1$	1	Discrete samples given in appendix	
Domain 3: Access	sibility/Clar	ity	TT' 1	1	1		
	Metric 6:	Metadata Completeness	High	× 1	1	fully transparent.	
Domain 4. Variah	ulity and U	certainty					
Domain 4. Variat	Metric 7:	Metadata Completeness	High	$\times 1$	1	discussion of variability or uncertainty	
			tipued c	nort	<i>~~</i>	v v	
		Con	tinued on	i next pa	ge		

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Source Citation: Us, E. P. A.: 1985. OCCUPATIONAL EXPOSURE AND ENVIRONMENTAL RELEASE ASSESSMENT OF METHYLENE CHLORIDE CONTRACT NO 68-02-3935.								
Type of Data Source	Occupational Exposure; Monitoring Dat	ta;						
Hero ID	4214063	,						
EVALUATION								
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Overall Quality I	$\operatorname{Petermination}^\dagger$	High		1.4				

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\* MWF = Metric Weighting Factor

Source Citation:	Us, E. P. A Chlori	A 1985. OCCUPATIONAL EXI DE CONTRACT NO 68-02-3935	POSURE	AND EN	VIRON	MENTAL RELEASE ASSESSMENT OF METHYLENE	
Type of Data Source Hero ID	Occupatio 4214063	nal Exposure; Monitoring Data;					
EXTRACTION			Data				
I al allietter			Data				
Life Cycle Stage:			Industri	ial, comm	nercial a	and consumer uses	
Life Cycle Descrip	ption (Subca	ategory of Use):	Propella	ants and	blowing	g agents	
Physical Form:			spray, v	apor			
Route of Exposur	re:		Inhalati	on			
Exposure Concen	tration (Uni	it):	Calcula	ted expo	sure fro	m 7 to 249 with a geometric mean of $74 \text{ mg/m3}$	
	1		for all jo	ob catego	ories.		
Number of Sampl	les:		measure	ed: 18 10	am oper	ator, 18 otner(pg 104)	
Tumo of Mossuro	mont or Mot	had	01 colculat	od			
Worker Activity:	ment of met	liou.	Exposu	re calcul	ated for	2 job categories: 1) foam operator and 2) other	
worker neurray.			worker f	table 2-1	1 (ng 41	of 201)	
Number of Worke	ers:		per plant: 5 foam operator, 4 other				
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1. Poliah							
Domain 1. Renau	Metric 1:	Methodology	High	× 1	1		
		withillouology	111511	~ 1		US EPA	
		Wethodology		× 1	1	US EPA	
Domain 2: Repre	sentative	Methodology		× 1	1	US EPA	
Domain 2: Repre	sentative Metric 2:	Geographic Scope	High	× 1	1	US EPA	
Domain 2: Repre	sentative Metric 2: Metric 3:	Geographic Scope Applicability	High High	$\begin{array}{c} \times 1 \\ \times 2 \end{array}$	1 1 2	US EPA US Use in scope	
Domain 2: Repre	Metric 2: Metric 3: Metric 4:	Geographic Scope Applicability Temporal Representativeness	High High Low	$ \begin{array}{c} \times 1 \\ \times 2 \\ \times 2 \\ \end{array} $	1 1 2 6	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL	
Domain 2: Repre	Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low High	$ \begin{array}{c} \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \end{array} $	1 2 6 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix	
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5: sibility/Clar	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low High	$\begin{array}{c} \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \end{array}$	1 2 6 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix	
Domain 2: Repre	Metric 2: Metric 3: Metric 4: Metric 5: sibility/Clar Metric 6:	Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness	High High Low High High	× 1 × 2 × 2 × 1 × 1	1 2 6 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent.	
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5: sibility/Clar Metric 6:	Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness	High High Low High High	$ \begin{array}{c} \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \end{array} $	1 2 6 1 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent.	
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5: sibility/Clar Metric 6: bility and U:	Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness ncertainty	High High Low High High	$ \begin{array}{c} \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \end{array} $	1 1 2 6 1 1 1 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent.	
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5: sibility/Clar Metric 6: bility and U: Metric 7:	Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness ncertainty Metadata Completeness	High High Low High High	$ \begin{array}{c} \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \\ \end{array} $	1 2 6 1 1 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent. discussion of variability or uncertainty	
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5: sibility/Clar Metric 6: bility and U: Metric 7:	Geographic Scope Applicability Temporal Representativeness Sample Size ity Metadata Completeness ncertainty Metadata Completeness	High High Low High High	$ \begin{array}{c} \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \\ \end{array} $ $ \times 1 \\ \end{array} $	1 2 6 1 1 1	US EPA US Use in scope More than 20 years old i.e., 1985 and prior to most recent PEL Discrete samples given in appendix fully transparent. discussion of variability or uncertainty	

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Source Citation:	Us, E. P. A 1985. OCCUPATIONAL EXF CHLORIDE CONTRACT NO 68-02-3935.	OSURE	AND EN	VIRON	MENTAL RELEASE ASSESSMENT OF METHYLENE
Type of Data Source	Occupational Exposure; Monitoring Data;				
Hero ID	4214063				
EVALUATION					
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
Overall Quality D	$\operatorname{Petermination}^\dagger$	High		1.4	

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Source Citation:	Texaco, Ir HOL, CAI CHLORIE	nc. 1993. I.H. MONIT. FOR RBON TETRACHLORIDE, TO DE & TOLUENE.	PENTANE DTAL HYD	, ETHY ROCAR	L ETHI BONS,	ER, CHLOROFORM, ACETONE, T-BUTYL ALCO- GASOLINE, ISOOCTANE, HEXANE, METHYLENE			
Type of Data Source Hero ID	e Occupational Exposure; Completed Exposure or Risk Assessments; 4215915								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Processin	٥.					
Life Cycle Descrip	tion (Subca	ategory of Use):	Laborato	ry chemi	cals for	all other chemical product and preparation			
<i>v</i> 1			menufact	uring					
Physical Form:			Fumes						
Route of Exposure	e:		Inhalation	n					
Exposure Concent	ration (Uni	t):	<1  pp						
Number of Sample	es:		3						
Number of Sites:		, ,	1						
Type of Measuren	nent or Met	hod:	full-shift	1	,	1 1			
worker Activity:			Upen con	umn cnro	matogr	apny, composition, spectral and infrared anal-			
Type of Sampling			ysis, iiquid chromatography, wasning glassware						
Sampling Location	1•		Lab						
Exposure Duratio	n:		420-465 min						
I to the second									
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Beliah	ility								
	Metric 1:	Methodology	Medium	$\times 1$	2	Methodology described and appears to be equivalent to NIOSH/OSHA methods			
Danain 9. Danas									
Domain 2: Repres	Motria 2.	Coographic Scope	High	$\sim 1$	1	IIC			
	Metric 2: Motric 3:	Applicability	High	$\times 1$ $\times 2$	1	US			
	Metric 4.	Temporal Representativeness	Low	$\times 2$ $\times 2$	6	Use in scope More than 20 years old i.e. 1003 and prior to most recent PEL.			
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given			
		1	0			5			
Domain 3: Access	ibility/Clar	ity							
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Most metadata given, missing exposure frequency and duration			
		Con	tinued on i	next page	e e e e e e e e e e e e e e e e e e e				

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Source Citation:	Texaco, Inc. 1993. I.H. MONIT. FOR PENTANE, ETHYL ETHER, CHLOROFORM, ACETONE, T-BUTYL ALCO- HOL, CARBON TETRACHLORIDE, TOTAL HYDROCARBONS, GASOLINE, ISOOCTANE, HEXANE, METHYLENE CHLORIDE & TOLUENE.							
Type of Data Source	Occupation	nal Exposure; Completed Exp	osure or Risk	Assessm	ents;			
Hero ID	4215915							
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 4: Variab	oility and Ur Metric 7:	certainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality D	Determination	$\mathbf{n}^{\dagger}$	Medium		1.9			

\* MWF = Metric Weighting Factor

Source Citation:	General Electric, Co. 1988. Health and Safety Studies on Methylene Chloride with Attachments and Cover Letter Dated 090688.							
Type of Data Source Hero ID	Occupational Exposure; Completed Exposure or Risk Assessments; 4442312							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Processin	g				
Life Cycle Descrip	ption (Subca	ategory of Use):	Processin	g as a re	actant			
Route of Exposur	e:		Inhalation	n 15 /16	0.000			
Exposure Concen	tration (Uni	it):	3 N.D.0.0	115 mg/ IU . /1	0.038 m	g/10.062 mg/10.078 mg/10.177 mg/10.198 mg/		
Number of Sampl	08.		10.270 mg	5/1				
Number of Sites			10					
Type of Measurer	nent or Met	hod	full-shift					
Number of Worke	ers:	ilou.	10					
Type of Sampling	:		personal	blood lev	els befo	re and after exposure		
Sampling Locatio	n:		Control r	oom, Res	sin worl	kup, dryer and extruder, material and reactor		
1 0			feeds, end cap					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	oility							
	Metric 1:	Methodology	High	$\times 1$	1	Information is from trusted sources		
Domain 2: Repre	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Medium	$\times 2$	4	Likely within scope		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1988		
	Metric 5:	Sample Size	Low	$\times 1$	3	Distribution characterized by no statistics.		
	·1 ·1· / / / / 1	.,						
Domain 3: Access	Sibility/Clar	Matadata Completeness	II: mh	~ 1	1			
	metric o:	Metadata Completeness	підп	× 1	1	Assessment or report clearly documents its data sources, as- sessment methods, results.		
Domain 4: Variat	oility and U	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion on uncertainty and variability		
		Cor	tinued on i	next page	)			
				1 0				

Source Citation:	General Electric, Co. 1988. 1 090688.	Health and Safety Stud	ies on M	ethylene	Chloride with Attachments and Cover Letter Dated			
Type of Data Source Hero ID	Occupational Exposure; Comp 4442312	Occupational Exposure; Completed Exposure or Risk Assessments; 442312						
EVALUATION								
Domain	Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Overall Quality I	$\operatorname{Determination}^\dagger$	Medium		2.1				

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\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source	Halogenated Solvents Industry Alliance, Inc. 2018. Comment letter of Halogenated Solvents Industry Alliance, Inc. (HSIA) regarding Docket ID No. EPA-HQ-OPPT-2016-0742-0103. Personal Communication. Occupational Exposure; Monitoring Data;						
Hero ID	5042167						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Mfg, Proc	c-Rxn, P	lastcs		
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	ility						
	Metric 1:	Methodology	Low	$\times 1$	3	Methods not specified	
Domain 2: Repres	sentative						
Domain 2. Ropio	Metric 2:	Geographic Scope	High	$\times 1$	1	US facilities	
	Metric 3:	Applicability	High	$\times 2$	2	Directy industrial scenarios	
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	most within the last 10 years	
	Metric 5:	Sample Size	High	$\times 1$	1	Individual data points	
Domain 3: Access	ibility/Clar	ity					
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Most metadata given, missing exposure frequency and duration	
Domain 4: Variah	ility and U	ncortainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.	
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	High		1.6		

\* MWF = Metric Weighting Factor

Source Citation:	Finkel, A.I. Communic	M. 2017. Comment letter of Ad	lam M. Finl	kel regare	ding Do	cket ID No. EPA-HQ-OPPT-2016-0231-0536. Personal
Type of Data Source Hero ID	Occupatio 5042391	nal Exposure; Monitoring Data;				
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Use			
Life Cycle Descrip	otion (Subca	ategory of Use):	Spot Clea	ning		
Route of Exposur	e:		inhalatior	1		
Exposure Concent	tration (Uni	it):	0-88.7			
Number of Sampl	es:		6			
Type of Measurer	ment or Met	hod:	TWA			
Worker Activity:			unknown	- industr	ial laun	derer sites
Type of Sampling			personal			
Exposure Duratio	on:		various			
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
	•1•,					
Domain I: Reliab	Motrie 1.	Mathadalagy	Uich	× 1	1	
	Metric 1:	Methodology	Ingn	× 1	1	data collected by OSHA, assumed of use OSHA methods
Domain 2: Repres	sentative					
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US data
	Metric 3:	Applicability	Medium	$\times 2$	4	Use in scope
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1985/1997, prior to most recent PEL
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given
Domain 2. Accord	sibility /Clan	:+				
Domain 5: Access	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Most metadata given missing exposure frequency and duration
	Metric 0.	Metadata Completeness	meurum	~ 1	2	most metadata given, missing exposure nequency and duration
Domain 4. Variat	oility and U	ncertainty				
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.
		Provonoss			~	
Overall Quality F	)eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.0	
Overall squality L		***	mount		2.0	

