

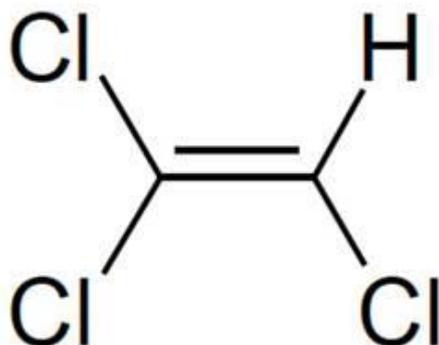


Final Risk Evaluation for Trichloroethylene

Systematic Review Supplemental File:

Data Quality Evaluation for Data Sources on Consumer and Environmental Exposure

CASRN: 79-01-6



November 2020

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HERO ID	Data Type	Reference	
			1
Monitoring			2
5405	Monitoring	Pellizzari, E. D.,Wallace, L. A.,Gordon, S. M.. 1992. Elimination kinetics of volatile organics in humans using breath measurements. <i>Journal of Exposure Analysis and Environmental Epidemiology</i> 2	2
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21469	Monitoring	Wallace, L. A.,Pellizzari, E. D.,Hartwell, T. D.,Sparacino, C. M.,Sheldon, L. S.,Zelon, H.. 1985. Results from the first three seasons of the TEAM study: personal exposures, indoor-outdoor relationships, and breath levels of toxic air pollutants measured for 355 persons in New Jersey.	4
22045	Monitoring	Heavner, D. L.,Morgan, W. T.,Ogden, M. W.. 1995. Determination of volatile organic compounds and ETS apportionment in 49 homes. <i>Environment International</i> 21	5
22186	Monitoring	Lebret, E.,van de Wiel, H. J.,Bos, H. P.,Noij, D.,Boleij, J. S. M.. 1986. Volatile organic compounds in Dutch homes. <i>Environment International</i> 12	6
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34460	Monitoring	Lehmann, I.,Thoelke, A.,Rehwagen, M.,Rolle-Kampczyk, U.,Schlink, U.,Schulz, R.,Borte, M.,Diez, U.,Herbarth, O.. 2002. The influence of maternal exposure to volatile organic compounds on the cytokine secretion profile of neonatal T cells. Environmental Toxicology 17	16
49414	Monitoring	Ryan, T. J.,Hart, E. M.,Kappler, L. L.. 2002. VOC exposures in a mixed-use university art building. AIHA Journal 63	17
56224	Monitoring	Serrano-Trespacios, P. I.,Ryan, L.,Spengler, J. D.. 2004. Ambient, indoor and personal exposure relationships of volatile organic compounds in Mexico City metropolitan area. Journal of Exposure Analysis and Environmental Epidemiology 1	18
75108	Monitoring	Murray, A. J.,Riley, J. P.. 1973. Occurrence of some chlorinated aliphatic hydrocarbons in the environment. Nature 242	19
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3970810	Completed Exposure Assessment	D. O. W. Deutschland. 2014. Chemical safety report: Uses of trichloroethylene in formulation.	139
3970811	Completed Exposure Assessment	D. O. W. Deutschland. 2014. Chemical safety report: Industrial use as process chemical (enclosed systems) in Alcantara material production.	140
3970823	Completed Exposure Assessment	D. O. W. Deutschland. 2014. Chemical safety report: Use of trichloroethylene in industrial parts cleaning by vapour degreasing in closed systems where specific requirements (system of use-parameters) exist.	141
3970833	Completed Exposure Assessment	Vlisco Netherlands, B. V.. 2014. Chemical safety report Part A: Use of trichloroethylene as a solvent for the removal and recovery of resin from dyed cloth.	142
3970837	Completed Exposure Assessment	. 2014. Exposure assessment: Trichloroethylene.	143
3970838	Completed Exposure Assessment	Parker Hannifin, Manufacturing. 2014. Chemical safety report: Use of trichloroethylene as a process solvent for the manufacturing of hollow fibre gas separation membranes out of polyphenylene oxide (PPO).	144
3970841	Completed Exposure Assessment	R. A. G. Aktiengesellschaft. 2014. Chemical safety report: Trichloroethylene.	145
3970842	Completed Exposure Assessment	. 2014. Exposure assessment: Trichloroethylene, Part 3.	146
3970844	Completed Exposure Assessment	Iarc,. 2014. IARC Monographs on the evaluation of carcinogenic risks to humans: Trichloroethylene, tetrachloroethylene, and some other chlorinated agents. 106	147
3980992	Completed Exposure Assessment	National Toxicology, Program. 2015. Monograph on trichloroethylene.	148
3980995	Completed Exposure Assessment	. 2010. Case studies in environmental medicine: tetrachloroethylene toxicity.	149
3981036	Completed Exposure Assessment	U.S, E. P. A.. 2017. Trichloroethylene market and use report.	150
3981155	Completed Exposure Assessment	Environment Canada, Health Canada. 1993. Canadian Environmental protection act priority substances list assessment report trichloroethylene.	151
3982332	Completed Exposure Assessment	Nih,. 2016. Report on carcinogens: Trichloroethylene.	152
3982339	Completed Exposure Assessment	Atsdr,. 2014. Draft toxicological profile for trichloroethylene.	153
3982475	Completed Exposure Assessment	Ecsa,. 2015. Product safety summary on trichloroethylene.	154
3986442	Completed Exposure Assessment	Dhhs,. 2015. Draft: Skin notation (SK) profile trichloroethylene (TCE).	155
4152270	Completed Exposure Assessment	Wu,,et al.,. 2001. Sources, emissions and exposures for trichloroethylene (TCE) and related chemicals.	156

4152304	Completed Exposure Assessment	Herbert, P.,Charbonnier, P.,Rivolta, L.,Servais, M.,Van Mensch, F.,Campbell, I.. 1986. The occurrence of chlorinated solvents in the environment. Prepared by a workshop of the European Chemical Industry Federation (CEFIC). Chemistry and Industry 24	157
4152318	Completed Exposure Assessment	Department of National, Health,Welfare,. 1993. Trichloroethylene. Supporting documentation, health related sections for the Canadian Environmental Protection Act (CEPA) Priority Substances List assessment report.	158
4663189	Completed Exposure Assessment	Delmaar, J. E.. Emission of chemical substances from solid matrices: a method for consumer exposure assessment.	159
Survey			160
1005969	Survey	U.S, E. P. A.. 1987. Household solvent products: A national usage survey.	160
2443306	Survey	Farrow, A.,Taylor, H.,Northstone, K.,Golding, J.,Avon Longitudinal, Study. 2003. Symptoms of mothers and infants related to total volatile organic compounds in household products. Archives of Environmental Health 58	161
Modeling			165
30661	Modeling	S. L. Miller, M. J. Anderson, E. P. Daly, J. B. Milford. 2002. Source apportionment of exposures to volatile organic compounds I Evaluation of receptor models using simulated exposure data. Atmospheric Environment 36	165
56224	Modeling	Serrano-Trespacios, P. I.,Ryan, L.,Spengler, J. D.. 2004. Ambient, indoor and personal exposure relationships of volatile organic compounds in Mexico City metropolitan area. Journal of Exposure Analysis and Environmental Epidemiology 1	166
2128201	Modeling	McKnight, U. S.,Funder, S. G.,Rasmussen, J.,Finkel, M.,Binning, P. J.,Bjerg, P. L.. 2010. An integrated model for assessing the risk of TCE groundwater contamination to human receptors and surface water ecosystems. Ecological Engineering 36	167
2800950	Modeling	Rippen, G.,Klopffer, W.,Frische, R.,Gunther, K. O.. 1984. The Environmental Model Segment Approach For Estimating Potential Environmental Concentrations. II. Application Of The Model To p-Dichlorobenzene And Trichloroethane. Ecotoxicology and Environmental Safety 8	168
3230538	Modeling	H. F. Frasch, A. L. Bunge. 2015. The transient dermal exposure II: post-exposure absorption and evaporation of volatile compounds. Journal of Pharmaceutical Sciences 104	169
3393249	Modeling	Coulibaly, L.,Labib, M. E.,Hazen, R.. 2004. A GIS-based multimedia watershed model: development and application. Chemosphere 55	170

Refer to Appendix E of '*Application of Systematic Review in TSCA Risk Evaluations*' at <https://www.epa.gov> for more information of evaluation procedures and parameters.