\* MWF = Metric Weighting Factor

Source Citation:	Finkel, A.I. Communic	M. 2017. Comment letter of Ad	lam M. Finl	kel regare	ding Do	cket ID No. EPA-HQ-OPPT-2016-0231-0536. Personal
Type of Data Source Hero ID	Occupatio 5042391	nal Exposure; Monitoring Data;				
EXTRACTION						
Parameter			Data			
Life Cycle Stage:			Use			
Life Cycle Descrip	otion (Subca	ategory of Use):	Spot Clea	ning		
Route of Exposur	e:	,	inhalation	1		
Exposure Concent	tration (Uni	it):	0-88.7			
Number of Sampl	es:		6			
Type of Measurer	ment or Met	hod:	TWA			
Worker Activity:			unknown	- industr	ial laun	derer sites
Type of Sampling			personal			
Exposure Duratio	on:		various			
EVALUATION						
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments
	•1•,					
Domain 1: Reliab	Motrie 1.	Mathadalagy	Uich	× 1	1	
	Metric 1.	Methodology	Ingn	× 1	1	data collected by OSHA, assumed of use OSHA methods
Domain 2: Repres	sentative					
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US data
	Metric 3:	Applicability	Medium	$\times 2$	4	Use in scope
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2003 and after most recent PEL
	Metric 5:	Sample Size	High	$\times 1$	1	discrete data given
Damain 2. Asses	:1:1:4 / <i>C</i> 1	:				
Domain 5: Access	Motrie 6	Metadata Completeness	Modium	× 1	0	
	Metric 0.	Metadata Completeness	meanum	× 1	2	Most metadata given, missing exposure frequency and duration
Domain 4. Variat	vility and U	ncertainty				
Domain 4. Variat	Metric 7:	Metadata Completeness	Low	× 1	3	Not discussed
					· ·	
Overall Quality F	eterminatio	$\mathbf{n}^{\dagger}$	Medium		18	
Overall Quality L	, coerminatio	211	meannin		1.0	

\* MWF = Metric Weighting Factor

Source Citation:	International Programme on Chemical Safet. 1996. Environmental Health Criteria 164. Methylene Chloride Second Edition.								
Type of Data Source	Occupational Exposure; Completed Exposure or Risk Assessments;								
Hero ID	5071459								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Description (Subcategory of Use):			Polyurethane Foam Blowing						
Physical Form:			vapor						
Route of Exposure:			inhalation						
Exposure Concentration (Unit):			7.1 - 1,090						
Number of Samples:			unknown						
Number of Sites:			unknown						
Type of Measuren	nent or Met	hod:	TWA						
Worker Activity:			Moulding, unknown, various jobs						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
	_								
Domain 1: Reliab	ility		_		_				
	Metric 1:	Methodology	Low	$\times 1$	3	Not Specified			
Domain 2: Repres	Motria 2	Coorrephie Seene	Modium	× 1	0	Well Held Ormaletter			
	Metric 2:	Applicability	High	$\times 1$ $\times 2$	2	World Health Organization			
	Metric J.	Tomporal Representativeness	Low	$\sim 2$ $\sim 2$	6	Foam Blowing			
	Metric 5:	Sample Size	Modium	× 4 × 1	0	1987 through 1992, prior to FEL			
	metric 5.	Sample Size	meannin	~ 1	2	range given			
Domain 3: Access	ity								
Domain of Trocost	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Type of measurement given, no other metadata provided			
						, , , , , , , , , , , , , , , , , , ,			
Domain 4: Variability and Uncertainty									
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Not discussed.			
Overall Quality Determination <sup><math>\dagger</math></sup>			Low		2.3				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	OSHA. 2019. Dichloromethane Sampling Results, 2012-2016. Occupational Exposure; Monitoring Data; 5079093							
EXTRACTION Parameter			Data					
Life Cycle Stage:			Various					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Dennein 1. Dellekilian								
Domain 1. Renau	Metric 1:	Methodology	High	$\times 1$	1	Assumed that OSHA used OSHA-approved methods		
Domain 2: Ropresentative								
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Covers various industries directly related to scope		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2013-2016		
	Metric 5:	Sample Size	High	$\times 1$	1	Individual data points		
Domain 3: Access	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	sample times seem incorrect		
		I				k i i i i i i i i i i i i i i i i i i i		
Domain 4: Variability and Uncertainty								
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Uncertainty and variability not discussed		
Overall Quality Determination <sup><math>\dagger</math></sup>			High		1.3			

\* MWF = Metric Weighting Factor
Source Citation: Type of Data Source Hero ID	Defense Occupational and Environmental Health Readiness System - Industrial Hygiene (DOEHRS-IH). 2018. Email between DOD and EPA: RE: [Non-DoD Source] Update: DoD exposure data for EPA risk evaluation - EPA request for additional information. U.S. Department of Defense. Occupational Exposure; Monitoring Data; 5178607						
EXTRACTION Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Exposure Concentration (Unit):			Use Laborato: mg/m3	ry			
EVALUATION		N	D ()		q		
Domain		Metric	Rating	MWF'*	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method	
Domain 2: Repres	sentative						
	Metric 2:	Geographic Scope	High	$\times 1$	1	DOD	
	Metric 3:	Applicability	High	$\times 2$	2	Laboratory	
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	pre 2016	
	Metric 5:	Sample Size	High	$\times 1$	1	Individual data points	
Domain 3: Access	sibility/Clar	ity		1	0		
	Metric 6:	Metadata Completeness	Medium	× 1	2	personal samples - sample times given; shift duration data is spotty	
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Uncertainty and variability not discussed	
Overall Quality Determination <sup>†</sup>		High		1.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Defense Occupational and Environmental Health Readiness System - Industrial Hygiene (DOEHRS-IH). 2018. Email between DOD and EPA: RE: [Non-DoD Source] Update: DoD exposure data for EPA risk evaluation - EPA request for additional information. U.S. Department of Defense. Occupational Exposure; Monitoring Data; 5178607						
EXTRACTION Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Exposure Concentration (Unit):			Use Paints an mg/m3	d Coatin	gs		
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method	
Domain 2: Repres	sentative		TT: 1	1	1		
	Metric 2:	Geographic Scope	High	$\times 1$	1	DOD	
	Metric 3:	Applicability	High	$\times 2$	2	Paints and Coatings	
	Metric 4:	Temporal Representativeness	High Hish	$\times 2$	2	2016	
	Metric 5:	Sample Size	High	× 1	1	Individual data points	
Domain 2. Accord	ibility /Clan	i+					
Domain 5: Access	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	personal samples - sample times given; shift duration data is spotty	
Domain 4: Variak	oility and U	ncertainty	_				
	Metric 7:	Metadata Completeness	Low	× 1	3	Uncertainty and variability not discussed	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	High		1.3		

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Defense Occupational and Environmental Health Readiness System - Industrial Hygiene (DOEHRS-IH). 2018. Email between DOD and EPA: RE: [Non-DoD Source] Update: DoD exposure data for EPA risk evaluation - EPA request for additional information. U.S. Department of Defense. Occupational Exposure; Monitoring Data; 5178607						
EXTRACTION Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Exposure Concentration (Unit):			Use Waste Ha mg/m3	ndling			
EVALUATION						_	
Domain		Metric	Rating	MWF*	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	NIOSH Method	
Domain 2: Repres	sentative						
	Metric 2:	Geographic Scope	High	$\times 1$	1	DOD	
	Metric 3:	Applicability	High	$\times 2$	2	Waste Handling	
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2017	
	Metric 5:	Sample Size	High	$\times 1$	1	Individual data points	
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Medium	$\times 1$	2	personal samples - sample times given; shift duration data is spotty	
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Uncortainty and variability not discussed	
	MEDIIC 1.	metadata Completeness	цом	^ 1	0	Oncertainty and variability not discussed	
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	High		1.3		

\* MWF = Metric Weighting Factor

Source Citation:	Bernstein, Evaluation OPPT-201	Bernstein, A 2017. Arkema Inc. Comments to Inform EPA's Rulemaking on the Problem Formulations for the Risk Evaluations for Certain of the First Ten Chemical Substances under the Lautenberg Chemical Safety Act (LCSA). EPA-HQ-OPPT-2016-0742-0079.							
Type of Data Source Hero ID	Occupation 5355369	nal Exposure; Monitoring Data;							
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Prox-Rxn	1					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility								
	Metric 1:	Methodology	Low	$\times 1$	3	Unknown method			
Domain 2: Repres	sentative								
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Processing as a reactant			
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2017			
	Metric 5:	Sample Size	Medium	$\times 1$	2	average provided			
Demain 2. Access	:1:1:4/ <i>C</i> 1	·							
Domain 3: Access	Metric 6:	Metadata Completeness	Low	$\times 1$	3	personal samples			
		X				* *			
Domain 4: Variab	ility and U	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	Uncertainty and variability not discussed			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		1.8				

\* MWF = Metric Weighting Factor

Facility

Source Citation: Type of Data Source Hero ID	2017. Che Facility; R 3860459	2017. Chemical data reporting: Dichloro-methane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3860459							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Manufacture/Import Manufacture/Import of DCM 261,469,894 lb/yr 12 (some CBI)						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	EPA Source			
Domain 2: Repres	sentative								
- • • ••F • ••	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Manufacture/Import of DCM			
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2010, 2011			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.7				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Cmr,. 1979 Facility; R 730485	Cmr,. 1979. Chemical profile on methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 730485							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Manufacture Manufacture of DCM 830,000,000 lb/yr (1979) 7						
EVALUATION									
Domain		Metric	Rating	MWF*	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	Chemical Marketing Reporter			
Domain 2: Repres	sentative								
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Manufacture of DCM			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1979			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Cmr,. 198 Facility; R 730486	Cmr., 1982. Chemical profile on methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 730486							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Manufacture Manufacture of DCM 722,000,000 lb/yr (1982) 7						
EVALUATION		N	D		a				
Domain		Metric	Rating	MWF*	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	Chemical Marketing Reporter			
Domain 2: Repres	sentative								
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Manufacture of DCM			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1982			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation:	Hall, A. H.,Rumack, B. H. 1990. Methylene chloride exposure in furniture-stripping shops: Ventilation and respirator use practices. Journal of Occupational Medicine									
Type of Data Source Hero ID	Facility; R 730520	Facility; Reports for Data or Information Other than Exposure or Release Data; 730520								
EXTRACTION										
Parameter			Data							
			M							
Life Cycle Stage:	tion (Suba	torowy of Uco).	Manufa	cture	DCM					
Total Annual U.S.	Volume (a	nd percent of PV).	635 000	000  lb/v	r (1980)	)				
1000111111001 0.5	. vorunie (a	nd percent of r v).	000,000	,000 10/ y	1 (1000	)				
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Damain 1. Daliah	:1:4									
Domain 1: Reliad	Metric 1	Methodology	Low	× 1	3	Methodology not specified				
	Meetile 1.	Methodology	LOW	~ 1	0	Methodology not specifica				
Domain 2: Repres	sentative									
-	Metric 2:	Geographic Scope	High	$\times 1$	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Manufacture of DCM				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1980				
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size				
Domain 2: Accord	ibility/Clar	14.7								
Domain 5. Access	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided				
Domain 4: Variab	ility and Ur	ncertainty	Ŧ	-	0					
	Metric 7:	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty				
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3					

\* MWF = Metric Weighting Factor

Source Citation:	Hall, A. H.,Rumack, B. H 1990. Methylene chloride exposure in furniture-stripping shops: Ventilation and respirator use practices. Journal of Occupational Medicine									
Type of Data Source Hero ID	Facility; R 730520	Facility; Reports for Data or Information Other than Exposure or Release Data; 730520								
EXTRACTION										
Parameter			Data							
Life Cruele Sterrer			Dresser							
Life Cycle Stage:	tion (Subca	ategory of Use).	Formula	ng ation of I	Paint St	rippers/Bemovers				
Total Annual U.S	. Volume (a	nd percent of PV):	30 perce	ent of P	7	hppels/ itemovers				
EVALUATION										
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments				
Domain 1. Roliah										
	Metric 1:	Methodology	Low	$\times 1$	3	Methodology not specified				
Domain 2: Bepres	entative									
Domain 2. Repres	Metric 2:	Geographic Scope	High	$\times 1$	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Formulation of Paint Strippers/Removers				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1980				
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size				
Domoin 2. Access	:h:l:ter/Clam									
Domain 5: Access	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided				
		-								
Domain 4: Variab	ility and Ui	ncertainty								
	Metric 7:	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty				
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3					