Study Citation:	Pellizzari, E. D.,Wallace, L. A.,Gordon, S. M.. 1992. Elimination kinetics of volatile organics in humans using breath measurements. Journal of Exposure Analysis and Environmental Epidemiology.				
Data Type	Monitoring				
Hero ID	5405				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling methodology detailed in separate reference which we don't have. Upgradable upon examination of reference.	
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>20 years old	
	Metric 6: Spatial and Temporal Variability	Low	3	Only 4 subjects	
	Metric 7: Exposure Scenario	Medium	2	Provided consumer products used, but not names or active ingredients.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	High	1		
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	limited discussion	
Overall Quality Determination *		Medium	1.8		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Clayton, C. A., Pellizzari, E. D., Whitmore, R. W., Perritt, R. L., Quackenboss, J. J.. 1999. National Human Exposure Assessment Survey (NHEXAS): Distributions and associations of lead, arsenic, and volatile organic compounds in EPA Region 5. Journal of Exposure Analysis and Environmental Epidemiology.				
Data Type	Monitoring				
Hero ID	14003				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Sampling methodologies explained in detail in other papers	
	Metric 2: Analytical Methodology	High	1	Analytical methodologies explained in detail in other papers.	
	Metric 3: Biomarker Selection	N/A	N/A	air samples	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 years ago	
	Metric 6: Spatial and Temporal Variability	High	1	Large sample size	
	Metric 7: Exposure Scenario	Medium	2	Indoor air, but not directly related to consumer products.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw, no minimum.	
	Metric 9: Quality Assurance	High	1	Supplemental articles on QA/QC activities of project..	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination *		High	1.4		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Wallace, L. A., Pellizzari, E. D., Hartwell, T. D., Sparacino, C. M., Sheldon, L. S., Zelon, H.. 1985. Results from the first three seasons of the TEAM study: personal exposures, indoor-outdoor relationships, and breath levels of toxic air pollutants measured for 355 persons in New Jersey.				
Data Type	Monitoring				
Hero ID	21469				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Standard sampling method not mentioned. Air - Tenax, pump flow rates, 12 hr period; Breath - spirometer; No info on sample storage, duration prior to analysis. Field blanks conducted.	
	Metric 2: Analytical Methodology	Medium	2	GC/MS/COMP. Only very limited details provided. Recoveries provided, but no other discussion on calibration.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	30 yrs old	
	Metric 6: Spatial and Temporal Variability	High	1	Large sample size, duplicates	
	Metric 7: Exposure Scenario	Medium	2	Indoor air, but not specific to a product	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Only GM, mean, and max provided. No raw data.	
	Metric 9: Quality Assurance	High	1	Dups, field blanks, lab blanks, controls	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination *		High	1.6		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Heavner, D. L.,Morgan, W. T.,Ogden, M. W.. 1995. Determination of volatile organic compounds and ETS apportionment in 49 homes. Environment International.				
Data Type	Monitoring				
Hero ID	22045				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Flow rate provided. No calibration mentioned. Field blanks used.	
	Metric 2: Analytical Methodology	Low	3	No LOD/LOQ.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	Samples collected in 1991	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	Indoor air in residence, but not directly tied to a consumer product, but list of potential products listed.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data. No percent detected.	
	Metric 9: Quality Assurance	Medium	2	field blanks. no recoveries	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	SD. compared results between smokers and non smokers.	
Overall Quality Determination *		Medium	1.9		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Lebret, E.,van de Wiel, H. J.,Bos, H. P.,Noij, D.,Boleij, J. S. M.. 1986. Volatile organic compounds in Dutch homes. Environment International.				
Data Type	Monitoring				
Hero ID	22186				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	sampling method is well explained. but no discussion of storage conditions and calibration.	
	Metric 2: Analytical Methodology	Low	3	calibration, DT, recovery samples are not mentioned.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs old	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	Indoor air study. but not consumer products specific.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	range, mean, deta frequency are provided. but no raw data.	
	Metric 9: Quality Assurance	Low	3	no QA/QC is discussed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	discussion of variability/uncertainty is quite limited.	
Overall Quality Determination *		Medium	2.2		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Wallace, L. A.. 1986. Personal exposures, indoor and outdoor air concentrations, and exhaled breath concentrations of selected volatile organic compounds measured for 600 residents of New Jersey, North Dakota, North Carolina, and California. Toxicological and Environmental Chemistry.				
Data Type	Monitoring				
Hero ID	23081				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	High	1	breath	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs old	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	indoor air study. but not analysis for consumer products.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	no raw data	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination *		High	1.4		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Chan, C. C., Vainer, L., Martin, J. W., Williams, D. T.. 1990. Determination of organic contaminants in residential indoor air using an adsorption-thermal desorption technique. Journal of the Air and Waste Management Association.				
Data Type	Monitoring				
Hero ID	27974				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling methodology discussed. At each of 12 homes the following samples were collected in November or December 1986: four indoor air samples, of varying volumes, using single sorbent tube and one indoor air sample using two sorbent tubes connected in series. Repeat samplings were carried out at six of these homes in February or March, 1987. The indoor air samples were collected on the main floor of the home, usually in the living or family room, where no obvious sources of contamination were present. Indoor air samples were collected at the same time, usually in the evening or late afternoon where a uniform 90-minute sampling time was used and pump flow rates were adjusted to sample the required volume of air. Air volumes sampled varied from 5 to 50 L. After sample collection the sorbent tubes were sealed in individual screw cap glass tubes and then stored in a tightly sealed container until analyzed.	
	Metric 2: Analytical Methodology	Medium	2	Analytical methodology discussed. Samples were analyzed using adsorption/Thermal Desorption coupled with Gas Chromatography/Mass Spectrometry (ATD/GS/MS). Method Detection Limit (ng/tube) provided in Table I; 6.0 ng/tube for DCM, TCE and PERC. Analysis was carried out within two days of sampling.	
	Metric 3: Biomarker Selection	N/A	N/A	Biomarker is not used.	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	Canada	
	Metric 5: Currency	Low	3	>15 years (1986, 1987)	
	Metric 6: Spatial and Temporal Variability	Medium	2	large sample (60 indoor air samples collected 1986: 4 samples using single sorbent tube and 1 sample using two sorbent tubes connected in a series and 12 homes, so 5x12=60 and 30 indoor air samples collected 1987 at 6 homes: 5x6=30).	
	Metric 7: Exposure Scenario	Medium	2	Some discussion of exposure scenario, samples collected on main floor of the home usually in living room or family room where no source of contamination was present.	
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Study Citation:	Chan, C. C., Vainer, L., Martin, J. W., Williams, D. T.. 1990. Determination of organic contaminants in residential indoor air using an adsorption-thermal desorption technique. Journal of the Air and Waste Management Association.				
Data Type	Monitoring				
Hero ID	27974				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No supplemental or raw data. Tables II and III report indoor air concentrations (range and mean) for 12 homes during 1986 and 6 homes during 1987, respectively.	
	Metric 9: Quality Assurance	Medium	2	A blank sorbent tube was carried to and from each home and handled and analyzed as a sample, except that no air was sampled through the tube. Each week, three tubes fortified at a low level (approx 70-80 ng) and three tubes fortified at a medium level (approx 700- 800 ng) with a standard mixture of target compounds, together with a blank tube, were transported to and from one sampling site and analyzed by ATD/GC/MS. To assess the stability of the organic target compounds during storage of the sampling tube, triplicate sorbent tubes fortified with the target compounds at low and medium levels (approx 70-80 and 700-800 ng, respectively), together with a blank tube, were stored for 0,1,3 and 7 days under normal storage conditions and then analyzed by ATD/GC/MS.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	Since concentrations of contaminants can vary greatly, effective use of the technique requires that several air samples of different volumes be collected at each location.	
Overall Quality Determination *		Medium	2.0		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Ferrario, J. B., Lawler, G. C., Deleon, I. R., Laseter, J. L.. 1985. Volatile organic pollutants in biota and sediments of Lake Pontchartrain. Bulletin of Environmental Contamination and Toxicology.				
Data Type	Monitoring				
Hero ID	28993				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	sampling method is described well. calibration is not refered.	
	Metric 2: Analytical Methodology	Medium	2	Analysis method is based on National Bureau of Standards procedure though, modified ver. Older method (1976).	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs old	
	Metric 6: Spatial and Temporal Variability	Low	3	sample size is quite small.	
	Metric 7: Exposure Scenario	Low	3	study of oysters/clams is off PECO.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data.	
	Metric 9: Quality Assurance	Medium	2	Blanks and calibration standards used, in addition internal standards, however results not reported.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	No discussion for variability/uncertainty.	
Overall Quality Determination *		Low	2.3		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Singh, H. B., Salas, L. J., Stiles, R. E.. 1983. Selected man-made halogenated chemicals in the air and oceanic environment. Journal of Geophysical Research.				
Data Type	Monitoring				
Hero ID	29192				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	Low	3	sampling method, equipments are discribed. But there is time lag(3 - 6weeks) between sampling and analysis. experimental protocol is provided in another reference(singh 1982).	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs old	
	Metric 6: Spatial and Temporal Variability	Medium	2	Sufficient sample size(About 40). These samples are collected in various dates, sites, and depth. But no replicate samples.	
	Metric 7: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Dataset is well summarized. But no raw data is showed(just average value). The meaning of hyphen is not explained.	
	Metric 9: Quality Assurance	Medium	2	QA is described a bit like calibration, standards though, discussion is quite limited.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	Comparison of measured values and predicted values is described though, limited discussion.	
Overall Quality Determination [*]		Medium	2.0		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	U.S, E. P. A.. 1977. Environmental monitoring near industrial sites methylchloroform.				
Data Type	Monitoring				
Hero ID	29263				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	> 15yrs old	
	Metric 6: Spatial and Temporal Variability	Medium	2	sample size is below 10(2 -6 samples per site). no replicates.	
	Metric 7: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	High	1		
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	No discussion of variability/uncertainty.	
Overall Quality Determination *		High	1.6		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Pellizzari, E. D.,Hartwell, T. D.,Harris, B. S., III,Waddell, R. D.,Whitaker, D. A.,Erickson, M. D.. 1982. Purgeable organic compounds in mother's milk. Bulletin of Environmental Contamination and Toxicology.				
Data Type	Monitoring				
Hero ID	29308				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	N/A	N/A	sampling method for mother's milk is simply described. no sampling for any media is conducted.	
	Metric 2: Analytical Methodology	Medium	2	technique of analysis is served. but calibration, detection limits, and recovery are not described.	
	Metric 3: Biomarker Selection	Low	3	frequency of occurrence in mother's milk for each chemical is shown in table 1. no concentration, exposure pathway is discussed.	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	> 15 yrs old	
	Metric 6: Spatial and Temporal Variability	Medium	2	8 samples for each chemical.	
	Metric 7: Exposure Scenario	Unacceptable	4	media or exposure scerario is not identified.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	concentration is not measured. no statistical discussion for data.	
	Metric 9: Quality Assurance	Medium	2	there is description of recoveries though, QA/QC is not directly discussed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	no discussion	
Overall Quality Determination*		Unacceptable	4.0	Metric mean score**: 2.6.	
Extracted		No			
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Study Citation:	Pellizzari, E. D.,Hartwell, T. D.,Harris, B. S., III,Waddell, R. D.,Whitaker, D. A.,Erickson, M. D.. 1982. Purgeable organic compounds in mother’s milk. Bulletin of Environmental Contamination and Toxicology.
Data Type	Monitoring
Hero ID	29308

Domain	Metric	Rating [†]	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.