\* MWF = Metric Weighting Factor

Source Citation:Osha, 19Type of Data SourceFacility; FHero ID3982430	91. Proposed rules: Occupationa Reports for Data or Information	al exposure Other than	to methy Exposure	lene chi e or Rei	loride. lease Data;					
EXTRACTION		_								
Parameter		Data								
Life Cycle Stage:	Life Cycle Stage:			Manufacture						
Life Cycle Description (Subc	Life Cycle Description (Subcategory of Use):			CM						
Process Description:		Yes								
Total Annual U.S. Volume (a	and percent of PV):	467,000,0	00 ;b (19	988)520	,000,000 lb $(1987)735,000,000$ lb/yr capacity					
		(1987)607	7,000,000	lb $(198)$	4)					
Number of Sites:										
EVALUATION										
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments					
Domain 1: Beliability										
Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources					
Domain 2: Representative										
Metric 2:	Geographic Scope	High	$\times 1$	1	US					
Metric 3:	Applicability	High	$\times 2$	2	Manufacture of DCM					
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1984-1988					
Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size					
Damain 2. A accessibility (Class										
Domain 3: Accessibility/Clai	Matadata Completeness	Low	× 1	9						
metric 0.	Metadata Completeness	LOW	× 1	ა	No underlying information provided					
Domain 4: Variability and U	ncertainty									
Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty					
	*				vv					
Overall Quality Determination	$\mathrm{on}^{\dagger}$	Medium		2.1						

<sup>\*</sup> MWF = Metric Weighting Factor
<sup>†</sup> If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982430									
EXTRACTION										
Parameter			Data							
Life Cycle Stage:			Use							
Life Cycle Descrit	otion (Subca	ategory of Use):	Polvureth	nane Foar	n Blowi	ng				
Process Description	on:		Yes			0				
Total Annual U.S	. Volume (a	nd percent of PV):	54,000,00	0 lb (198	8)					
Number of Sites:	,	- ,	180							
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliab	Domain 1. Polishility									
	Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources				
Domain 2. Ponno	antativa									
Domain 2: Repres	Motric 2.	Coographic Scope	High	$\sim 1$	1	TIC				
	Metric 3:	Applicability	High	$\times 1$ $\times 2$	2	05 Polyurethane Foam Blowing				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1984-1988				
	Metric 5:	Sample Size	Low	× 1	3	No information on sample size				
Domain 3: Access	ibility/Clar	ity								
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided				
Domain 4. Variah	ilitar and II.									
Domain 4: Variat	Metric 7.	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncortainty				
		Metadata Completeness	LOW	~ 1	0	The discussion of variability of uncertainty				
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982430							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV):		Processing Distribution/Formulation 250,000,000 lb (1988)		ulation 88)				
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	OSHA report based on other sources		
Domain 2: Repre	sentative Metric 2: Metric 3:	Geographic Scope Applicability	High High	$\begin{array}{c} \times \ 1 \\ \times \ 2 \end{array}$	1 2	US Distribution/Formulation		
	Metric 4: Metric 5:	Temporal Representativeness Sample Size	Low Low	$\times 2$ $\times 1$	$\frac{6}{3}$	1984-1988 No information on sample size		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided		
Domain 4: Variał	oility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982430									
EXTRACTION										
Parameter			Data							
Life Cycle Stage:			Use							
Life Cycle Descrip	otion (Subca	ategory of Use):	Aerosols							
Process Description	on:		Yes							
Total Annual U.S	. Volume (a	nd percent of PV):	106,000,0	00  lb (193)	88)					
Number of Sites:			217							
EVALUATION										
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments				
Domain 1: Boliah	ility									
Domain 1. Renad	Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources				
Domain 2: Repres	sentative		TT' 1	1	1					
	Metric 2: Metric 2:	Geographic Scope	High Uigh	$\times 1$	1	US Assessed				
	Metric 3.	Tomporal Boprosontativonoss	Low	$\times 2$ $\times 2$	6	Aerosois				
	Metric 5:	Sample Size	Low	× 1	3	No information on sample size				
	Meetic 0.	Sumple Size	LOW	~ 1	0	No mormation on sample size				
Domain 3: Access	sibility/Clari	ity								
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided				
Domain 4: Variab	ility and Ur	ncertainty	-							
	Metric 7:	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty				
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3982430	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982430								
EXTRACTION										
Parameter			Data							
Life Cycle Stage:			Leo							
Life Cycle Descrip	ption (Subca	tegory of Use):	Polycarbo	onate Res	sin					
Process Description	on:		Yes							
Total Annual U.S	. Volume (a	nd percent of PV):	7,000,000	lb (1988)	)					
Number of Sites:	,	_ ,	4							
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1. Reliab	oility									
	Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources				
Domain 2: Barro	sontativo									
Domain 2. Repre	Metric 2	Geographic Scope	High	× 1	1	US				
	Metric 3:	Applicability	Medium	$\times 2$	4	Polycarbonate Resin				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1984-1988				
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size				
		_								
Domain 3: Access	sibility/Clar	ity	Ŧ	-	0					
	Metric 6:	Metadata Completeness	Low	× 1	3	No underlying information provided				
Domain 4. Variat	vility and Ur	cortainty								
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty				
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.3					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982430								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Processing						
Life Cycle Descrip	otion (Subca	ategory of Use):	Pharmace	euticals					
Process Description	on:	/	Yes						
Total Annual U.S	. Volume (a	nd percent of PV):	28,000,00	0  lb (198)	8)				
Number of Sites:			76						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility								
	Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources			
Domain 2: Repres	sentative								
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	Medium	$\times 2$	4	Pharmaceuticals			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1984-1988			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
		_							
Domain 3: Access	sibility/Clar	ity	т	1	0				
	Metric 6:	Metadata Completeness	Low	× 1	3	No underlying information provided			
Domain 4: Variat	vility and Ur	certainty							
Domain 4. Vallar	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup>†</sup>			Low		2.3				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982430								
EXTRACTION									
Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Total Annual U.S. Volume (and percent of PV): Number of Sites:		Processing Manufacture of Paints Yes 28,000,000 lb (1988) 390							
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources			
Domain 9: Donna	antatina		0						
Domain 2. Repres	Metric 2.	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Manufacture of Paints			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1984-1988			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup>†</sup>		Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation:OshType of Data SourceFaciHero ID3982	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982430							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Total Annual U.S. Volume (and percent of PV): Number of Sites:		Processing Manufacture of Paint Removers Yes 155,000,000 lb (1988) 203						
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliability Met	ric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources		
			0					
Domain 2: Representat	ive	Coomanhia Soona	II: mh	× 1	1	110		
Met	ric $2$ :	Applicability	пі <u>g</u> п High	$\times 1$ $\times 2$	1	US Manufacture of Point Removers		
Met	ric $4$ ·	Temporal Representativeness	Low	$\times 2$	6	1984-1988		
Met	ric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Accessibility	/Clarit	у						
Met	ric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variability a Met	and Unc ric 7:	ertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality Determination <sup>†</sup>		Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation:Osha,. 199Type of Data SourceFacility; RHero ID3982430	91. Proposed rules: Occupationa eports for Data or Information (	l exposure Other than	to methy Exposure	lene chl e or Rel	oride. Jease Data;	
EXTRACTION						
Parameter		Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Total Annual U.S. Volume (and percent of PV): Number of Sites:			Use Paint Stripping Yes 52,000,000 lb (1988) 75 large aircraft strippers; 225 small air craft strippers; 4,000 furniture strippers; 1,930 industrial firms			
EVALUATION				_		
Domain	Metric	Rating	MWF*	Score	Comments	
Domain 1: Reliability Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources	
Domain 2: Representative						
Metric 2:	Geographic Scope	High	$\times 1$	1	US	
Metric 3:	Applicability	High	$\times 2$	2	Paint Stripping	
Metric 4:	Temporal Representativeness	Low	× 2	6	1984-1988	
Domain 3: Accessibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided	
Domain 4: Variability and Uncertainty Metric 7: Metadata Completeness		Low	× 1	3	No discussion of variability or uncertainty	
Overall Quality Determination <sup>†</sup>		Medium		2.1		

Source Citation:Osha,. 199Type of Data SourceFacility; RHero ID3982430	91. Proposed rules: Occupationa teports for Data or Information	l exposure Other than	to methy Exposure	lene chi e or Rei	loride. lease Data;		
EXTRACTION							
Parameter		Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Total Annual U.S. Volume (and percent of PV): Number of Sites:			Use Degreasing and Metal Cleaning Yes 41,000,000 lb (1988) 22,652 cold degreasers; 129 open top degreasers; 111 conveyorized vapor degreasers				
EVALUATION							
Domain	Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliability Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources		
Domain 2: Representative							
Metric 2:	Geographic Scope	High	$\times 1$	1	US		
Metric 3:	Applicability	High	$\times 2$	2	Degreasing and Metal Cleaning		
Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1984-1988		
Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Accessibility/Clan Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variability and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality Determination <sup>†</sup>		Medium		2.1			

<sup>\*</sup> MWF = Metric Weighting Factor
<sup>†</sup> If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982430									
EXTRACTION			_							
Parameter			Data							
Life Cycle Stage:			Use							
Life Cycle Descri	otion (Subca	ategory of Use):	Cellulose	Triacetat	e and H	Film Base Production				
Process Description	on:		Yes							
Total Annual U.S	. Volume (a	nd percent of PV):	11,000,00	0 lb (198	8)					
Number of Sites:			1							
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1. Reliah	ility									
	Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources				
Domain 2: Barra	contativo									
Domain 2. Repres	Metric 2.	Geographic Scope	High	× 1	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Cellulose Triacetate and Film Base Production				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1984-1988				
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size				
		•.								
Domain 3: Access	Matuia C	ity Mata lata Gammalatan an	Τ	. I	9					
	Metric 6:	Metadata Completeness	LOW	× 1	3	No underlying information provided				
Domain 4. Variat	vility and Ur	ncertainty								
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty				
Overall Quality E	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982430									
EXTRACTION										
Parameter			Data							
Life Cycle Stage:			Use							
Life Cycle Descrit	otion (Subca	ategory of Use):	Electroni	cs						
Process Description	on:		Yes							
Total Annual U.S	. Volume (a	nd percent of PV):	40,000,00	0 lb (198	8)					
Number of Sites:			1059							
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Boliah	ility									
Domain 1. Renad	Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources				
Domain 2: Repres	sentative	~	*** 1		_					
	Metric 2:	Geographic Scope	High	$\times 1$	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Electronics				
	Metric 4:	Temporal Representativeness	Low	× 2	6	1984-1988				
	Metric 5:	Sample Size	Low	× 1	3	No information on sample size				
Domain 3. Access	ibility/Clari	ity								
Domain 0. Hooos	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided				
Domain 4: Variat	ility and Ur	ncertainty	Ŧ							
	Metric 7:	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty				
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation:Osha, 1991. Proposed rules: Occupational exposure to methylene chloride.Type of Data SourceFacility; Reports for Data or Information Other than Exposure or Release Data; 3982430								
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Total Annual U.S. Volume (and percent of PV): Number of Sites:			<ul> <li>Proc/Use</li> <li>Miscellaneous (Food extraction, pesticide formialtion, and ink)</li> <li>Yes</li> <li>38,000,000 lb (1988)</li> <li>3 food processing companies; 37 ink manufacturers; 10,482 printers; Note that report later indicates that DCM is no longer used in food extraction and that use in pesticides and ink have already or will be phased out</li> </ul>					
EVALUATION		N	D ()		a			
Domain		Metric	Rating	MWF'^	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	${\it Miscellaneous}\;({\it Food extraction},{\it pesticide formialtion},{\it and ink})$		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1984-1988		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar	ity	_		_			
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variability and Uncertainty Metric 7: Metadata Completeness		Low	$\times 1$	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup>†</sup>		Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1991. Proposed rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982430							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrit	ntion (Subca	ategory of Use).	Solvent r	ecoverv				
Process Description	on:	tegory of ese).	Yes	covery				
Total Annual U.S	. Volume (a	nd percent of PV):	37,000,00	0 lb (198	8)			
Number of Sites:	× ×	1 /	40	(	,			
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Boliah	ility							
Domain 1. Itenab	Metric 1:	Methodology	High	$\times 1$	1	OSHA report based on other sources		
Domain 2. Donna								
Domain 2: Repres	Motric 2.	Geographic Scope	High	$\times 1$	1	IIG		
	Metric 2.	Applicability	High	$\times 1$ $\times 2$	2	Solvent recovery		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1984-1988		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4. Variah	iliter and II.							
Domain 4: Variat	Metric 7.	Metadata Completeness	Low	× 1	3	No discussion of variability or uncortainty		
		Metadata Completeness	TOM	~ 1	0	The discussion of variability of uncertainty		
Overall Quality D		$\mathbf{n}^{\dagger}$	Medium		2.1			
C veran gudney D		**	mourum		4.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Manufact Manufact 469,200,0 4	Manufacture Manufacture of DCM 469,200,000 lb (1990) 4					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA Final Rule			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Manufacture of DCM			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup>†</sup>		Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter	Data								
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				g ion/Form 00 lb (19	ulation 90)				
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Benree	sentative								
Domain 2. Repres	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Distribution/Formulation			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter	Data								
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				Use Cold Degreasing and Other Cold Cleaning: 32560000 lb (1990) 23717					
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Cold Degreasing and Other Cold Cleaning:			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter	Data								
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				Use Open Top Vapor Degreasing 14870000 lb (1990) 278					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
- • •-•-F- •-	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Open Top Vapor Degreasing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and U Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298								
EXTRACTION Parameter	Data								
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				Use Conveyorized Vapor Degreasing 1130000 lb (1990) 45					
EVALUATION									
Domain		Metric	Rating	$MWF^*$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
1	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Conveyorized Vapor Degreasing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				uctors $(1990)$				
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule		
Domain 2: Repres	sentative							
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Semiconductors		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				Circuit Bo lb (1990)	oards )			
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	OSHA Final Rule		
Domain 2: Repres	sentative							
- • • ••F • ••	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Printed Circuit Boards		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variab	ility and U Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				Processing Aerosol Packaging 25210000 lb (1990) 52					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
- • •-•-F- •-	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Aerosol Packaging			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter	Data								
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				Processing Paint Remover Manufacturing 136850000 lb (1990) 80					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Paint Remover Manufacturing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	${f n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter	Data								
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				Processing Paint Manufacturing 3540000 lb (1990) 49					
EVALUATION									
Domain		Metric	Rating	MWF*	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
Domain 2. Ropio	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Paint Manufacturing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data					
			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	otion (Subca	ategory of Use):	Paint Str	ipping: A	ircraft			
Number of Sites:	. volume (a	nd percent of PV):	300	ID (1990)	)			
rumber of price.			000					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1. Deliah	:1:4							
Domain 1: Reliad	Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule		
Domain 2: Repres	Sentative Motrie 2:	Coorrenkie Soone	II: mh	× 1	1			
	Metric 2:	Appliesbility	High	$\times 1$	1	US Defect States in a Alexandri		
	Metric 3:	Tomporal Boprosontativonoss	Low	$\times 2$ $\times 2$	2 6	Paint Stripping: Aircraft		
	Metric 4. Metric 5:	Sample Size	Low	$ \times 2 \times 1 $	3	No information on sample size		
		Sample She						
Domain 3: Access	ibility/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4. Variah	ility and U	ncertainty						
Domain 4. variau	Metric 7:	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
					~			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1			
Storen gaung Determination								