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	M. R. Van Winkle, P. A. Scheff. 2001. Volatile organic compounds, polycyclic aromatic hydrocarbons and elements in the air of ten urban homes. Indoor Air.				
Data Type	Monitoring				
Hero ID	31210				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A	Biomarker is not used.	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	U.S., Southeast Chicago, IL	
	Metric 5: Currency	Low	3	>15 yrs old	
	Metric 6: Spatial and Temporal Variability	Medium	2	large sample size. But no discription of replicates.	
	Metric 7: Exposure Scenario	Medium	2	The emission factors of each exposure scenario are discribed. But no discussion of exposure controls.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	The summary of data is discribed statistically. But no raw data.	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	The uncertainty of data is discribed to a certain extent like a discussion of correlations.	
Overall Quality Determination [*]		Medium	1.7		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Lehmann, I.,Thoelke, A.,Rehwagen, M.,Rolle-Kampczyk, U.,Schlink, U.,Schulz, R.,Borte, M.,Diez, U.,Herbarth, O.. 2002. The influence of maternal exposure to volatile organic compounds on the cytokine secretion profile of neonatal T cells. Environmental Toxicology.				
Data Type	Monitoring				
Hero ID	34460				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling methods and equipment are described.	
	Metric 2: Analytical Methodology	Medium	2	A GC-MS method was described with detection limits provided.	
	Metric 3: Biomarker Selection	High	1		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	Data collected >15 years old	
	Metric 6: Spatial and Temporal Variability	Medium	2	No replicates.	
	Metric 7: Exposure Scenario	Medium	2	Indoor air measured in children's bedrooms.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	Summary statistics provided with description of data set, range of concentrations, and number of samples in data set only.	
	Metric 9: Quality Assurance	Low	3	Quality assurance is not directly discussed	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	No discussion on variability but limitations were discussed.	
Overall Quality Determination *		Medium	2.2		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Ryan, T. J., Hart, E. M., Kappler, L. L.. 2002. VOC exposures in a mixed-use university art building. AIHA Journal.				
Data Type	Monitoring				
Hero ID	49414				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Gave sampling details. Samples refrigerated and analyzed within 2 weeks.	
	Metric 2: Analytical Methodology	Medium	2	Methods well described, but info such as calibration, blanks, and recoveries were not provided.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs	
	Metric 6: Spatial and Temporal Variability	High	1	18 to 90 samples	
	Metric 7: Exposure Scenario	High	1	personal monitoring in printing studio at university (relevant to high-end hobbyist)	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data. Missing the range, but has average, median and AD.	
	Metric 9: Quality Assurance	Low	3	Used the Qedit function for accuracy and precision, but was not described. Blanks not discussed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Discussion different locations of building, compared to other studies, provided SD.	
Overall Quality Determination *		Medium	1.7		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Serrano-Trespalacios, P. I., Ryan, L., Spengler, J. D.. 2004. Ambient, indoor and personal exposure relationships of volatile organic compounds in Mexico City metropolitan area. Journal of Exposure Analysis and Environmental Epidemiology.				
Data Type	Monitoring				
Hero ID	56224				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Detailed sampling methodology, except no storage duration or calibration procedures reported.	
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	Over 15 years old Over 90 individuals Indoor air samples not linked to specific consumer products.	
	Metric 5: Currency	Low	3		
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw, missing minimum	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Comparison to other studies.	
Overall Quality Determination *		High	1.6		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Murray, A. J., Riley, J. P.. 1973. Occurrence of some chlorinated aliphatic hydrocarbons in the environment. Nature.				
Data Type	Monitoring				
Hero ID	75108				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Unacceptable	4	sampling methods, equipments, and any other information are missed.	
	Metric 2: Analytical Methodology	Low	3	GC-ECD is used. calibration, LOD, recovery samples are not described.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs old	
	Metric 6: Spatial and Temporal Variability	Medium	2	sample size is moderate(6 sample). no replicate samples.	
	Metric 7: Exposure Scenario	Medium	2	samples are collected from the North East Atlantic.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	No raw data.	
	Metric 9: Quality Assurance	Low	3	No description of QA/QC.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	no discussion of variability/Uncertainty	
Overall Quality Determination*		Unacceptable	4.0	Metric mean score**: 2.7.	
Extracted		No			

** 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.

† High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

‡ The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Kostiainen, R.. 1995. Volatile organic compounds in the indoor air of normal and sick houses. Atmospheric Environment.				
Data Type	Monitoring				
Hero ID	76241				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling methods are described in detail	
	Metric 2: Analytical Methodology	High	1	Analytical methods are given in detail, including calibration and detection limits	
	Metric 3: Biomarker Selection	N/A	N/A	No biomarker	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	Not given, but assume Finland based on laboratory location	
	Metric 5: Currency	Low	3	Data collected prior to publication in 1994 (15+ years)	
	Metric 6: Spatial and Temporal Variability	Low	3	More than 10 locations selected as both normal and "sick" houses, but collection period not given and no mention of replicates	
	Metric 7: Exposure Scenario	High	1	Consumer exposure through indoor air concentration	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Data mostly presented as summary statistics; some raw data given to illustrate particular cases	
	Metric 9: Quality Assurance	Low	3	Quality assurance is not directly discussed	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Discussion of how a variety of building and furnishing materials affects indoor air quality	
Overall Quality Determination *		Medium	1.9		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Lindstrom, A. B., Proffitt, D., Fortune, C. R.. 1995. Effects of modified residential construction on indoor air quality. Indoor Air.				
Data Type	Monitoring				
Hero ID	78782				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	tenax, stated followed epa guidelines. Described sampled homes.	
	Metric 2: Analytical Methodology	Low	3	HPLC and provided MDLs, but did not describe the HPLC.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs	
	Metric 6: Spatial and Temporal Variability	Medium	2	10 homes	
	Metric 7: Exposure Scenario	Medium	2	testing conditions well described (housing characteristics). Only one geographic location.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	only geometric means provided. No SD, range.	
	Metric 9: Quality Assurance	Low	3		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	No SD or CV. described differences between conventional and experimental homes. no discussion of uncertainty.	
Overall Quality Determination *		Low	2.3		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Weissflog, L.,Elansky, N.,Putz, E.,Krueger, G.,Lange, C. A.,Lisitzina, L.,Pfennigsdorff, A.. 2004. Trichloroacetic acid in the vegetation of polluted and remote areas of both hemispheres - Part II: Salt lakes as novel sources of natural chlorohydrocarbons. Atmospheric Environment.				
Data Type	Monitoring				
Hero ID	104106				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling methodology is described and discussed. besides, some information of equipments or sampling strage conditions are missed.	
	Metric 2: Analytical Methodology	Medium	2	Analytical methodology is described and discussed. besides, some information of instruments or recovery samples are missed.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15yrs	
	Metric 6: Spatial and Temporal Variability	Medium	2	less discuss an use of replicate samples.	
	Metric 7: Exposure Scenario	Medium	2	The information of surface water is discribed.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	raw data. less information of summary of data	
	Metric 9: Quality Assurance	Low	3	no discussion	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	uncertainty is discussed.	
Overall Quality Determination *		Medium	2.1		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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: $=\geq 1.7$ to < 2.3 ; Low: $=\geq 2.3$ to ≤ 3 .