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				Use Furniture Stripping 23260000 lb (1990) 6152					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Furniture Stripping			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1				

\* MWF = Metric Weighting Factor
Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Use Other Industrial Paint Stripping 59360000 lb (1990) 35041						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Other Industrial Paint Stripping			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	${f n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Use Flexible Polyurethane Foam Manufacturing 50320000 lb (1990) 100						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Flexible Polyurethane Foam Manufacturing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Processing/Use Manufacturing and Use of Plastics and Adhesives 41900000 lb (1990) 3487						
EVALUATION			_		_				
Domain		Metric	Rating	MWF*	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2. Bepres	sentative								
Domain = 100pro.	Metric 2:	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Manufacturing and Use of Plastics and Adhesives			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Number of Sites:		Processing Adhesive Production 165							
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	OSHA Final Rule			
Domain 2: Repre	sentative	<u> </u>			-				
	Metric 2:	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Adhesive Production			
	Metric 4: Metric 5:	Sample Size	Low Low	$\times 2 \times 1$	6 3	1990 No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided			
Domain 4: Varial	oility and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality I	Determinatio	$\mathrm{n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298						
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Number of Sites:		Use Adhesive 1753	Use					
EVALUATION								
Domain		Metric	Rating	$\rm MWF^{\star}$	Score	Comments		
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	OSHA Final Rule		
Domain 2: Repre	sentative Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3: Matric 4:	Applicability Tomp and Doppedentation	High	$\times 2$	2	Adhesive Use		
	Metric 4: Metric 5:	Sample Size	Low	$\times 2 \times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided		
Domain 4: Varial	bility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality I	Determinatio	$\mathrm{n}^\dagger$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Number of Sites:		Use Injection 80	Use Injection Molding 30						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	OSHA Final Rule			
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$ \begin{array}{c} \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \end{array} $	$\begin{array}{c} 1\\ 2\\ 6\\ 3\end{array}$	US Injection Molding 1990 No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided			
Domain 4: Varial	bility and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup>†</sup>		Medium		2.1					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298						
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Number of Sites:		Use Laminati 1323	on					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	OSHA Final Rule		
Domain 2: Repre	sentative Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3: Motrie 4:	Applicability Tomporal Representativeness	High	$\times 2$ $\times 2$	2	Lamination		
	Metric 4. Metric 5:	Sample Size	Low	$\times 1^{\times 2}$	3	No information on sample size		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided		
Domain 4: Varial	bility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality I	Determinatio	$\mathrm{n}^\dagger$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Number of Sites:		Use Mold Rel 165	ease						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	OSHA Final Rule			
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$ \begin{array}{c} \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \end{array} $	$     \begin{array}{c}       1 \\       2 \\       6 \\       3     \end{array} $	US Mold Release 1990 No information on sample size			
	Metric 5.	Sample Size	LOW	~ 1	0	No mormation on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	oility and Ui Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.1	× ×			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Processing Ink and Ink Solvent Manufacturing 3680000 lb (1990) 15						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Ink and Ink Solvent Manufacturing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:				Use Ink Solvent Use in Printing 3680000 lb (1990) 11869				
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Ink Solvent Use in Printing		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Processing/Use Pesticide Manufacturing and Formulation 9580000 lb (1990) 60						
EVALUATION		N			q				
Domain		Metric	Rating	MWF'*	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Bopros	contativo								
Domain 2. Repres	Metric 2.	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Pesticide Manufacturing and Formulation			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided			
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha,. 199 Facility; R 3978298	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Processing/Use Pharmaceutical Manufacturing 39530000 lb (1990) 108						
EVALUATION									
Domain		Metric	Rating	$MWF^*$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Pharmaceutical Manufacturing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided			
Domain 4: Variab	oility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality D	eterminatio	n†	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Use Solvent R 32100000 34	Use Solvent Recovery 32100000 lb (1990) 34				
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Solvent Recovery		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variab	ility and U Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Use Film Base 8900000 1 1	e Manufa b (1990)	cturing			
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Film Base Manufacturing		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variab	ility and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Use Polycarbonate Manufacturing 6700000 lb (1990) 4					
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Polycarbonate Manufacturing		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	${f n}^\dagger$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Use construct 2440000 1 9504	Use construction 2440000 lb (1990) 9504				
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule		
Domain 2: Repres	sentative							
Domain <b>2</b> , 100pros	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	construction		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Osha, 1997. Final rules: Occupational exposure to methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3978298							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV): Number of Sites:			Use Shipyards 470000 lb 25	Use Shipyards 470000 lb (1990) 25				
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA Final Rule		
Domain 2: Repres	sentative							
Domain = 100pro.	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Shipyards		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided		
Domain 4: Variab	oility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih, 2016. Report on carcinogens: Dichloromethane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982330						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Use				
Life Cycle Descrit	otion (Subca	ategory of Use):	Paint Str	ippers an	d Remo	overs	
Total Annual U.S	. Volume (a	nd percent of PV):	30 percen	t.			
	,	- ,	•				
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	oility						
	Metric 1:	Methodology	Low	$\times 1$	3	References Holbrook 2003 (Kirk Othmer)	
Domain 2: Benre	sentative						
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Paint Strippers and Removers	
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	unknown (need to see Holbrook 2003) (at least 10 years old)	
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size	
Domain 3: Access	sibility/Clar	ity					
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided	
Domain 4: Variab	bility and U	ncertainty	-				
	Metric 7:	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty	
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih,. 2016. Report on carcinogens: Dichloromethane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982330						
EXTRACTION Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV):		Use Adhesives 20 percen	s .t				
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	oility Metric 1:	Methodology	Low	× 1	3	References Holbrook 2003 (Kirk Othmer)	
Domain 2: Repre	sentative Metric 2: Metric 3:	Geographic Scope Applicability	High High	$\times 1 \times 2$	$\frac{1}{2}$	US Adhesives	
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	unknown (need to see Holbrook 2003) (at least 10 years old) $% \left( \left( {{{\rm{A}}} \right)_{\rm{B}}} \right)$	
	Metric 5:	Sample Size	Low	× 1	3	No information on sample size	
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	No underlying information provided	
Domain 4: Varial	oility and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty	
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.1		

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih, 2016. Report on carcinogens: Dichloromethane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982330						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Use				
Life Cycle Descrip	otion (Subca	ategory of Use):	Propellan	nt in Aerc	sols		
Total Annual U.S	. Volume (a	nd percent of PV):	10 percen	ıt			
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	oility						
	Metric 1:	Methodology	Low	$\times 1$	3	References Holbrook 2003 (Kirk Othmer)	
Domain 9. Ponno	aantatira						
Domain 2: Repres	Motric 2	Coographic Scope	High	× 1	1	116	
	Metric 2.	Applicability	High	$^{\wedge 1}$	1 9	DS Branellant in Acroscia	
	Metric 4:	Temporal Representativeness	Medium	$\sim 2$ $\times 2$	2 1	unknown (need to see Helbrook 2003) (at least 10 years old)	
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size	
Domain 3: Access	sibility/Clar	ity					
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided	
Domain 4: Variab	oility and U	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty	
Overall Quality Determination <sup>†</sup>		Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih, 2016. Report on carcinogens: Dichloromethane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982330						
EXTRACTION Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV):			Use Solvent in the Manufacture of Pharmaceuticals and Drugs 10 percent				
EVALUATION							
Domain		Metric	Rating	$\rm MWF^{\star}$	Score	Comments	
Domain 1: Reliab	oility Metric 1:	Methodology	Low	× 1	3	References Holbrook 2003 (Kirk Othmer)	
Domain 2: Repre	sentative Metric 2: Metric 3:	Geographic Scope Applicability	High High	$\times 1$ $\times 2$	1 2	US Solvent in the Manufacture of Pharmaceuticals and Drugs	
	Metric 4: Metric 5:	Temporal Representativeness Sample Size	Medium Low	$\times 2 \times 1$	$\frac{4}{3}$	unknown (need to see Holbrook 2003) (at least 10 years old) No information on sample size	
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided	
Domain 4: Varial	oility and U Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty	
Overall Quality Determination <sup>†</sup>		Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih, 2016. Report on carcinogens: Dichloromethane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982330						
EXTRACTION			Data				
			Data				
Life Cycle Stage:			Use				
Life Cycle Descrip	ption (Subca	ategory of Use):	Chemical	Processi	ng		
Total Annual U.S	. Volume (a	nd percent of PV):	10 percen	ıt			
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	oility						
	Metric 1:	Methodology	Low	$\times 1$	3	References Holbrook 2003 (Kirk Othmer)	
Domain 2. Bepre	sentative						
Domain 2. Repre	Metric 2.	Geographic Scope	High	× 1	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Chemical Processing	
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	unknown (need to see Holbrook 2003) (at least 10 years old)	
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size	
		*					
Domain 3: Access	sibility/Clar	ity					
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided	
Domain 4: Variab	oility and U	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty	
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih, 2016. Report on carcinogens: Dichloromethane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982330						
EXTRACTION			Data				
Parameter			Data				
Life Cycle Stage:			Use				
Life Cycle Descrip	otion (Subca	ategory of Use):	Metal Cle	eaning an	d Finis	hing Solvent	
Total Annual U.S	. Volume (a	nd percent of PV):	10 percen	t			
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	oility						
	Metric 1:	Methodology	Low	$\times 1$	3	References Holbrook 2003 (Kirk Othmer)	
Domain 2: Repres	sentative						
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Metal Cleaning and Finishing Solvent	
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	unknown (need to see Holbrook 2003) (at least 10 years old)	
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size	
Domain 3: Access	sibility/Clar	ity					
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided	
Domain 4: Variab	oility and Ui	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty	
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.1			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih,. 2016 Facility; R 3982330	Nih,. 2016. Report on carcinogens: Dichloromethane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982330						
EXTRACTION			Data					
			Data					
Life Cycle Stage:			Use					
Life Cycle Descri	otion (Subca	ategory of Use):	Urethane	Foam B	owing			
Total Annual U.S	. Volume (a	nd percent of PV):	5 percent		0			
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	oility				_			
	Metric 1:	Methodology	Low	$\times 1$	3	References Holbrook 2003 (Kirk Othmer)		
Domain 2: Bonro	contativo							
Domain 2. Repre	Metric 2.	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Urethane Foam Blowing		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	unknown (need to see Holbrook 2003) (at least 10 years old)		
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variat	bility and Ui	ncertainty	-	_	2			
	Metric 7:	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih,. 2016 Facility; R 3982330	Nih,. 2016. Report on carcinogens: Dichloromethane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982330							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Number of Sites:		Manufacture Manufacture of DCM 4							
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	oility Metric 1:	Methodology	Low	× 1	3	References SRI 2009			
Domain 2: Banra	contativo								
Domain 2. Repre	Metric 2.	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Manufacture of DCM			
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2009			
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided			
	Metho 0.	Metadata Completeness	LOW	~ 1	5	No underlying information provided			
Domain 4: Varial	oility and U	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup>†</sup>		Medium		1.9					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Nih,. 2016 Facility; R 3982330	Nih,. 2016. Report on carcinogens: Dichloromethane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982330							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Number of Sites:		Distribut Distribut 58 U.S. S	Distribution Distribution 58 U.S. Suppliers						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	oility Metric 1:	Methodology	Low	× 1	3	References ChemSources 2009			
Domain 2: Repre	sentative								
	Metric 2:	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Distribution			
	Metric 4: Metric 5:	Sample Size	High Low	$\times 2 \times 1$	2 3	2009 No information on sample size			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	No underlying information provided			
Domain 4: Varial	oility and U Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup>†</sup>		Medium		1.9					