Study Citation:	Sexton, K.,Adgate, J. L.,Church, T. R.,Ashley, D. L.,Needham, L. L.,Ramachandran, G.,Fredrickson, A. L.,Ryan, A. D.. 2005. Children's exposure to volatile organic compounds as determined by longitudinal measurements in blood. Environmental Health Perspectives.				
Data Type	Monitoring				
Hero ID	632064				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Calibration, conditions of sampler is not described.	
	Metric 2: Analytical Methodology	Medium	2	Calibration, detection limit are not described.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	Collected samples are >15yrs old	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	Indoor air study. But not directly related to consumer products.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data. Missing SD	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination *		Medium	1.7		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Adgate, J. L., Church, T. R., Ryan, A. D., Ramachandran, G., Fredrickson, A. L., Stock, T. H., Morandi, M. T., Sexton, K.. 2004. Outdoor, indoor, and personal exposure to VOCs in children. Environmental Health Perspectives.				
Data Type	Monitoring				
Hero ID	632310				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	storage conditions and durations not provided	
	Metric 2: Analytical Methodology	Low	3	Did not actually provide the detection limit, although the did discuss how they handled LOD values.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 years old	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	High	1		
	Metric 9: Quality Assurance	Medium	2	no recoveries	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	No CV	
Overall Quality Determination *		Medium	1.8		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Ohura, T.,Amagai, T.,Senga, Y.,Fusaya, M.. 2006. Organic air pollutants inside and outside residences in Shimizu, Japan: Levels, sources and risks. Science of the Total Environment.				
Data Type	Monitoring				
Hero ID	632484				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	no storage duration, passive samplers	
	Metric 2: Analytical Methodology	Medium	2	passive sampling were linearly correlated with the concentrations measured by active sampling, calibration not discussed. Good recoveries.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	japan	
	Metric 5: Currency	Low	3	>15 yrs	
	Metric 6: Spatial and Temporal Variability	High	1	24 hr samples, large sample size	
	Metric 7: Exposure Scenario	High	1	Questionairre on Selected sociodemographic characteristics and exposure- related attributes	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No individual samples.	
	Metric 9: Quality Assurance	High	1	lab and field blanks, recoveries	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Assessed factors influences exposures	
Overall Quality Determination *		High	1.6		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Zuraimi, M. S.,Tham, K. W.. 2008. Effects of child care center ventilation strategies on volatile organic compounds of indoor and outdoor origins. Environmental Science and Technology.				
Data Type	Monitoring				
Hero ID	632758				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Sampling methodology discussed. For each CCC, an indoor (main classroom) and an outdoor sampling point were randomly selected for simultaneous air sampling. Indoor samplings were performed in the middle of the classroom near the breathing zone of children (approximately 0.5*0.7 m). Designed to evaluate the "typical" levels of VOCs to which the preschool children in each CCC are exposed, samplings were conducted in the middle of the week and during the day from 8 am to 5 pm (sampling interval of 9 h). For noncarboneyls, VOCs were actively sampled using a sampling pump (AP Buck Inc.) onto preconditioned Tenax TA sorbent tubes. Duplicate flow rates were set at 5 and 10 mLmin-1. For carbonyls, duplicate air samples were pumped through DNPH cartridges (Supelco) using another sampling pump at flow rates of 0.5 and 1 L min-1. Flow rates were measured before and after sampling using the mini Buck airflow calibrator (AP Buck Inc.). Details of the sample collection, analysis and QA/QC can be found in the Supporting Information.	
	Metric 2: Analytical Methodology	Medium	2	Analytical methodology discussed. The sampled VOCs on Tenax tubes were desorbed using an automated thermal desorber (Perkin-Elmer), separated using a gas chromatograph (Agilent) and analyzed using a mass selective detector (Agilent). For carbonyls, the analytes were eluted using acetonitrile and analyzed using a high performance liquid chromatography equipped with a diode array detector (Agilent). For every CCC, a field and laboratory blank is employed. VOCs with measured values lower than their method detection limit (MDL) were assigned to a value half of the MDL. Details of the sample collection, analysis and QA/QC can be found in the Supporting Information.	
	Metric 3: Biomarker Selection	N/A	N/A	Biomarker is not used.	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	Singapore	
	Metric 5: Currency	Medium	2	>5 to 15 years (2007 pub date)	
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Study Citation:	Zuraimi, M. S.,Tham, K. W.. 2008. Effects of child care center ventilation strategies on volatile organic compounds of indoor and outdoor origins. Environmental Science and Technology.				
Data Type	Monitoring				
Hero ID	632758				
Domain	Metric	Rating [†]	Score	Comments [‡]	
	Metric 6: Spatial and Temporal Variability	High	1	High number of samples, duplicates. Sampling numbers provided for each ventilation strategy. In this study, ACMV CCCs (N=5) are defined as those with a dedicated or shared air handling unit, filtration and fresh air provision (typically about 10 percent of total air change), HB CCCs (N=21), those that incorporate air conditioning for a portion of the day (typically 2 h) and relying on natural ventilation at other times, NV CCCs (N=59), those that rely on open windows only for ventilation and AC CCCs (N=19), those that incorporate split unit air-conditioners without any provision of fresh air. During inspections, it was found that there were rooms in some NV CCCs which were air conditioned. For these CCCs (N=19), an indoor air location in the NV room and another in the AC room were measured simultaneously making it a total of 123 samples. Supporting Information (SI) Table S1 provides a descriptive summary of the CCCs characteristics.	
	Metric 7: Exposure Scenario	Medium	2	Singapore is a tropical city, where the ventilation strategies adopted by the child care centers (CCCs) can be classified as naturally ventilated (NV), hybrid (combination of natural ventilation and air conditioning) ventilated (HB), air-conditioned and mechanically ventilated (ACMV), and air-conditioned but without ventilation (AC). In this article, we present the exposures and risk of indoor VOCs, their sources, and the impact of ventilation strategies in a nationwide study involving 104 representative CCCs in Singapore.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Supplementary Info available but not provided; requested for extraction. Table 1 reports indoor air concentrations of TCE and PERC in CCCs with different ventilation strategies.	
	Metric 9: Quality Assurance	Medium	2	For every CCC, a field and laboratory blank is employed. VOCs with measured values lower than their method detection limit (MDL) were assigned to a value half of the MDL. Details of the sample collection, analysis and QA/QC can be found in the Supporting Information.	
Domain 4: Variability and Uncertainty					
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Study Citation:	Zuraimi, M. S.,Tham, K. W.. 2008. Effects of child care center ventilation strategies on volatile organic compounds of indoor and outdoor origins. Environmental Science and Technology.			
Data Type	Monitoring			
Hero ID	632758			
Domain	Metric	Rating [†]	Score	Comments [‡]
	Metric 10: Variability and Uncertainty	Medium	2	Because regulatory decisions are based on risk evaluations, it is important to know how CCC ventilation strategies give rise to differing risks estimates of VOC exposures. However, given the large uncertainties in risk calculations, it is difficult to ascertain significant differences between estimated cancer risks. Assumptions used by the U.S. Environmental Protection Agency and the Office of Environmental Health Hazard Assessment such as standard body weight and average breathing rate may not reflect the variability of the population at large and specific differences between adults and children and between Caucasians and Asians. Also, toxicity information obtained from studies using animals have uncertainty related to extrapolations from high doses for animals to low human exposures. Indeed, information providing confidence intervals for cancer potency estimates are still not available. Despite these assumptions which may bias the estimates, the median values provide a good indication of the relative risk levels among attending children in CCCs with different ventilation strategies. Also, analyses of risk assessment used in this study can provide insight not only about the high-risk VOCs, but also about the dominant sources of their exposures, which can allow proper mitigation strategies for more effective means of exposure reduction.
Overall Quality Determination *		Medium	1.7	
Extracted		Yes		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Dewulf, J. P., Van Langenhove, H. R., Der Auwera, L. F.. 1998. Air/water exchange dynamics of 13 volatile chlorinated C1- and C2-hydrocarbons and monocyclic aromatic hydrocarbons in the southern North Sea and the Scheldt estuary. Environmental Science and Technology.				
Data Type	Monitoring				
Hero ID	644857				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Sampling equipment, procedures and storage are given	
	Metric 2: Analytical Methodology	Medium	2	Analytical procedure and equipment described, including detection limit but not calibration.	
	Metric 3: Biomarker Selection	N/A	N/A	No biomarker	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	Map is given with North Sea sampling locations	
	Metric 5: Currency	Low	3	Data collected in 1995-1996 (15+ years ago)	
	Metric 6: Spatial and Temporal Variability	High	1	38 total samples in duplicate from six locations	
	Metric 7: Exposure Scenario	Medium	2	Surface water inc. from oceans is a scenario of interest, ambient air is not	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Data summarized in Table 1	
	Metric 9: Quality Assurance	High	1	Quality control charts and standard addition tests	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	Some discussion of variability with regards to sources of PERC in water samples	
Overall Quality Determination [*]		Medium	1.7		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Yamamoto, K.,Fukushima, M.,Kakutani, N.,Kuroda, K.. 1997. Volatile organic compounds in urban rivers and their estuaries in Osaka, Japan. Environmental Pollution.				
Data Type	Monitoring				
Hero ID	645789				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling method discussed, but does not indicate if it is a standard method. Samples stored refrigerated until analysis.	
	Metric 2: Analytical Methodology	High	1	GC/MS. EPA Method 524.2 Mean accuracy, the precision & method detection limits	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>20 years (1993-1995)	
	Metric 6: Spatial and Temporal Variability	High	1	Large sample size; 30 water samples collected from 30 sites; sampled different months & years	
	Metric 7: Exposure Scenario	High	1	Site description and sampling sites provided	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	No supplemental or raw data reported; levels are reported in Figure 1	
	Metric 9: Quality Assurance	Medium	2	Mean accuracy, precision and method detection limits cited. No control samples?	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	Discussion on reasons for distribution patterns of DCM. TCE and PERC have similar distribution patterns.	
Overall Quality Determination *		Medium	1.8		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Amaral, O. C., Otero, R., Grimalt, J. O., Albaiges, J.. 1996. Volatile and semi-volatile organochlorine compounds in tap and riverine waters in the area of influence of a chlorinated organic solvent factory. Water Research.			
Data Type	Monitoring			
Hero ID	658643			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Sampling Methodology	High	1	
	Metric 2: Analytical Methodology	High	1	
	Metric 3: Biomarker Selection	N/A	N/A	
Domain 2: Representativeness				
	Metric 4: Geographic Area	High	1	
	Metric 5: Currency	Low	3	>15tys
	Metric 6: Spatial and Temporal Variability	Unacceptable	4	sample size of SW is not discribed.
	Metric 7: Exposure Scenario	Medium	2	The scenario of surface water is discribed.
Domain 3: Accessibility/Clarity				
	Metric 8: Reporting of Results	Medium	2	not raw data, and some detailed information of statistics are missed.
	Metric 9: Quality Assurance	High	1	
Domain 4: Variability and Uncertainty				
	Metric 10: Variability and Uncertainty	Low	3	uncertainty and variability are not discussed.
Overall Quality Determination *		Unacceptable	4.0	Metric mean score ^{**} : 2.0.
Extracted		No		

^{**} 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.

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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: $=\geq 1.7$ to < 2.3 ; Low: $=\geq 2.3$ to ≤ 3 .

Study Citation:	Martinez, E.,Llobet, I.,Lacorte, S.,Viana, P.,Barcelo, D.. 2002. Patterns and levels of halogenated volatile compounds in Portuguese surface waters. Journal of Environmental Monitoring.				
Data Type	Monitoring				
Hero ID	659075				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	glass vials, portable freezer, analyzed within 15 days of collection. Used analytical method EPA Method 502 so assumed used a preservative.	
	Metric 2: Analytical Methodology	High	1	EPA Method 502	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	1999-2000	
	Metric 6: Spatial and Temporal Variability	Medium	2	644 samples, but not mention of replicate/duplicate samples.	
	Metric 7: Exposure Scenario	Medium	2	surface water in scope - sea, estuarine, river water and industrial effluents - however not in US and older.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	no standard deviation . Mean in figure only. No raw data.	
	Metric 9: Quality Assurance	High	1	Recovery of 93-95 percent, R2 = 0.99.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	No SD, did not discuss any uncertainties.	
Overall Quality Determination *		Medium	1.8		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Huybrechts, T., Dewulf, J., Van Langenhove, H.. 2005. Priority volatile organic compounds in surface waters of the southern North Sea. Environmental Pollution.				
Data Type	Monitoring				
Hero ID	660096				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	storage temp and duration provided,	
	Metric 2: Analytical Methodology	Medium	2	Previously described elsewhere., but robust description provided. GC-MS. detection limit provided. Recoveries for surrogates provided.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	1998-2000	
	Metric 6: Spatial and Temporal Variability	High	1	47 samples. Replicate samples used.	
	Metric 7: Exposure Scenario	Medium	2	appropriate medium, but older data and not US	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	no raw data or supplemental data, but they provided robust statistics	
	Metric 9: Quality Assurance	High	1	Followed QUASI-MEME guidelines. detailed measures described elsewhere. This is a European standard, so the assumption is that if appropriate measures were adopted in all steps of the process, then the QA should be at a high level.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	discussed possible reasons for variation. No standard deviation provided.	
Overall Quality Determination *		Medium	1.7		
Extracted		Yes			