\* MWF = Metric Weighting Factor

Source Citation:AtsdrType of Data SourceFaciliHero ID39823	<ul> <li>Atsdr., 2000. Toxicological profile for methylene chloride.</li> <li>Facility; Reports for Data or Information Other than Exposure or Release Data; 3982337</li> </ul>								
EXTRACTION Parameter		Data							
Life Cycle Stage: Life Cycle Description (S Process Description: Total Annual U.S. Volur Number of Sites:	Manufact Manufact Yes 545,000,0 4	Manufacture Manufacture of DCM Yes 545,000,000 lb capacity (1999) 4							
<b>EVALUATION</b> Domain	Metric	Rating	MWF*	Score	Comments				
Domain 1: Reliability Metri	: 1: Methodology	High	× 1	1	Produced by ATSDR				
Domain 2: Representativ	e	0							
Metri	2: Geographic Scope	High	$\times 1$	1	US				
Metri	e 3: Applicability	High	$\times 2$	2	Manufacture of DCM				
Metri	e 4: Temporal Representativeness	Low	$\times 2$	6	>20 years old				
Metri	5: Sample Size	Medium	$\times 1$	2	Provided an estimate - uncertain range or error				
Domain 3: Accessibility, Metri	Clarity e 6: Metadata Completeness	Low	$\times 1$	3	Only results provided				
Domain 4: Variability an Metri	d Uncertainty 27: Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty				
Overall Quality Determination <sup>†</sup>				2.0					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Atsdr,. 20 Facility; R 3982337	Atsdr,. 2000. Toxicological profile for methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982337							
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Import						
Life Cycle Descri	otion (Subca	ategory of Use):	Import						
Total Annual U.S	. Volume (a	nd percent of PV):	132-145 n	nilion pou	inds (19	992-1996)			
EVALUATION	EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	oility								
	Metric 1:	Methodology	High	$\times 1$	1	Produced by ATSDR			
Domain 2: Bepre	sentative								
Domain 2. Repre	Metric 2.	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Import			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	>20 years old			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Provided an estimate - uncertain range or error			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Only results provided			
Domain 4: Variab	oility and U	ncertainty	_						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.0					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Atsdr,. 20 Facility; R 3982337	Atsdr,. 2000. Toxicological profile for methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982337							
EXTRACTION			Data						
Farameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	otion (Subca	ategory of Use):	Paint Str	ippers an	d Remo	overs			
Total Annual U.S	. Volume (a	nd percent of PV):	25 percen	ıt					
EVALUATION									
Domain		Metric Rating MWF* Score Comments							
Domain 1: Reliab	oility								
	Metric 1:	Methodology	High	$\times 1$	1	Produced by ATSDR			
Domain 2: Repres	sentative								
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Paint Strippers and Removers			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	>20 years old			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Provided an estimate - uncertain range or error			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Only results provided			
Domain 4: Variab	bility and Ui	ncertainty	-	_	-				
	Metric 7:	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.0					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Atsdr,. 20 Facility; R 3982337	Atsdr,. 2000. Toxicological profile for methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982337							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV):			Use Propellant in Aerosols 25 percent						
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	Produced by ATSDR			
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4:	Geographic Scope Applicability Temporal Representativeness	High High Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \end{array}$	$ \begin{array}{c} 1\\ 2\\ 6\end{array} $	US Propellant in Aerosols >20 years old			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Provided an estimate - uncertain range or error			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	Only results provided			
Domain 4: Variab	bility and U Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty			
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.0				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Atsdr,. 2000. Toxicological profile for methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982337							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descri	otion (Subca	ategory of Use):	Proces so	lvent in i	mfg of d	lrugs, pharmaceuticals, and film coatings		
Total Annual U.S	. Volume (a	nd percent of PV):	20 percen	ıt	0			
EVALUATION								
Domain		Metric	Rating	$\mathbf{MWF}^{\star}$	Score	Comments		
Domain 1, Daliah	:1:4							
Domain 1: Reliac	Motrio 1.	Mathadalam	II: mla	V 1	1			
	Metric 1:	Methodology	Ingn	× 1	1	Produced by AISDR		
Domain 2: Repre	sentative							
-	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Proces solvent in mfg of drugs, pharmaceuticals, and film coatings		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	>20 years old		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Provided an estimate - uncertain range or error		
		•.						
Domain 3: Access	Sibility/Clar	Ity Matadata Completeness	Low	× 1	2			
	Metric 0:	Metadata Completeness	LOW	X 1	3	Only results provided		
Domain 4: Variat	oility and U	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality Determination <sup>†</sup>		Medium		2.0				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Atsdr,. 20 Facility; R 3982337	Atsdr,. 2000. Toxicological profile for methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982337							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Total Annual U.S. Volume (and percent of PV):			Use Metal Cleaning and Finishing Solvent 10 percent						
EVALUATION									
Domain	Metric Rating MWF <sup>*</sup> Score Comments								
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	Produced by ATSDR			
Domain 2: Repre	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Modium	$ \begin{array}{c} \times 1 \\ \times 2 \\ \times 2 \\ \times 1 \end{array} $	$     \begin{array}{c}       1 \\       2 \\       6 \\       2     \end{array} $	US Metal Cleaning and Finishing Solvent >20 years old			
	Metric 5:	Sample Size	meann	× 1	2	Provided an estimate - uncertain range or error			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	$\times 1$	3	Only results provided			
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty			
Overall Quality I	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.0				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Atsdr,. 20 Facility; R 3982337	Atsdr,. 2000. Toxicological profile for methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982337						
EXTRACTION Parameter			Data					
			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	ption (Subca	ategory of Use):	Electronic	CS				
Total Annual U.S	. Volume (a	nd percent of PV):	10 percen	t				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	oility							
	Metric 1:	Methodology	High	$\times 1$	1	Produced by ATSDR		
Domain 2: Repres	sentative							
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Electronics		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	>20 years old		
	Metric 5:	Sample Size	Medium	$\times 1$	2	Provided an estimate - uncertain range or error		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Only results provided		
Domain 4: Variat	Matuia 7	Mata lata Canadatanaa	τ	v 1	9			
	Metric 7:	Metadata Completeness	Low	× 1	3	No discussion of variability or uncertainty		
Overall Quality D	Determinatio	n <sup>†</sup>	Medium		2.0			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Atsdr,. 20 Facility; R 3982337	Atsdr,. 2000. Toxicological profile for methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982337							
EXTRACTION Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	ption (Subca	ategory of Use):	Polyureth	ane Foar	n Blowi	ing			
Total Annual U.S	. Volume (a	nd percent of PV):	10 percen	t					
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1, Paliah	.;1;+								
Domain 1. Kenau	Motrie 1.	Mathadalagy	Uich	× 1	1				
	Methe 1.	Methodology	IIIgii	~ 1	1	Froduced by AISDR			
Domain 2: Repres	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Polyurethane Foam Blowing			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	>20 years old			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Provided an estimate - uncertain range or error			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Only results provided			
		X				V A			
Domain 4: Variab	oility and U	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty			
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.0					

\* MWF = Metric Weighting Factor

Source Citation:	Kikuchi, E. mi, Kikuchi, Y., Hirao, M 2012. Monitoring and Analysis of Solvent Emissions from Metal Cleaning Processes for Practical Process Improvement. Annals of Occupational Hygiene. Facility: Reports for Data or Information Other than Exposure or Release Data:							
Hero ID	2128076		o ther than	Exposur				
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description:			Use Open Top Vapor Degreasing Yes					
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	Journal article		
Domain 2: Repres	sentative							
Domain 2. Hopfo	Metric 2:	Geographic Scope	Medium	$\times 1$	2	Japan		
	Metric 3:	Applicability	High	$\times 2$	2	Open Top Vapor Degreasing		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2011		
	Metric 5:	Sample Size	N/A		N/A	N/A - only process description from this source		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	N/A		N/A	N/A - only process description from this source		
Domain 4: Variab	ility and U	ncertainty						
	Metric 7:	Metadata Completeness	N/A		N/A	N/A - only process description from this source		
Overall Quality Determination <sup>†</sup>		High		1.2				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Iarc,. 2016. Dichloromethane. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Facility; Reports for Data or Information Other than Exposure or Release Data; 3827786							
EXTRACTION Parameter			Data					
Life Cycle Stage: Total Annual U.S. Volume (and percent of PV):			Manufact 45,000 to	Manufacture/Import 45,000 to 227,000 tonnes between 1996 and 2006				
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	per NTP, 2001		
Domain 2: Repre	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Manufacture/Import of DCM		
	Metric 4: Metric 5:	Temporal Representativeness	Medium	$\times 2$	4	2001		
	Metric 5:	Sample Size	LOW	× 1	3	No information on sample size		
Domain 3: Access	sibilitv/Clar	ity						
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	No underlying information provided		
Domain 4: Variak	oility and Un Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty		
Overall Quality D	Determinatio	n <sup>†</sup>	Medium		2.1			

\* MWF = Metric Weighting Factor
Source Citation: Type of Data Source Hero ID	ToxNet Hazardous Substances Data, Bank. 2017. HSDB: Methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3970276									
EXTRACTION			Data							
Parameter			Data							
Life Cycle Stage:			Import	Import						
Life Cycle Descrip	otion (Subca	ategory of Use):	Import							
Total Annual U.S	. Volume (a	nd percent of PV):	10-20 m	illion po	unds pe	er year (1997)				
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
D 1 D 1 1	•1•,									
Domain 1: Reliab	Matula 1	Matha dala ma	τ	· 1	9					
	Metric 1:	Methodology	Low	× 1	3	HSDB, per Chemical Marketing Reporter 1997				
Domain 2: Repres	sentative									
	Metric 2:	Geographic Scope	High	$\times 1$	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Import				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997				
	Metric 5:	Sample Size	Low	$\times 1$	3	No information on sample size				
Domain 2. Accord	:h:l:t/Clan	:								
Domain 5: Access	Metric 6	Metadata Completeness	Low	× 1	3	No underlying information provided				
	Metric 0.	Metadata Completeness	LOW	~ 1	0	No underlying information provided				
Domain 4: Variab	ility and U	ncertainty								
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No discussion of variability or uncertainty				
Overall Quality Determination <sup>†</sup>			Low		2.3					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	1996. Best management practices for pollution prevention in the slabstock and molded flexible polyurethane foam industry. Facility; Reports for Data or Information Other than Exposure or Release Data; 3860546						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Use				
Life Cycle Descri	otion (Subca	ategory of Use):	Blowing I	Foam			
Process Description	on:		Yes				
EVALUATION							
Domain		Metric	Rating	MWF*	Score	Comments	
Domain 1: Reliab	oility						
	Metric 1:	Methodology	High	$\times 1$	1	EPA Source	
Domain 2: Bapro	contativo						
Domain 2. Repres	Metric 2.	Geographic Scope	High	× 1	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Blowing Foam	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1996, 22 years old	
	Metric 5:	Sample Size	Medium	$\times 1$	2	Gives a broad evaluation of Methylene Chloride in the industry	
Demain 2. Access	:1:1:4 / <i>C</i> 1	•					
Domain 3: Access	Motric 6:	Motadata Completeness	High	$\sim 1$	1	Well documented	
	Metric 0.	Metadata Completeness	IIIgii	~ 1	1	wen documented.	
Domain 4: Varial	oility and U	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.	
Overall Quality Determination <sup>†</sup>		Medium		1.8			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	1989. Alternative control technology document – Halogenated solvent cleaners. Facility; Reports for Data or Information Other than Exposure or Release Data; 3860356								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrit	otion (Subca	tegory of Use):	Halogena	ted Degre	easers				
Process Description	on:		Yes						
Total Annual U.S	. Volume (a	nd percent of PV):	232000 to	ons					
Number of Sites:		- ,	130,000-1	40,000 de	egreaser	s in operation.			
Batch Size:			varies						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	EPA Source			
Domain 2: Repres	sentative								
Domain 2. Repres	Metric 2:	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Halogenated Degreasers			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1989, 29 years old			
	Metric 5:	Sample Size	Medium	$\times 1$	2	Gives a broad evaluation of Methylene Chloride in the industry			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Decently well documented.			
Domain 4: Variab	oility and Ur	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.9				