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[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Sexton, K.,Mongin, S. J.,Adgate, J. L.,Pratt, G. C.,Ramachandran, G.,Stock, T. H.,Morandi, M. T.. 2007. Estimating volatile organic compound concentrations in selected microenvironments using time-activity and personal exposure data. Journal of Toxicology and Environmental Health, Part A: Current Issues.				
Data Type	Monitoring				
Hero ID	730121				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	3M model 3500 organic vapor monitors (3500 OVMS), which are charcoal-based passive air samplers.A more detailed description of the study design and results was published previously (Sexton et al., 2004a, 2004b; Pratt et al., 2004, 2005).	
	Metric 2: Analytical Methodology	Medium	2	GC with an HP 5972 MS detector, Analytical and internal standards were prepared, and VOC concentrations were calculated as described previously	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	1999	
	Metric 6: Spatial and Temporal Variability	High	1	333 samples, some dups	
	Metric 7: Exposure Scenario	Medium	2	Indoor air, but not consumer specific	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Good summary statistics; however, no raw/supplementary data available.	
	Metric 9: Quality Assurance	Medium	2	Duplicate O, I, and P badges were collected periodically during the study (total n = 80), and correlation coefficients were >.94 for all individual VOC.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Not random sample, one area, are has known low VOC outdoors	
Overall Quality Determination*		Medium	1.7		
Extracted		Yes			
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Study Citation:	Sexton, K.,Mongin, S. J.,Adgate, J. L.,Pratt, G. C.,Ramachandran, G.,Stock, T. H.,Morandi, M. T.. 2007. Estimating volatile organic compound concentrations in selected microenvironments using time-activity and personal exposure data. Journal of Toxicology and Environmental Health, Part A: Current Issues.			
Data Type	Monitoring			
Hero ID	730121			
Domain	Metric	Rating [†]	Score	Comments [‡]

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Billionnet, C.,Gay, E.,Kirchner, S.,Leynaert, B.,Annesi-Maesano, I.. 2011. Quantitative assessments of indoor air pollution and respiratory health in a population-based sample of French dwellings. Environmental Research.				
Data Type	Monitoring				
Hero ID	733119				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Passive samplers. Only limited details provided, but more info in companion doc (Ramalho et al.,2006).	
	Metric 2: Analytical Methodology	Medium	2	GC with FID/MS.. Few details provided. but more info in companion doc (Ramalho et al.,2006). LOD is provided.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	2003-2005	
	Metric 6: Spatial and Temporal Variability	High	1	490 samples	
	Metric 7: Exposure Scenario	Medium	2	Indoor air of households, not specific to a consumer product.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	no raw data. no SD/CV.	
	Metric 9: Quality Assurance	Low	3	Implied, no details provided.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Limitations reported, characteristics of population reported.	
Overall Quality Determination *		Medium	1.8		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Chao, C. Y., Chan, G. Y.. 2001. Quantification of indoor VOCs in twenty mechanically ventilated buildings in Hong Kong, Atmospheric Environment.				
Data Type	Monitoring				
Hero ID	824555				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	Medium	2	no recoveries, EPA method	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs	
	Metric 6: Spatial and Temporal Variability	Medium	2	10 samples, 4 hr samples	
	Metric 7: Exposure Scenario	Medium	2	foreign country, not directly linked to consumer products	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data	
	Metric 9: Quality Assurance	Low	3	Didn't discuss QC, but used standard methods	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	SD provided, compared results between locations	
Overall Quality Determination [*]		Medium	2.0		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Kostopoulou, M. N.,Golfinopoulos, S. K.,Nikolaou, A. D.,Xilourgidis, N. K.,Lekkas, T. D.. 2000. Volatile organic compounds in the surface waters of northern Greece. Chemosphere.				
Data Type	Monitoring				
Hero ID	1024859				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	Samples collected >15 years ago	
	Metric 6: Spatial and Temporal Variability	High	1	Water samples were collected from four rivers and five lakes in the region of Northern Greece, seasonally, four times per year.	
	Metric 7: Exposure Scenario	Medium	2	Closely represents relevant exposure scenario, except it's not the US population.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Summary data reported with statistics; raw data not reported	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	Limited discussion of uncertainty	
Overall Quality Determination *		High	1.6		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	X. M. Wu, M. G. Apte, R. Maddalena, D. H. Bennett. 2011. Volatile organic compounds in small- and medium-sized commercial buildings in California. Environmental Science and Technology.				
Data Type	Monitoring				
Hero ID	1062239				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	High	1	EPA method TO-17; GC-MS Concentrations below MDL were replaced with 1/2 MDL, while for samples between the MDL and the analytical limit of quantification (LOQ), determined as 10 times the standard deviation of low-level spikes, were reported as the value determined in the laboratory.	
	Metric 3: Biomarker Selection	N/A	N/A	Biomarker is not used.	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	>5yrs old (2011 pub)	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	indoor air study. but not consumer products.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	the result of concentration for each chemicals is summarized. But no raw data.	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	discussion of variability is limited.	
Overall Quality Determination *		High	1.4		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Dodson, R. E.,Levy, J. I.,Spengler, J. D.,Shine, J. P.,Bennett, D. H.. 2008. Influence of basements, garages, and common hallways on indoor residential volatile organic compound concentrations. Atmospheric Environment.				
Data Type	Monitoring				
Hero ID	1065844				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Storage conditions and calibration not discussed, but did use a published method. BEAM study.	
	Metric 2: Analytical Methodology	High	1	Standard TO 17 method was used.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	2005	
	Metric 6: Spatial and Temporal Variability	High	1	Large sample size.	
	Metric 7: Exposure Scenario	Medium	2	Indoor air, but not ties to a specific consumer product.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data. Mean and SD in the main report. Other stats may be in supplemental.	
	Metric 9: Quality Assurance	Medium	2	Average recovery of 65 percent. Additional info in supp materials.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination *		High	1.6		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	S. N. Sax, D. H. Bennett, S. N. Chillrud, P. L. Kinney, J. D. Spengler. 2004. Differences in source emission rates of volatile organic compounds in inner-city residences of New York City and Los Angeles. Journal of Exposure Analysis and Environmental Epidemiology.				
Data Type	Monitoring				
Hero ID	1066049				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	The sampling and analytical methods are described in US EPA's Compendium Method TO-17. Sampling methodology discussed. See Study Design.	
	Metric 2: Analytical Methodology	High	1	The sampling and analytical methods are described in US EPA's Compendium Method TO-17. GC-MSD. LODs reported.	
	Metric 3: Biomarker Selection	N/A	N/A	Biomarker is not used.	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	NYC , NY (Harlem) and Los Angeles, CA (South Central, LA)	
	Metric 5: Currency	Low	3	>15 years (NYC: winterand summer 1999 and Los Angeles: fall and winter 2000)	
	Metric 6: Spatial and Temporal Variability	High	1	large sample size (36 samples); duplicate samples	
	Metric 7: Exposure Scenario	Medium	2	Measurements were conducted in about 40 homes in each of the two cities across two seasons.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No supplemental or raw data. Summary stats for indoor air provided in Table 3.	
	Metric 9: Quality Assurance	Medium	2	Field and laboratory blanks were collected, with each totaling at least 10 percent of the number of samples. Field blanks were transported and handled like regular samples, but were not attached to pumps . Field blanks were used to determine background contamination and for calculation of method limits of detection (LODs).	
Domain 4: Variability and Uncertainty					
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Study Citation:	S. N. Sax, D. H. Bennett, S. N. Chillrud, P. L. Kinney, J. D. Spengler. 2004. Differences in source emission rates of volatile organic compounds in inner-city residences of New York City and Los Angeles. <i>Journal of Exposure Analysis and Environmental Epidemiology</i> .			
Data Type	Monitoring			
Hero ID	1066049			
Domain	Metric	Rating [†]	Score	Comments [‡]
	Metric 10: Variability and Uncertainty	High	1	Indoor ^o outdoor relationships as well as SERs were calculated for each home and sources of variability in the data were examined. Between homes, variability may be due to differences in housing characteristics, building materials, use and storage of household products, and AERs. Between cities, variability can be associated with differences in ambient emission sources and meteorological patterns. Also, seasonal variability within each city can be due to different meteorological patterns in different seasons, which in turn affect AER, environmental chemistry, emission rates, and environmental dispersion rates. By determining the variability in both indoor ^o outdoor relationships and SERs, we can gain a better understanding of indoor contributions to human exposures. The degree of uncertainty associated with measurement error was also calculated for the estimated emission rates and this uncertainty was compared to the inherent variability. We discuss the implication of this uncertainty on predicting emission rates of VOCs in homes.
Overall Quality Determination [*]		High	1.6	
Extracted		Yes		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Robinson, K. W., Flanagan, S. M., Ayotte, J. D., Campo, K. W., Chalmers, A.. 2004. Water Quality in the New England Coastal Basins, Maine, New Hampshire, Massachusetts, and Rhode Island, 1999-2001.				
Data Type	Monitoring				
Hero ID	1391354				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	Samples collected >15 years ago	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	TCE and PERC measured and median concentrations presented in graphs (Fig 14, 19); so, difficult to extract. Raw data may be available in referenced reports, or appendix 3.	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	Limited discussion of uncertainty	
Overall Quality Determination *		High	1.4		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	van de Meent, D.,Den Hollander, H. A.,Pool, W. G.,Vredenbregt, M. J.,van Oers, H. A. M.,de Greef, E.,Luijten, J. a. 1986. Organic micropollutants in Dutch coastal waters. Water Science and Technology.			
Data Type	Monitoring			
Hero ID	1441544			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Sampling Methodology	Medium	2	calibration, storage conditions are missed.
	Metric 2: Analytical Methodology	Unacceptable	4	The analytical method for PERC and TCE is not provided.
	Metric 3: Biomarker Selection	N/A	N/A	
Domain 2: Representativeness				
	Metric 4: Geographic Area	High	1	
	Metric 5: Currency	Low	3	1986, >15 yrs old
	Metric 6: Spatial and Temporal Variability	High	1	
	Metric 7: Exposure Scenario	Medium	2	study of Dutch coastal water. not US.
Domain 3: Accessibility/Clarity				
	Metric 8: Reporting of Results	Medium	2	no raw data, detection frequency not reported.
	Metric 9: Quality Assurance	Low	3	QA/QC is not discussed.
Domain 4: Variability and Uncertainty				
	Metric 10: Variability and Uncertainty	Medium	2	uncertainty is few discussed.
Overall Quality Determination*		Unacceptable	4.0	Metric mean score ^{**} : 2.2.
Extracted		No		

^{**} 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.