Source Citation: Type of Data Source Hero ID	Holbrook, M. T 2004. Methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3859416							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Total Annual U.S. Volume (and percent of PV):			Use General Methylene Chloride Use Yes 242.6 metric tons (2004)					
EVALUATION					q			
Domain		Metric	Rating	MWF'*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Medium	$\times 1$	2	Michael T. Holbrook		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	General Methylene Chloride Use		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2006, 12 years old		
	Metric 5:	Sample Size	Low	$\times 1$	3	General evaluation		
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Medium	$\times 1$	2	Decently well documented.		
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	No Comment.		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		1.9			

\* MWF = Metric Weighting Factor

Source Citation:	Kaufman, C. M., Overcash, M. R 1993. WASTE MINIMIZATION IN THE MANUFACTURE OF FLEXIBLE POLYURETHANE FOAMS - QUANTIFICATION OF AUXILIARY BLOWING AGENT VOLATILIZATION. Journal of the Air and Waste Management Association (1990-1992).								
Type of Data Source Hero ID	Facility; R 3588566	Facility; Reports for Data or Information Other than Exposure or Release Data; 3588566							
EXTRACTION									
Parameter			Data						
Life Cruele Stame.			Has						
Life Cycle Stage:	tion (Sube	atogory of Uso).	Use Blowing I	Foam					
Process Description	m.	ategory of Ose).	Yes	l'oam					
Total Annual U.S	. Volume (a	nd percent of PV):	5 million	tons					
Total Annual 0.5. Volume (and percent of 1 V).									
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Danain 1. Daliah	:1:4								
Domain 1: Reliad	Motric 1.	Mathadalagy	Modium	$\times 1$	2	No Commont			
	Methe 1.	methodology	meannin	~ 1	2	No Comment.			
Domain 2: Repres	entative								
Domain 2. Ropro.	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Blowing Foam			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993, 25 years old			
	Metric 5:	Sample Size	Low	$\times 1$	3	Addresses new ways to reduce waste - unclear what the current state of production is.			
Domain 3. Access	ibility/Clar	i+.,							
Domain 5. Access	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Minimal references -seems much of the authority is coming from the author.			
Domain 4. Variah	ility and U	acontainty							
Domain 4. Variat	Metric 7.	Metadata Completeness	Low	× 1	3	No Comment			
	menne /.	metadata Completeness	LOW	~ 1	ა	ivo Comment.			
Overall Quality Determination <sup><math>\dagger</math></sup>		Medium		2.2					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	1991. Handbook for reducing and eliminating chlorofluorocarbons in flexible polyurethan foams. Facility; Reports for Data or Information Other than Exposure or Release Data; 3860551						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Use				
Life Cycle Descri	otion (Subca	ategory of Use):	Blowing I	Foam			
Process Description	on:		Yes				
EVALUATION							
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments	
Domain 1: Reliab	ollity		TT· 1	1	1		
	Metric 1:	Methodology	High	× 1	1	EPA Source	
Domain 2: Repre	sentative						
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Blowing Foam	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1991, 27 years old	
	Metric 5:	Sample Size	Low	$\times 1$	3	Addresses new ways to blow foam that reduces the use of CFCs.	
Domain 2. Accord	ibiliter /Class						
Domain 5: Access	Motric 6	Motadata Completeness	Modium	$\sim 1$	9	Desently well desumented	
	Metric 0.	Metadata Completeness	Weurum	~ 1	2	Decently wen documented.	
Domain 4: Varial	oility and Ur	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.	
Overall Quality Determination <sup>†</sup>		Medium		2.0			

\* MWF = Metric Weighting Factor

Source Citation:	1994. Control of volatile organic compound emissions from batch processes – Alternative control techquiues information document								
Type of Data Source Hero ID	Facility; R 3860363	Facility; Reports for Data or Information Other than Exposure or Release Data; 3860363							
EXTRACTION									
Parameter			Data						
Life Cycle Stage:					~ .				
Life Cycle Descrip	tion (Subca	tegory of Use):	Pharmace	euticals: (	Coating	g tablets			
Process Descriptio	n: Walana (a	- 1	Yes		L 100 4	· · · · · · · · · · · · · · · · · · ·			
Total Annual U.S.	volume (a	nd percent of $PV$ ):	Hypotnet	ical: Up i	to 100 t 15a	tons per year			
Site Daily Throug	hput		Hypothet	ical: 200	105 to 250 1	lbe			
Site Daily Inroughput: Possible Physical Form:			Aerosol	icai. Op	10 200 1	105			
Chemical Concent	ration:		80 percen	t DCM					
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliabi	llity Motrie 1.	Mathadalam	II: mb	× 1	1				
	Metric 1:	Methodology	підп	X 1	1	EPA Source			
Domain 2: Repres	entative								
*	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	Medium	$\times 2$	4	Pharmaceuticals: Coating tablets			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1994, 24 years old			
	Metric 5:	Sample Size	Low	$\times 1$	3	Merely discusses a process method utilizing Methylene Chlo- ride			
Domain 3: Access	ibility/Clari	ity							
Domain 5. Access	Metric 6:	Metadata Completeness	Low	$\times 1$	3	Only results provided			
		I I I I I I I I I I I I I I I I I I I							
Domain 4: Variab	ility and Ur	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	No Comment.			
Overall Quality D	eterminatio	n <sup>†</sup>	Low		2.3				

Source Citation: Type of Data Source Hero ID	Jordan, B. Facility; R 3860917	Jordan, B. ruce C 1994. Memorandum: Transmittal of alternative control technology documents. Facility; Reports for Data or Information Other than Exposure or Release Data; 3860917						
EXTRACTION			_					
Parameter			Data					
Life Cycle Stage:			EPA					
Life Cycle Descrip	otion (Subca	ategory of Use):	Industry Guida	ance on V	VOC red	luction		
Process Description	on:	/	No					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1. Roliah	, ilitar							
Domain 1. Kenab	Metric 1	Methodology	High	× 1	1	EPΔ		
	Wiethe I.	Methodology	Ingn	~ 1	1			
Domain 2: Repres	sentative							
-	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Recommendations on how to limit VOC emissions in air/water. DCM was 1 of over 100 listed chemical		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1994, 24 years old		
	Metric 5:	Sample Size	N/A		N/A	N/A - no information on DCM		
Domain 3: Access	Sibility/Clari	Ity Matadata Commisteness	NT / A		NT / A			
	Metric 6:	Metadata Completeness	N/A		N/A	N/A - no information on DCM		
Domain 4: Variat	oility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	N/A		N/A	N/A - no information on DCM		
	)	†	TT		4			
Overall Quality L	eterminatio	n'	Unacceptable		4	Metric Mean Score: 2.7.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	U.S, E. P. Facility; R 3861374	U.S, E. P. A. 1996. Solvent study. Facility; Reports for Data or Information Other than Exposure or Release Data; 3861374							
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description:		EPA Solvents Study No							
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	EPA			
Domain 2: Repres	sentative		TT: 1	4	1				
	Metric 2: Metric 3:	Geographic Scope Applicability	High Unacceptable	$\times 1 \times 2$	1 8	US Study references DCM in its introduction, but does not focus on it moving forward.			
	Metric 4: Metric 5:	Temporal Representativeness Sample Size	Low N/A	$\times 2$	$^{6}$ N/A	1996, 22 years old N/A - no information on DCM			
Domain 3: Access	N/A		N/A	N/A - no information on DCM					
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	N/A		N/A	N/A - no information on DCM			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.7.			

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	U.S, E. P. Facility; R 3970051	U.S, E. P. A 2008. Control techniques guidelines for fiberglass boat manufacturing materials. Facility; Reports for Data or Information Other than Exposure or Release Data; 3970051						
EXTRACTION			Data					
Parameter			Data					
Life Cycle Stage:			EPA					
Life Cycle Descrip	otion (Subca	tegory of Use):	Fiberglass Boa	t Guideli	ines			
Process Description	on:		No					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility		· · · ·					
	Metric 1:	Methodology	High	$\times 1$	1	EPA		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Guideline references DCM, but is not focused on the use of DCM in the workplace.		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2008, 10 years old.		
	Metric 5:	Sample Size	N/A		N/A	N/A - no information on DCM		
Domain 3: Access	ibility/Clar	ity						
	Metric 6:	Metadata Completeness	N/A		N/A	N/A - no information on DCM		
Domain 4. Variah	ility and U	acertainty						
Domain 4. Variau	Metric 7.	Metadata Completeness	N/A		N/A	$N/\Lambda$ no information on DCM		
	WICUIIC 7.	metadata Compreteness	11/11		11/11			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.3.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Echa,. 201 Facility; R 3970726	Echa, 2017. Dichloromethane, Part 2. Facility; Reports for Data or Information Other than Exposure or Release Data; 3970726								
EXTRACTION			Data							
Parameter			Data							
Life Cycle Stage:			ECHA	ECHA						
Life Cycle Descrip	otion (Subca	tegory of Use):	Profile of DCM	[						
Process Description	on:		No							
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1, Poliah	:1:+									
Domain 1. Menab	Metric 1.	Methodology	High	× 1	1	European Chemical Association				
	MEULIC 1.	Wethodology	Iligii	~ 1	1	European Chemical Association				
Domain 2: Repres	sentative									
*	Metric 2:	Geographic Scope	Medium	$\times 1$	2	EU				
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Lists current producers in the EU				
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	Current information				
	Metric 5:	Sample Size	N/A		N/A	N/A - only provides lists of producers in EU				
Domain 3: Access	sibility/Clar	ity	27/4		<b>DT</b> / A					
	Metric 6:	Metadata Completeness	N/A		N/A	N/A - only provides lists of producers in EU				
Domain 4. Variah	ility and U	acortainty								
Domain 4. Vallat	Metric 7.	Metadata Completeness	N/A		N/A	N/A - only provides lists of producers in EU				
		metadata compreteness			11/11					
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Unacceptable		4	Metric Mean Score: 2.5.				

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Upjohn, Company. 1990. Environmental assessment: Excenel sterile suspension (ceftiofur hydrochloride). Facility; Reports for Data or Information Other than Exposure or Release Data; 3974795							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	otion (Subca	ategory of Use):	Pharmaceutica	ls Manuf	acturin	<u>r</u>		
Process Description	on:	· · · · · · · · · · · · · · · · · · ·	No		·			
Total Annual U.S	. Volume (a	nd percent of PV):	DCM: unknow	nProduct	t: 3000	kg/year		
Number of Sites:			1					
EVALUATION								
Domain		Metric	Rating	$MWF^*$	Score	Comments		
Domain 1: Boliah	ility							
Domain 1. Renau	Metric 1:	Methodology	Medium	$\times 1$	2	Upjohn Company		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Unacceptable	$\times 2$	8	Utilizes methylene chloride in an unknown way in the proposed facility		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990, 28 years old		
	Metric 5:	Sample Size	N/A		N/A	N/A - no information on DCM		
Domain 2. Access	ibility /Class	: <b>.</b>						
Domain 5: Access	Motric 6:	Motadata Completeness	N/A		N/A	N/A no information on DCM		
	Metric 0.	Metadata Completeness	N/A		$\mathbf{N}/\mathbf{A}$	N/A - no information on DCM		
Domain 4: Variab	oility and Ur	ncertainty						
	Metric 7:	Metadata Completeness	N/A		N/A	N/A - no information on DCM		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Unacceptable		4	Metric Mean Score: 2.8.		

\*\* Consistent with our Application of Systematic Review in TSCARisk Evaluations document, if a metric for a data source receives a score of Unacceptable (score = 4), EPA will determine the study to be unacceptable. In this case, one of the metrics were rated as unacceptable. As such, the study is considered unacceptable and the score is presented solely to increase transparency.

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	1999. 33/5 Facility; R 3860543	0 Program: The final record. eports for Data or Information (	Other tha	n Expos	ure or R	Release Data;		
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Total Annual U.S. Volume (and percent of PV): Number of Sites:				Use Industry-wide use No 1988: 155,419,301 lbs/year1996: 68,661,243 lbs/year 1294 companies				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	EPA		
Domain 2: Repres	Matric 2.	Coorrenkie Soone	Himh	× 1	1	110		
	Metric 2: Metric 3:	Applicability	Low	$\times 1 \times 2$	6	Addresses 1,294 companies who voluntarily reduced emissions, but only on total emissions.		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1999, 19 years old. Does not address operations, equipment, or worker activities		
	Metric 5:	Sample Size	Low	$\times 1$	3	$\rm N/A$ - only $\#$ of companies from this source		
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	High	$\times 1$	1	Data sources, methods, and assumptions are clearly reported.		
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not addressed		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3			

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	U.S, E. P. A. 1977. Control of volatile organic emissions from solvent metal cleaning. Facility; Reports for Data or Information Other than Exposure or Release Data; 3827321						
EXTRACTION Parameter			Data				
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description:		Use Degreas Yes	sing				
EVALUATION							
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments	
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	EPA	
Domain 2: Repres	sentative Motria 2:	Coorranhia Seona	High	× 1	1		
	Metric 2.	Applicability	Low	$^{\land 1}$ $^{\lor 2}$	6	US	
	Metric 4:	Temporal Representativeness	Low	$\times 2 \times 2$	6	1977. 41 years old	
	Metric 5:	Sample Size	Low	$\times 1$	3	N/A - only process description from this source	
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	N/A - only process description from this source	
	Metric 0.	Metadata Completeness	LOW	~ 1	5	N/A - only process description from this source	
Domain 4: Variab	oility and Ui	ncertainty					
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	N/A - only process description from this source	
Overall Quality E	Determinatio	$\mathbf{n}^{\dagger}$	Low		2.6		

\* MWF = Metric Weighting Factor

Source Citation:	Hearne, F. T., Grose, F., Pifer, J. W., Friedlander, B. R., Raleigh, R. L. 1987. Methylene chloride mortality study: Dose- response characterization and animal model comparison. Journal of Occupational Medicine.								
Type of Data Source Hero ID	Facility; Reports for Data or Information Other than Exposure or Release Data; 730524								
EXTRACTION Parameter		Data							
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Number of Site:			Use manufacture of cellulose triacetate film Yes						
Operating Days per Year and Batches per Day: Possible Physical Form: Chemical Concentration:			24hr/3656 vapor, liq 30-100 pp	1 24hr/365day vapor, liquid 30-100 ppm in workroom					
EVALUATION	ALUATION								
Domain		Metric	Rating	MWF*	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	Lists out different methods used over time and validates their accuracy in cited source			
Domain 2: Repres	sentative								
1	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that uses Methylene Chloride			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1987, 31 years old			
	Metric 5:	Sample Size	Low	$\times 1$	3	Not characterized			
Domain 3: Access	sibility/Clar	ity							
	Metric 6:	Metadata Completeness	High	$\times 1$	1	Data sources, methods, and assumptions are clearly reported.			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Not addressed			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.9				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	U.S, E. P. A 1993. Locating and estimating air emissions from sources of methylene chloride. Facility; Reports for Data or Information Other than Exposure or Release Data; 3970168							
EXTRACTION								
Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Number of Sites:				Manufacture Methylene Chloride Manufacture Yes 5				
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	Uses EPA and other trusted sources		
D O D	, , <b>.</b>							
Domain 2: Repres	Motrie 2:	Coographic Scope	High	$\sim 1$	1	IIC		
	Metric 2: Metric 3:	Applicability	High	$\times 1$ $\times 2$	1	US Workplace that uses Methylane Chloride		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1993 25 years old		
	Metric 5:	Sample Size	Low	$\times 1$	3	N/A - only $\#$ of sites from this source		
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	High	× 1	1	Data sources, methods, and assumptions are clearly reported.		
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not Addressed		
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		1.9			

\* MWF = Metric Weighting Factor

Source Citation:	2008. Bac Waste Lar	2008. Background Information Document for Updating AP42 Section 2.4 for Estimating Emissions from Municipal Solid Worte Landfills							
Type of Data Source Hero ID	Facility; R 1263807	Facility; Reports for Data or Information Other than Exposure or Release Data; 1263807							
EXTRACTION Parameter	XTRACTION Dete								
			Dutu						
Life Cycle Stage:			Disposal						
Life Cycle Descrip	otion (Subca	ategory of Use):	Landfill C	Jas					
Process Description	on:		No						
Number of Sites:			109	0.15					
Chemical Concent	tration:		Average:	6.15 ppn	nMax: 4	41.2 ppmMin: .0054ppm			
EVALUATION									
Domain		Metric	Rating	MWF*	Score	Comments			
			0						
Domain 1: Reliab	ility								
	Metric 1:	Methodology	Medium	$\times 1$	2	EPA Source - unclear which methods were used to gather DCM result, however.			
Domain 2: Ropros	contativo								
Domain 2. Repres	Metric 2.	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	Medium	$\times 2$	4	Facility that is indirectly associated with Methylene Chloride			
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2008, 10 years old.			
	Metric 5:	Sample Size	Low	$\times 1$	3	N/A - only # of sites from this source			
Domain 3: Access	ability/Clar	ity		1	0				
	Metric 6:	Metadata Completeness	Medium	× 1	2	Generally well documented, though methods used was unclear for certain data sets.			
Domain 4. Variah	ility and U	ncortainty							
Domain 4. Vallat	Metric 7:	Metadata Completeness	Medium	$\times 1$	2	Degree of uncertainty is presented in the paper, thought the measurements of DCM are not well addressed.			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		2.0				

\* MWF = Metric Weighting Factor

Source Citation:	1996. Methyl chloride via oxyhydrochlorination of methane: A building block for chemicals and fuels from natural gas. Environmental assessment.							
Type of Data Source Hero ID	Facility; Reports for Data or Information Other than Exposure or Release Data; 2530707							
EXTRACTION Parameter	Data							
Life Cycle Stage: Life Cycle Descript Process Description Total Annual U.S Number of Sites: Possible Physical	ge:Manufacturecription (Subcategory of Use):Methyl Chloride Manufactureption:YesU.S. Volume (and percent of PV):Proposed: 900lbs/hr Methyl Chloride,322.5 lbs Methylenees:1cal Form:vapor, liquid					ture hyl Chloride,322.5 lbs Methylene Chloride.		
<b>EVALUATION</b> Domain	Metric Bating MWF* Score Comments					Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	DOE Environmental Assessment		
Domain 2: Repres	Sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1\\ 2\\ 6\\ 3\end{array}$	US Facility that manufactures Methylene Chloride 1996, 22 years old N/A - only # of sites from this source		
Domain 3: Access	Domain 3: Accessibility/Clarity Metric 6: Metadata Completeness			× 1	2	Few references, but written from a first-hand authority.		
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	Not addressed		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.0			

\* MWF = Metric Weighting Factor

PEER REVIEW DRA	AFT - DO NOT	CITE OR (	QUOTE
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Source Citation:	U.S, E. P.	U.S, E. P. A. 1978. OAQPS guideline series: Control of volatile organic emissions from manufacture of synthesized pharma-								
Type of Data Source Hero ID	Facility; R 3970050	Facility; Reports for Data or Information Other than Exposure or Release Data; 3970050								
EXTRACTION Parameter	Data									
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Number of Sites: Batch Size: Possible Physical Form:				Use Manufacture of Pharmaceuticals Yes 26+ 2000-11000 liters vapor, liquid						
<b>EVALUATION</b> Domain		Metric	Rating MWF* Score Comments							
Domain 1: Reliab	oility Metric 1:	Methodology	High	× 1	1	EPA document				
Domain 2: Repres	sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High Medium Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	$\begin{array}{c} 1 \\ 4 \\ 6 \\ 3 \end{array}$	US Workplace that produces Methylene Chloride, but only relates to environmental emissions 1978, 40 years old N/A - only # of sites from this source				
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Medium	$\times 1$	2	Majority of metadata present				
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	None addressed.				
Overall Quality D	Determinatio	n†	Medium		2.2					

\* MWF = Metric Weighting Factor
<sup>†</sup> If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

Source Citation:	U.S, E. P. A. 1996. Hazardous air pollutant emissions from the production of flexible polyurethane foam – Basis and purpose document for proposed standards.						
Type of Data Source Hero ID	Facility; Reports for Data or Information Other than Exposure or Release Data; 3970122						
EXTRACTION							
Parameter			Data				
Life Cycle Stage:			Use				
Life Cycle Descrir	tion (Subc	ategory of Use).	Slabstock	Foam			
Process Description	on:	tegory of eller.	Yes	1 Oam			
Total Annual U.S.	. Volume (a	nd percent of PV):	16568  ton	s/vr HA	Р		
Number of Sites:	`	1 /	78	10			
Batch Size:			4'x8'x50'	/100'			
Possible Physical Form:			vapor, liq	uid			
EVALUATION							
Domain		Motric	Boting	MWF*	Score	Comments	
		Wethe	Itating	IVI VV I	bcore	Comments	
Domain 1. Beliab	ility						
	Metric 1:	Methodology	High	$\times 1$	1	EPA document	
Domain 2: Repres	sentative						
Domain 2. Ropros	Metric 2:	Geographic Scope	High	$\times 1$	1	US	
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that uses Methylene Chloride	
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1996, 22 years old	
	Metric 5:	Sample Size	Low	$\times 1$	3	$\rm N/A$ - only $\#$ of sites from this source	
Domain 3: Access	ibility/Clar	ity					
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Majority of metadata present	
Domain 4. Variah	ility and U	ncortainty					
Domain 4. Variab	Motric 7.	Motadata Completeness	Low	$\sim 1$	3	No Comment	
	ME011C 1.	metadata Completeness	цом	^ 1	0	NO Comment.	
Overall Quality D	otorminatio	m <sup>†</sup>	Modium		2.0		
Overall Quality D	erei minatio	211	meann		2.0		

\* MWF = Metric Weighting Factor

PEER REVIEW DRAFT -	DO NOT CI	TE OR QUOTE
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Source Citation:	U.S, E. P. A. 1996. Hazardous air pollutant emissions from the production of flexible polyurethane foam – Basis and purpose							
Type of Data Source Hero ID	Facility; Reports for Data or Information Other than Exposure or Release Data; 3970122							
EXTRACTION								
Parameter			Data					
Life Cycle Stage:			Use					
Life Cycle Descrip	otion (Subca	ategory of Use):	Molded F	`oam				
Process Description	on:		Yes					
Total Annual U.S	. Volume (a	nd percent of PV):	3186  tons	/yr HAP	)			
Number of Sites:			228					
Operating Days per Year and Batches per Day:			250					
EVALUATION								
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments		
Domain 1: Reliab	ility							
	Metric 1:	Methodology	High	$\times 1$	1	EPA document		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that uses Methylene Chloride		
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1996, 22 years old		
	Metric 5:	Sample Size	Low	$\times 1$	3	$\rm N/A$ - only $\#$ of sites from this source		
Domain 3: Access	sibility/Clar	ity						
	Metric 6:	Metadata Completeness	Medium	$\times 1$	2	Majority of metadata present		
Domain 4. Variah	ility and U	acortainty						
Domain 4. Variau	Metric 7.	Metadata Completeness	Low	× 1	3	No Comment		
			101	/\ 1	0	no commony.		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		2.0			

Source Citation:	European Chlorinated Solvents, Association. 1999. Euro chlor risk assessment for the marine environment, OSPARCOM region - Norht sea: Dichloromethane.									
Type of Data Source Hero ID	Facility; R 3982130	Facility; Reports for Data or Information Other than Exposure or Release Data; 3982130								
EXTRACTION Parameter	Data									
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Total Annual U.S. Volume (and percent of PV): Number of Sites: Possible Physical Form:				Manufacture Manufacture No 138000 tons per year 8 liquid, vapor						
<b>EVALUATION</b> Domain		Metric	Rating	$MWF^{\star}$	Score	Comments				
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	No discussion about where the metrics came from				
Domain 2: Repres	Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	Medium High Low Low	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	2 2 6 3	EU Facilities that produce Methylene Chloride 1999, 19 years old. N/A - only # of sites from this source				
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Sources are documented, but it is unclear how they are used and what they relate to.				
Domain 4: Variab	ility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	None addressed.				
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.4					

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Ec,. 2017. Rapid alert system for dangerous non-food products: Brake caliper spray paint. Facility; Reports for Data or Information Other than Exposure or Release Data; 3982350							
EXTRACTION Parameter			Data					
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Chemical Concentration:				r Use				
EVALUATION					~	~		
Domain		Metric	Rating	MWF*	Score	Comments		
Domain 1: Reliab	ility Metric 1:	Methodology	Low	× 1	3	No method given.		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	Medium	$\times 1$	2	EU		
	Metric 3:	Applicability	Low	$\times 2$	6	Consumer product similar to one used in industry		
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2017		
	Metric 5:	Sample Size	Low	$\times 1$	3	N/A - only provided conc in consumer product		
Domain 3: Access	ibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	N/A - only provided conc in consumer product		
Domain 4: Variab	ility and Ur Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	None addressed.		
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.4			