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Jia, C., Batterman, S., Godwin, C.. 2008. VOCs in industrial, urban and suburban neighborhoods, Part 1: Indoor and outdoor concentrations, variation, and risk drivers. Atmospheric Environment.				
Data Type	Monitoring				
Hero ID	1488206				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	sampling sites and methods are well described. but sampler calibration is not described.	
	Metric 2: Analytical Methodology	Medium	2	instrument calibration is not described.	
	Metric 3: Biomarker Selection	N/A	N/A	not biomarker study	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	Samples were collected in 2004 and 2005(>5yrs old)	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	indoor air study. but no description of consumer products.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	no raw data for TCE or perc.	
	Metric 9: Quality Assurance	Low	3	QA/QC is not discussed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination *		Medium	1.8		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	He, Z., Yang, G. P., Lu, X. L.. 2013. Distributions and sea-to-air fluxes of volatile halocarbons in the East China Sea in early winter. Chemosphere.				
Data Type	Monitoring				
Hero ID	1940132				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Sample collection method, bottle type, storage conditions, and storage duration provided.	
	Metric 2: Analytical Methodology	High	1	GC-ECD. retention times, detection limits provided, calibration standards discussed.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	Cruise was in 2010.	
	Metric 6: Spatial and Temporal Variability	High	1	About 40 sampling stations.	
	Metric 7: Exposure Scenario	Medium	2	China, not US. Location on map provided. Other parameters collected such as surface seawater temperature and salinity, were obtained	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	no raw data. range and mean reported, but no SD.	
	Metric 9: Quality Assurance	Medium	2	Storage stability assessed. Use of blanks for LOQ determination. No recovery results provided.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Described reasons for variability, but no SD provided,	
Overall Quality Determination *		High	1.4		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Kuster, M.,Díaz-Cruz, S.,Rosell, M.,López de Alda, M.,Barceló, D.. 2010. Fate of selected pesticides, estrogens, progestogens and volatile organic compounds during artificial aquifer recharge using surface waters. Chemosphere.				
Data Type	Monitoring				
Hero ID	1940784				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	no calibration is described.	
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	> 5yrs old	
	Metric 6: Spatial and Temporal Variability	Unacceptable	4	just one sample is shown for lake.	
	Metric 7: Exposure Scenario	Medium	2	intake from lake or river water. not US.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	no raw data	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	discussion of variability/uncertainty is quite limited.	
Overall Quality Determination*		Unacceptable	4.0	Metric mean score**: 2.0.	
Extracted		No			

** 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.

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	McDonald, T. J., Kennicutt M C, I. I., Brooks, J. M.. 1988. VOLATILE ORGANIC COMPOUNDS AT A COASTAL GULF OF MEXICO SITE. Chemosphere.				
Data Type	Monitoring				
Hero ID	1946098				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Low	3	sampling equipment is described(Glass containers). description of storage duration, sampling method, and calibration is limited.	
	Metric 2: Analytical Methodology	Low	3	analytical conditions are described. No information of recovery or calibration is served.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15yrs old	
	Metric 6: Spatial and Temporal Variability	Low	3	single sample	
	Metric 7: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	the meaning of dash in table 3 is unclear.	
	Metric 9: Quality Assurance	Low	3	QA/QC is not discussed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	Valuability/Uncertainty is not discussed.	
Overall Quality Determination *		Low	2.4		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Gokhale, S.,Kohajda, T.,Schlink, U. we. 2008. Source apportionment of human personal exposure to volatile organic compounds in homes, offices and outdoors by chemical mass balance and genetic algorithm receptor models. Science of the Total Environment.			
Data Type	Monitoring			
Hero ID	2095308			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Sampling Methodology	Medium	2	Calibration and air flow rates not discussed.
	Metric 2: Analytical Methodology	Unacceptable	4	There is no mention of analytical methods used,
	Metric 3: Biomarker Selection	N/A	N/A	No biomonitoring samples
Domain 2: Representativeness				
	Metric 4: Geographic Area	High	1	
	Metric 5: Currency	Low	3	2001
	Metric 6: Spatial and Temporal Variability	High	1	over 600 samples
	Metric 7: Exposure Scenario	Medium	2	Source apportionment between indoor, outdoor and office, but not directly tied to consumer products.
Domain 3: Accessibility/Clarity				
	Metric 8: Reporting of Results	Low	3	Only average concentration provided.
	Metric 9: Quality Assurance	N/A	N/A	No mention of QA/QC. No mention of analytical method.
Domain 4: Variability and Uncertainty				
	Metric 10: Variability and Uncertainty	High	1	
Overall Quality Determination*		Unacceptable	4.0	Metric mean score**: 2.1.
Extracted		No		

** 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.

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	He, Z.,Yang, G.,Lu, X.,Zhang, H.. 2013. Distributions and sea-to-air fluxes of chloroform, trichloroethylene, tetrachloroethylene, chlorodibromomethane and bromoform in the Yellow Sea and the East China Sea during spring. Environmental Pollution.				
Data Type	Monitoring				
Hero ID	2128010				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	No standard method, but details provided. Samples analyzed immediately after collection.	
	Metric 2: Analytical Methodology	Medium	2	samples analyzed on board ship- not at a standard laboratory. no standard method, but details provided.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	2011	
	Metric 6: Spatial and Temporal Variability	High	1	53 grid sampling stations	
	Metric 7: Exposure Scenario	High	1	location characterized.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data. Range and mean provided in text. No SD.	
	Metric 9: Quality Assurance	High	1	Accuracy of 5 of 18 percent, blanks, calibration of equipment discussed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	discussed correlations with ocean parameters. No SD provided.	
Overall Quality Determination *		High	1.6		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Su, F. C., Mukherjee, B., Batterman, S.. 2013. Determinants of personal, indoor and outdoor VOC concentrations: An analysis of the RIOPA data. Environmental Research.				
Data Type	Monitoring				
Hero ID	2128575				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Samples collected as part of RIOPA study. Passive samplers, 48 hr collection periods, Details described elsewhere. Medium because only few details provided.	
	Metric 2: Analytical Methodology	Medium	2	Method described elsewhere. GC/MS used. LOD provided. Medium because details not provided to verify.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs (1999 to 2001)	
	Metric 6: Spatial and Temporal Variability	High	1	310 households	
	Metric 7: Exposure Scenario	Medium	2	Indoor air, but not directly related to consumer product use. convenience sample may have over samples outdoor emission sources. 3 US cities	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	no raw data provided	
	Metric 9: Quality Assurance	Medium	2	calibration, blanks etc not mentioned. But they did indicate which chemicals had low recoveries , and TCE and PERC were not mentioned.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	robust strengths, liations	
Overall Quality Determination *		Medium	1.8		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Zoccolillo, L., Abete, C., Amendola, L., Ruocco, R., Sbrilli, A., Termine, M.. 2004. Halocarbons in aqueous matrices from the Rennick Glacier and the Ross Sea (Antarctica). International Journal of Environmental Analytical Chemistry.				
Data Type	Monitoring				
Hero ID	2189687				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	Medium	2	New method that uses large volume of water. Analyzed under "extreme" conditions in Antarctica.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	1997-1998	
	Metric 6: Spatial and Temporal Variability	Medium	2	multiple stations and samples from multiple depths. replicate samples not collected. Samples were generally collected at multiple time periods.	
	Metric 7: Exposure Scenario	Medium	2	Not US, not linked to a source.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No summary provided, need to calculate the stats.	
	Metric 9: Quality Assurance	Low	3	TCE had low extraction recoveries (50-60 percent). Study did not discuss if they corrected the concentrations for the low recoveries. PERC recoveries were acceptable.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	variations due to microclimates.	
Overall Quality Determination *		Medium	2.0		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Bravo-Linares, C. M., Mudge, S. M., Loyola-Sepulveda, R. H.. 2007. Occurrence of volatile organic compounds (VOCs) in Liverpool Bay, Irish Sea. Marine Pollution Bulletin.				
Data Type	Monitoring				
Hero ID	2277377				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A	sw samples	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	2006 (>10 years)	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	Source of exposure was not discussed.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	Range of data provided only.(no raw data)	
	Metric 9: Quality Assurance	Low	3	Some QA discussion with regards to sampling.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	There are some discussion on uncertainties and variability.	
Overall Quality Determination [*]		Medium	1.8		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Yamamoto, K.,Fukushima, M.,Kakutani, N.,Tsuruho, K.. 2001. Contamination of vinyl chloride in shallow urban rivers in Osaka, Japan. Water Research.				
Data Type	Monitoring				
Hero ID	2310570				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling methodology is described and discussed simply.	
	Metric 2: Analytical Methodology	Medium	2	Analytical methodology is described and discussed simply.	
	Metric 3: Biomarker Selection	N/A	N/A	sw samples	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 years	
	Metric 6: Spatial and Temporal Variability	Medium	2	Unknown if replicate sampling was done.	
	Metric 7: Exposure Scenario	Medium	2	SW samples collected.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Raw data not provided; summary of PERC and TCE concentration data in samples given as charts (Fig 3)	
	Metric 9: Quality Assurance	Low	3	Quality assurance implied through standard protocols	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	No variability; some dicussion on uncertainty.	
Overall Quality Determination *		Medium	2.2		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	D'Souza, J. C.,Jia, C.,Mukherjee, B.,Batterman, S.. 2009. Ethnicity, housing and personal factors as determinants of VOC exposures. Atmospheric Environment.				
Data Type	Monitoring				
Hero ID	2331366				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	NHANES is well documented. passive exposure monitors	
	Metric 2: Analytical Methodology	High	1	NHANES is well documented. Used a standard method.. GC/MS and selected-ion-monitoring mode (CDC,2006b), a second laboratory used GC/MS in scan mode (Weisel et al., 2005b). http://www.nber.org/nhanes/1999_2000/downloads/lab21_doc.pdf	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	1999-2000 data.	
	Metric 6: Spatial and Temporal Variability	High	1	over 600 samples	
	Metric 7: Exposure Scenario	Medium	2	Indoor air in homes, but not directly related to a specific consumer product.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	range, percentiles, det freq. missing SD . no raw data.	
	Metric 9: Quality Assurance	High	1	NHANES.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	No SD provided	
Overall Quality Determination *		High	1.6		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Loh, M. M.,Houseman, E. A.,Gray, G. M.,Levy, J. I.,Spengler, J. D.,Bennett, D. H.. 2006. Measured concentrations of VOCs in several non-residential microenvironments in the United States. Environmental Science and Technology.				
Data Type	Monitoring				
Hero ID	2442846				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Personal samplers, VOC sorbent. Sample volume of 10L or 2.5L Samples stored 1 week in refrigerator..	
	Metric 2: Analytical Methodology	High	1	EPA Method TO17	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	2003-2005	
	Metric 6: Spatial and Temporal Variability	High	1	3 to 17 stores per store type, 5 to 28 samples per store type. Table 1	
	Metric 7: Exposure Scenario	Medium	2	Indoor air, but not for a particular product.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data. Range, mean, CV reported in supp and summaries match the limited stats in main text.	
	Metric 9: Quality Assurance	High	1	Pilot testing, storage stability, 15 percent duplicate samples, field blanks on 11 percent of samples, correction for blanks if significantly above the mean,	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Considered in sample collection and analysis. Range of store types.	
Overall Quality Determination *		High	1.3		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Chin, J. Y., Godwin, C., Parker, E., Robins, T., Lewis, T., Harbin, P., Batterman, S.. 2014. Levels and sources of volatile organic compounds in homes of children with asthma. Indoor Air.				
Data Type	Monitoring				
Hero ID	2443355				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	2010	
	Metric 6: Spatial and Temporal Variability	High	1	7 day samples, large sample size	
	Metric 7: Exposure Scenario	High	1	Source identification using factor analysis	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination [*]		High	1.2		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	He, Z.,Yang, G. uiP,Lu, X. L. an,Ding, Q. Y. ao,Zhang, H. H. ai. 2013. Halocarbons in the marine atmosphere and surface seawater of the south Yellow Sea during spring. Atmospheric Environment.				
Data Type	Monitoring				
Hero ID	2532227				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	limited details	
	Metric 2: Analytical Methodology	Low	3	These samples were analyzed immediately on board for halocarbons using a purge-andtrap system coupled with GC-electron-capture-detection. The details of the sampling and analytical methods are reported in a different paper (Lu et al., 2010).	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	High	1		
	Metric 6: Spatial and Temporal Variability	Medium	2	small sample size	
	Metric 7: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	no summary stats, just individual values	
	Metric 9: Quality Assurance	Low	3	limited discussion	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	limited discussion	
Overall Quality Determination *		Medium	2.0		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Yang, G. et al., Yang, B. et al., Lu, X. L. et al., Ding, H. et al., He, Z. et al. 2014. Spatio-temporal variations of sea surface halocarbon concentrations and fluxes from southern Yellow Sea. Biogeochemistry.				
Data Type	Monitoring				
Hero ID	2799613				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	sampling equipment, condition are described. but calibration is not described.	
	Metric 2: Analytical Methodology	Medium	2	analytical method, condition are well described. calibration is not referred.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	> 5yrs old	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	surface water study. but not in the US.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data.	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	variability is discussed. no discussion for uncertainty.	
Overall Quality Determination *		Medium	1.7		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Insogna, S., Frison, S., Marconi, E., Bacaloni, A.. 2014. Trends of volatile chlorinated hydrocarbons and trihalomethanes in Antarctica. International Journal of Environmental Analytical Chemistry.				
Data Type	Monitoring				
Hero ID	2800175				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Clean glass bottles, no headspace, stored at 4C until analysis within one year.	
	Metric 2: Analytical Methodology	High	1	Purge and trap with GC-MS. operating conditions provided, standards provided, calibration described.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	High	1	2011-2012	
	Metric 6: Spatial and Temporal Variability	Medium	2	triplicate samples, at only nine sites.	
	Metric 7: Exposure Scenario	Medium	2	surface water on scope, but not US study	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	no raw data	
	Metric 9: Quality Assurance	High	1	analysis performed in triplicate. R2 >0.998. Recoveries from 75 to 95 percent. Samples stored for up to a year and no mention of storage stability.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	compared results to past cruises, No discussion of uncertainty.	
Overall Quality Determination *		High	1.3		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Ofstad, E. B., Drangsholt, H., Carlberg, G. E.. 1981. Analysis of volatile halogenated organic compounds in fish. Science of the Total Environment.				
Data Type	Monitoring				
Hero ID	2801663				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Low	3	no details for sampling methods.	
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs old	
	Metric 6: Spatial and Temporal Variability	Medium	2	Pooled samples of 3-5 fish.	
	Metric 7: Exposure Scenario	Medium	2	media and organisms interest. but not US.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data.	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	No range of data is shown.	
Overall Quality Determination [*]		Medium	1.9		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Rogers, H. R., Crathorne, B., Watts, C. D.. 1992. Sources and fate of organic contaminants in the Mersey estuary: Volatile organohalogen compounds. Marine Pollution Bulletin.				
Data Type	Monitoring				
Hero ID	2802879				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Samples collected without headspace. Stored cool until analysis within 24 hours. Extracted and analyzed within 24 hrs.	
	Metric 2: Analytical Methodology	Medium	2	GC-ECD. HMSO 1995 (british standard method), however lacked many details actually used. internal standards,	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	1987-89	
	Metric 6: Spatial and Temporal Variability	Medium	2	Single samples on 4 sampling dates for each of 4 waterbodies.	
	Metric 7: Exposure Scenario	Medium	2	surface water on topic, but not in US	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	missing range., SD no raw data.	
	Metric 9: Quality Assurance	Low	3	used a standard analytical method, but no discussion of methods used or recoveries.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2		
Overall Quality Determination *		Medium	2.1		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Dawes, V. J.,Waldock, M. J.. 1994. Measurement of Volatile Organic Compounds at UK National Monitoring Plan Stations. Marine Pollution Bulletin.				
Data Type	Monitoring				
Hero ID	2803418				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	UK National monitoring program	
	Metric 2: Analytical Methodology	Medium	2	purge and trap with gc-MS.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	1992	
	Metric 6: Spatial and Temporal Variability	High	1	about 70 samples overall	
	Metric 7: Exposure Scenario	Medium	2	surface water, but not in US	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	individual values, but no overall stats	
	Metric 9: Quality Assurance	Medium	2	Precision assessed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	variation reflects amounts of industrial activity.	
Overall Quality Determination [*]		Medium	1.9		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Wallace, L. A.. 1987. The total exposure assessment methodology (TEAM) study: Summary and analysis: Volume I.				
Data Type	Monitoring				
Hero ID	3004792				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	A lot of detail is given, refer to companion source for full details.	
	Metric 2: Analytical Methodology	High	1	A lot of detail is given, refer to companion source for full details.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	1984	
	Metric 6: Spatial and Temporal Variability	High	1	use of replicate samples, large sample size.	
	Metric 7: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Summary statistics of phases of the study are presented. No/limited supplemental data available.	
	Metric 9: Quality Assurance	High	1	Recoveries and control samples are discussed	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	Limited characterization of variability.	
Overall Quality Determination *		High	1.4		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Yang, B., Yang, G. P., Lu, X. L., Li, L., He, Z.. 2015. Distributions and sources of volatile chlorocarbons and bromocarbons in the Yellow Sea and East China Sea. Marine Pollution Bulletin.				
Data Type	Monitoring				
Hero ID	3052892				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling is described in detail; however, not all details are included.	
	Metric 2: Analytical Methodology	Medium	2	Details on methods used for VHOC analyses were described by Yang et al. (2014).	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	26 April - 21 May 2009	
	Metric 6: Spatial and Temporal Variability	Medium	2	No discussion of replicate samples.	
	Metric 7: Exposure Scenario	Medium	2	Surface water that is shown to be similar to other parts of the world (see Table 2); however, it's not near the US.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Mean and range reported (Table 2); however, no other summary statistics and no raw/supplemental data were provided.	
	Metric 9: Quality Assurance	Medium	2	Some QA/QC control measures are discussed; however, some of the QA/QC pieces of information are missing from the text.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	The study discussed uncertainty and variability. Uncertainties are noted, but not necessarily minimal.	
Overall Quality Determination [*]		Medium	1.9		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Christof, O., Seifert, R., Michaelis, W.. 2002. Volatile halogenated organic compounds in European estuaries. Biogeochemistry.				
Data Type	Monitoring				
Hero ID	3242836				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	niskan sampler, glass bottles, stored cool and dark, until purging, purged with 12 hours.	
	Metric 2: Analytical Methodology	Medium	2	purge and trap with gc-ms. Detailed operating conditions provided.. No authoritative method used.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	1997-1999	
	Metric 6: Spatial and Temporal Variability	High	1	14-15 samples per data set	
	Metric 7: Exposure Scenario	Medium	2	surface water, but not US.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Only range. No mean, median, sd.	
	Metric 9: Quality Assurance	High	1	Duplicate sample analysis in general. Purge efficiency = 90-93 percent	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	Mentioned that other studies said water traps can cause GC problems, but they said that diverse tests showed that their water traps worked.	
Overall Quality Determination *		Medium	1.7		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Dai, H.,Jing, S.,Wang, H.,Ma, Y.,Li, L.,Song, W.,Kan, H.. 2017. VOC characteristics and inhalation health risks in newly renovated residences in Shanghai, China. Science of the Total Environment.				
Data Type	Monitoring				
Hero ID	3453725				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	Medium	2	Analytical methodology is described and discussed; MDL for DCM not listed.	
	Metric 3: Biomarker Selection	N/A	N/A	indoor air samples	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	High	1		
	Metric 6: Spatial and Temporal Variability	Medium	2	8 residences; three sampling sites at each residence: living room, bedroom, and study. No mention of replicate sampling.	
	Metric 7: Exposure Scenario	Medium	2	Indoor air samples; not specifically associated with a consumer product	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Results reported in summary/chart form, not raw data. However, raw data may be provided in Supplementary Info.	
	Metric 9: Quality Assurance	Low	3	QA is implied.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination *		Medium	1.7		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Ma, H.,Zhang, H.,Wang, L.,Wang, J.,Chen, J.. 2014. Comprehensive screening and priority ranking of volatile organic compounds in Daliao River, China. Environmental Monitoring and Assessment.				
Data Type	Monitoring				
Hero ID	3488897				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Sampling methods and storage are described.	
	Metric 2: Analytical Methodology	Medium	2	Analytical methods and instrumentation are given. Detection limits mentioned, but calibration not described.	
	Metric 3: Biomarker Selection	N/A	N/A	No biomarker	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	Map with sampling locations along Daliao River (China)	
	Metric 5: Currency	Medium	2	Samples collected in 2011 (5-15 years ago)	
	Metric 6: Spatial and Temporal Variability	High	1	Duplicate and triplicate samples taken from 20 locations.	
	Metric 7: Exposure Scenario	High	1	Surface water concentration for VOCs including PERC	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Summary results only.	
	Metric 9: Quality Assurance	High	1	Quality assurance described in sampling/analytical procedures	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	Variability assessed with replicate samples	
Overall Quality Determination *		High	1.4		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Blanco, S.,Bécares, E.. 2010. Are biotic indices sensitive to river toxicants? A comparison of metrics based on diatoms and macro-invertebrates. Chemosphere.				
Data Type	Monitoring				
Hero ID	3501965				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Low	3	Little discussion of method	
	Metric 2: Analytical Methodology	Medium	2	Used standard method SM 6220 C., however few details provided to verify method properly executed.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	2007	
	Metric 6: Spatial and Temporal Variability	Medium	2	only 11 samples	
	Metric 7: Exposure Scenario	Medium	2	surface water, but river in Spain.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	No raw data, no min or SD.	
	Metric 9: Quality Assurance	Low	3	QC assumed because used standard method.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2		
Overall Quality Determination *		Medium	2.2		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Manamsa, K.,Lapworth, D. J.,Stuart, M. E.. 2016. Temporal variability of micro-organic contaminants in lowland chalk catchments: New insights into contaminant sources and hydrological processes. Science of the Total Environment.			
Data Type	Monitoring			
Hero ID	3503486			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Sampling Methodology	Medium	2	sampling method is described well. no calibration, strage conditions.
	Metric 2: Analytical Methodology	High	1	
	Metric 3: Biomarker Selection	N/A	N/A	
Domain 2: Representativeness				
	Metric 4: Geographic Area	High	1	sample size may be large. but not described clearly. study does not separate out surface water from ground water samples
	Metric 5: Currency	High	1	
	Metric 6: Spatial and Temporal Variability	Medium	2	
	Metric 7: Exposure Scenario	Unacceptable	4	
Domain 3: Accessibility/Clarity				
	Metric 8: Reporting of Results	Medium	2	data summary, detection frequency are described. but no raw data.
	Metric 9: Quality Assurance	High	1	
Domain 4: Variability and Uncertainty				
	Metric 10: Variability and Uncertainty	Low	3	discussion of variability/uncertainty is quite limited.
Overall Quality Determination*		Unacceptable	4.0	Metric mean score**: 1.9.
Extracted		No		