\* MWF = Metric Weighting Factor

Source Citation:	University of Minnesota, Duluth. 1997. American converters eliminates methylene chloride based adhesives: Substitutes eliminate regulatory compliance burdens without disrupting production.								
Type of Data Source Hero ID	Facility; Reports for Data or Information Other than Exposure or Release Data; 3982444								
EXTRACTION Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	otion (Subca	ategory of Use):	Foam F	abricatio	n				
Process Description	on:		Yes						
Total Annual U.S	. Volume (a	nd percent of PV):	4,170 gan bigher)	al of MC	based	adhesives (@65 percent MC concentration or			
Number of Sites:			1						
Possible Physical	Form:		liquid, v	vapor					
Chemical Concent	tration:		> 65 pe	ercent					
EVALUATION									
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments			
Domain 1: Reliab	ility								
	Metric 1:	Methodology	Low	$\times 1$	3	No method given.			
Domain 2: Repres	sentative								
-	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that uses Methylene Chloride			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1997, 21 years old			
	Metric 5:	Sample Size	Low	$\times 1$	3	$\rm N/A$ - only $\#$ of sites and conc from this source			
Domain 3: Access	ibility/Clar	ity							
	Metric 6:	Metadata Completeness	Low	$\times 1$	3	$\rm N/A$ - only $\#$ of sites and conc from this source			
Domain 4: Variab	ility and U	ncertainty							
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	$\rm N/A$ - only $\#$ of sites and conc from this source			
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Low		2.3				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Oecd,. 2011. SIDS initial assessment profile: Dichloromethane (methylene chloride). Facility; Reports for Data or Information Other than Exposure or Release Data; 3808975								
EXTRACTION									
Parameter	Data								
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Total Annual U.S. Volume (and percent of PV):			Manufacture Methylene Chloride Manufacture Yes 100,000 tons in EU (2009). Worldwide volume is 764,000-814,000 metric tonnes						
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	Low	$\times 1$	3	No documentation			
Domain 2: Repre	Sentative Motria 2:	Coographic Scope	Modium	$\sim 1$	9	1151			
	Metric 3:	Applicability	Medium	$\times 1 \times 2$	$\frac{2}{4}$	Overview of industry that produces methylene chloride, but no			
	Motria 4.	Tomporal Popportativopog	Uich	$\sim 2$	0	specific workplace			
	Metric 4:	Sample Size	Low	× 2 × 1	2	N/A = only PV provided			
Domain 3: Access	sibility/Clari Metric 6:	ity Metadata Completeness	Low	× 1	3	Not documented			
		*							
Domain 4: Variat	ility and Ur	Nete data Completeness	Low	× 1	0				
	Metric /:	Metadata Completeness	LOW	× 1	3	None addressed.			
Overall Quality I	eterminatio	$\mathrm{n}^\dagger$	Medium		2.2				

\* MWF = Metric Weighting Factor

Source Citation:	Ruder, A Sciences	Ruder, A 2006. Potential health effects of occupational chlorinated solvent exposure. Annals of the New York Academy of						
Type of Data Source Hero ID	Facility; Reports for Data or Information Other than Exposure or Release Data; 707665							
EXTRACTION								
Parameter			Data					
Life Cycle Starrow			Use					
Life Cycle Stage:	otion (Subc	storory of Uso).	USE DCM	consum	otion			
Process Description	on.	ategory of Use).	No No	consum				
Total Annual U.S	. Volume (a	nd percent of PV):	231.000 n	netric tor	ns (1998	)		
	, vorunie (a		-01,000 1			)		
EVALUATION								
Domain		Metric	Rating	$MWF^{\star}$	Score	Comments		
Domain 1: Roliah	ilitar							
Domain 1. Renau	Metric 1:	Methodology	High	$\times 1$	1	NIOSH document and sources cited.		
Domain 2: Repres	sentative							
	Metric 2:	Geographic Scope	High	$\times 1$	1	US		
	Metric 3:	Applicability	Medium	$\times 2$	4	Overview of industry that produces methylene chloride, but no specific workplace		
	Metric 4:	Temporal Representativeness	Medium	$\times 2$	4	2006, 12 years old		
	Metric 5:	Sample Size	Low	$\times 1$	3	N/A - only PV provided		
Domain 3: Access	sibility/Clar	ity Mata lata Gammalatan an	TT:l.	1	1			
	Metric 6:	Metadata Completeness	High	× 1	1	Clearly documented sources.		
Domain 4: Variat	oility and U	ncertainty						
	Metric 7:	Metadata Completeness	Low	$\times 1$	3	None addressed.		
		-						
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.9			

\* MWF = Metric Weighting Factor

Source Citation:	Niosh, 1990. Walk-through survey report: Control of methylene chloride in furniture stripping at Colonial Furniture Stripping,									
Type of Data Source Hero ID	Facility; R 3809453	Facility; Reports for Data or Information Other than Exposure or Release Data; 3809453								
EXTRACTION										
Parameter			Data							
Life Cruele Stame			Uae							
Life Cycle Stage.	otion (Subc	ategory of Use).	Furniture	Strippin	σ					
Process Description	on:	itegory of ose).	Yes	Surphin	5					
Number of Sites:			1							
Chemical Concent	tration:		72 percen	t DCM b	y weigh	at				
EVALUATION										
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments				
Domain 1: Reliab	ility		TT: 1	1	1					
	Metric 1:	Methodology	Hign	× 1	1	NIOSH 1005				
Domain 2: Repres	sentative									
	Metric 2:	Geographic Scope	High	$\times 1$	1	US				
	Metric 3:	Applicability	High	$\times 2$	2	Workplace that uses Methylene Chloride				
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1990, 28 years old				
	Metric 5:	Sample Size	Medium	$\times 1$	2	Reasonable well characterized.				
Domain 3: Access	sibility/Clar	ity			2					
	Metric 6:	Metadata Completeness	Medium	× 1	2	Reasonable well documented.				
Domain 4. Variah	ility and U	ncertainty								
Domain 4. Variac	Metric 7:	Metadata Completeness	Low	× 1	3	None addressed.				
					· ·					
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	Medium		1.9					
2 · · · · · · · · · · · · · · · · · · ·										

<sup>\*</sup> MWF = Metric Weighting Factor
<sup>†</sup> If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

PEER REVIEW DRA	AFT - DO NOT	CITE OR	QUOTE
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Source Citation:	U.S, E. P. A. 2017. Preliminary Information on Manufacturing, Processing, Distribution, Use, and Disposal: Methylene Chloride.									
Type of Data Source Hero ID	Facility; R 3986757	Facility; Reports for Data or Information Other than Exposure or Release Data; 3986757								
EXTRACTION Parameter	Data									
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description: Total Annual U.S. Volume (and percent of PV): Number of Sites:				Use Manufacture and Use Yes 2012: 230,896,388 lbs2013:230,498,027 lbs2014: 248,241,495 lbs2015: 263,971,494 lbs 10						
<b>EVALUATION</b> Domain		Metric	Rating	$MWF^{\star}$	Score	Comments				
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	Office of Chemical Safety and Pollution Prevention (OCSPP) Report				
Domain 2: Repres	Sentative Metric 2: Metric 3: Metric 4: Metric 5:	Geographic Scope Applicability Temporal Representativeness Sample Size	High Medium High High	$\begin{array}{c} \times \ 1 \\ \times \ 2 \\ \times \ 2 \\ \times \ 1 \end{array}$	1 4 2 1	US Overview of industry that produces methylene chloride, but no specific workplace 2017, 1 year old Well characterized				
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	High	$\times 1$	1	Well documented.				
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Medium	$\times 1$	2	Not applicable				
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	High		1.3					

MWF = Metric Weighting Factor
If any individual metrics are deemed Unacceptable, then the overall rating is also unacceptable. Otherwise, the overall rating is based on the following scale: High: ≥ 1 to < 1.7; Medium: ≥ 1.7 to < 2.3; Low: ≥ 2.3 to ≤ 3.</li>

Source Citation: Type of Data Source Hero ID	Spin,. 2017. SPIN substances in preparations in nordic countries dichlormethane. Facility; Reports for Data or Information Other than Exposure or Release Data; 3981130								
EXTRACTION Parameter			Data						
Life Cycle Stage: Life Cycle Description (Subcategory of Use): Process Description:		Manufacture and Use Manufacture and Use No							
<b>EVALUATION</b> Domain		Metric	Rating	MWF*	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	× 1	1	SPIN: Substances in Preparations in Nordic Countries			
Domain 2: Repres	sentative	<u> </u>		_	-				
	Metric 2:	Geographic Scope	Medium	× 1	2	EU/Nordic Countries			
	Metric 3:	Applicability	Medium	$\times 2$	4	Overview of industry that uses Methylene Chloride.			
	Metric 4:	Temporal Representativeness	High Hish	× 2	2	2017, 1 year old			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Database System - not sure where data is being pulled from based on pdf screen capture.			
Domain 4: Variab	ility and Uı Metric 7:	ncertainty Metadata Completeness	Low	$\times 1$	3	Not applicable			
Overall Quality D	eterminatio	$\mathrm{n}^\dagger$	Medium		1.8				

\* MWF = Metric Weighting Factor

Source Citation: Type of Data Source Hero ID	Kirk-Othmer Encyclopedia of Chemical Technology. 2011. Bromine, Organic Compounds. Facility; Reports for Data or Information Other than Exposure or Release Data; 2990975								
EXTRACTION			_						
Parameter			Data						
Life Cycle Stage:			Process	ing					
Life Cycle Descri	ption (Subca	ategory of Use):	Process	ing as a	Reactan	ıt			
Process Descripti	on:		Yes	0					
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliat	oility								
	Metric 1:	Methodology	High	× 1	1	Kirk Othmer			
Domain 2: Repre	sentative								
	Metric 2:	Geographic Scope	High	$\times 1$	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Processing as a reactant			
	Metric 4:	Temporal Representativeness	High	$\times 2$	2	2011			
	Metric 5:	Sample Size	N/A		N/A	N/A - process description			
Domain 3: Access	sibility/Clar	ity							
Domain 9. 110005	Metric 6:	Metadata Completeness	N/A		N/A	N/A - process description			
Domain 4: Variat	bility and Ui	ncertainty	<b>DT / A</b>		<b>NT / A</b>				
	Metric 7:	Metadata Completeness	N/A		N/A	N/A - process description			
Overall Quality Determination <sup>†</sup>			High		1.0				

\* MWF = Metric Weighting Factor

Source Citation:	Occupational Safety and Health Administration (OSHA). 1998. Methylene Chloride Facts No. 9 - Suggested Work Practices for Cold Degreesing and Other Cold Cleaning Operations								
Type of Data Source Hero ID	Facility; Reports for Data or Information Other than Exposure or Release Data; 5071452								
EXTRACTION									
Parameter			Data						
Life Cycle Stage:UseLife Cycle Description (Subcategory of Use):Cold Degreasing and Other Cold CleProcess Description:NoNumber of Sites:23717					er Cold Cleaning:				
EVALUATION									
Domain		Metric	Rating	$\mathrm{MWF}^{\star}$	Score	Comments			
Domain 1: Reliab	ility Metric 1:	Methodology	High	$\times 1$	1	OSHA			
Domain 2: Bonro	contativo								
Domain 2. Repres	Metric 2.	Geographic Scope	High	× 1	1	US			
	Metric 3:	Applicability	High	$\times 2$	2	Vapor Degreasing and Cold Cleaning			
	Metric 4:	Temporal Representativeness	Low	$\times 2$	6	1998			
	Metric 5:	Sample Size	Low	$\times 1$	3	only provides estimated number of sites			
Domain 3: Access	sibility/Clar Metric 6:	ity Metadata Completeness	Low	× 1	3	Only results provided			
Domain 4: Variab	oility and Un Metric 7:	ncertainty Metadata Completeness	Low	× 1	3	does not address variability			
Overall Quality D	Determinatio	$\mathbf{n}^{\dagger}$	Medium		2.1				

\* MWF = Metric Weighting Factor

Source Citation:	The Instit	The Institute for Research and Technical Assistance (IRTA) . 2006. Protecting the health of lithographic printers - Safer alternatives to toxic cleanup solvents							
Type of Data Source Hero ID	Facility; R 5071456	Facility; Reports for Data or Information Other than Exposure or Release Data; 5071456							
EXTRACTION									
Parameter			Data						
Life Cycle Stage:			Use						
Life Cycle Descrip	otion (Subca	ategory of Use):	Lithograp	hic Print	ing				
Process Description	on:		Yes						
EVALUATION			<b>D</b>		a	<b>a</b>			
Domain		Metric	Rating	MWF'*	Score	Comments			
Domain 1: Beliah	ility								
Domain 1. Renad	Metric 1:	Methodology	High	$\times 1$	1	Institute for Research and Technical Assistance (IRTA)			
Damain 9. Damai									
Domain 2: Repres	Motrie 2	Coorraphia Soopa	Uich	× 1	1	IIG			
	Metric 2:	Applicability	High	$\times 1$ $\times 2$	2	US			
	Metric 4:	Temporal Representativeness	Medium	$\times 2 \times 2$	4	2006			
	Metric 5:	Sample Size	N/A	·· -	N/A	N/A - process description			
			·		i				
Domain 3: Access	sibility/Clar	ity	/ -		/ .				
	Metric 6:	Metadata Completeness	N/A		N/A	N/A - process description			
Domain 4: Variah	oility and U	ncertainty							
	Metric 7:	Metadata Completeness	N/A		N/A	N/A - process description			
		*	1		'				
Overall Quality D	eterminatio	$\mathbf{n}^{\dagger}$	High		1.3				

\* MWF = Metric Weighting Factor