** 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.

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Sidonia, V.,Haydee, K. M.,Ristoiu, D.,Luminita, S. D.. 2009. Chlorinated solvents detection in soil and river water in the area along the paper factory from Dej Town, Romania. Studia Universitatis Babes-Bolyai. Chemia.				
Data Type	Monitoring				
Hero ID	3543217				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	Samples collected <15 years ago	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	Only one sample point; location relative to paper plant not specified; sampled when the plant was on- and off-line	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	High	1		
	Metric 9: Quality Assurance	Medium	2	Lab quality assumed from detail in process description; no control for water samples	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination *		High	1.3		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Zoccolillo, L., Rellori, M. 1994. Halocarbons in Antarctic surface waters. International Journal of Environmental Analytical Chemistry.				
Data Type	Monitoring				
Hero ID	3544414				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling methodology briefly discussed.	
	Metric 2: Analytical Methodology	Medium	2	Analytical methodology briefly discussed	
	Metric 3: Biomarker Selection	N/A	N/A	Biomarker not used.	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	Antarctica, Italy	
	Metric 5: Currency	Low	3	>15 years	
	Metric 6: Spatial and Temporal Variability	Medium	2	moderate sample size. no replicate samples.	
	Metric 7: Exposure Scenario	Medium	2	Exposure scenario of interest: surface water.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Concentration reported in Table 2.	
	Metric 9: Quality Assurance	Medium	2	Procedural recoveries provided, 50 percent for TCE and 75 percent for PERC. Controls not discussed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	Not discussed. Authors suggest that the differences in the concentrations in various waters can be attributed to sampling site microclimate and to morphology.	
Overall Quality Determination [*]		Medium	2.1		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Amagai, T.,Olansandan,,Matsushita, H.,Ono, M.,Nakai, S.,Tamura, K.,Maeda, K.. 1999. A survey of indoor pollution by volatile organohalogen compounds in Katsushika, Tokyo, Japan. Indoor and Built Environment.				
Data Type	Monitoring				
Hero ID	3545469				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	calibration, flow rates	
	Metric 2: Analytical Methodology	Low	3	LOQ not reported.	
	Metric 3: Biomarker Selection	N/A	N/A	No biomonitoring.	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs ago	
	Metric 6: Spatial and Temporal Variability	High	1	>50 samples	
	Metric 7: Exposure Scenario	Medium	2	Indoor air, but no direct link to consumer product.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data.	
	Metric 9: Quality Assurance	Medium	2	Used field blanks. Recoveries not mentioned.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination [*]		Medium	1.8		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Fielding, M.,Gibson, T. M.,James, H. A.. 1981. Levels of trichloroethylene, tetrachloroethylene and para-dichlorobenzene in groundwaters. Environmental Technology Letters.				
Data Type	Monitoring				
Hero ID	3570809				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	sampling methods and equipments are described. but calibration is not described.	
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	1980s (>15yrs old)	
	Metric 6: Spatial and Temporal Variability	Low	3	sample size is too small (duplicate sample at one site)	
	Metric 7: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No raw data for each sample.	
	Metric 9: Quality Assurance	Low	3	QA/QC is not discussed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	uncertainty is not discussed.	
Overall Quality Determination *		Medium	2.0		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Chapman, S. W., Parker, B. L., Cherry, J. A., Aravena, R., Hunkeler, D.. 2007. Groundwater-surface water interaction and its role on TCE groundwater plume attenuation. Journal of Contaminant Hydrology.				
Data Type	Monitoring				
Hero ID	3572385				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A	Study did not include biomarkers.	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	Samples collected > 15 years ago	
	Metric 6: Spatial and Temporal Variability	Medium	2	The study did not include replicates.	
	Metric 7: Exposure Scenario	Medium	2		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Some values are given in text; the report indicates good variability if all data could be obtained.	
	Metric 9: Quality Assurance	Medium	2	The authors did not include field control sites.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination *		High	1.6		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Lee, W.,Park, S. H.,Kim, J.,Jung, J. Y.. 2015. Occurrence and removal of hazardous chemicals and toxic metals in 27 industrial wastewater treatment plants in Korea. Desalination and Water Treatment.				
Data Type	Monitoring				
Hero ID	3580141				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Low	3	No discussion , but assumed to be in the standard analytical method used.	
	Metric 2: Analytical Methodology	High	1	Purge and trap with GC. Standard Korean method.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	High	1		
	Metric 6: Spatial and Temporal Variability	High	1	27 facilities	
	Metric 7: Exposure Scenario	Medium	2	waste water effluent, but not in the US	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	No raw data, no SD. No detection frequency.	
	Metric 9: Quality Assurance	Low	3	No discussion, but assumed because used standard Korean method.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	No SD	
Overall Quality Determination *		Medium	2.0		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Duclos, Y.,Blanchard, M.,Chesterikoff, A.,Chevreuil, M.. 2000. Impact of paris waste upon the chlorinated solvent concentrations of the river Seine (France). Water, Air, and Soil Pollution.				
Data Type	Monitoring				
Hero ID	3587944				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling methodology is described and discussed.	
	Metric 2: Analytical Methodology	Medium	2	Analytical methodology is described and discussed.	
	Metric 3: Biomarker Selection	N/A	N/A	sw samples	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15 yrs	
	Metric 6: Spatial and Temporal Variability	Medium	2	3 sampling sessions; 14 stations	
	Metric 7: Exposure Scenario	Medium	2	sw samples collected, but not in the US.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Data seems to be raw data.	
	Metric 9: Quality Assurance	Low	3	QA is implied.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	Limited discussion on uncertainty; no variability.	
Overall Quality Determination [*]		Medium	2.1		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Cdc,. 2017. National report on human exposure to environmental chemicals.				
Data Type	Monitoring				
Hero ID	3827236				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Biomonitoring data for US population from NHANES; information on sampling methodology readily available.	
	Metric 2: Analytical Methodology	High	1	Biomonitoring data for US population from NHANES; information on analytical methodology readily available.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	Blood concentrations for the period 2001-2008	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	Blood concentrations for general population	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Raw data, measures of variation not reported.	
	Metric 9: Quality Assurance	High	1	Biomonitoring data for US population from NHANES; information on QA/QC methodology readily available.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Biomonitoring data for US population from NHANES; information on variability/uncertainty readily available.	
Overall Quality Determination *		High	1.3		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Atsdr,. 2007. Public health assessment: Peninsula Boulevard groundwater plume town of Hempstead, Nassau County, New York: EPA facility ID: NYN000204407.			
Data Type	Monitoring			
Hero ID	3970464			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Sampling Methodology	Medium	2	Government paper so assumed use of appropriate methods.
	Metric 2: Analytical Methodology	Unacceptable	4	No method described.
	Metric 3: Biomarker Selection	N/A	N/A	sw samples
Domain 2: Representativeness				
	Metric 4: Geographic Area	High	1	
	Metric 5: Currency	Low	3	2007 (>10 years), data collected >15 years ago
	Metric 6: Spatial and Temporal Variability	Unacceptable	4	Sample size is not reported and assumptions cannot be made.
	Metric 7: Exposure Scenario	Medium	2	SW samples collected.
Domain 3: Accessibility/Clarity				
	Metric 8: Reporting of Results	Low	3	Maximum value provided only.
	Metric 9: Quality Assurance	Low	3	No discussion on QA.
Domain 4: Variability and Uncertainty				
	Metric 10: Variability and Uncertainty	Low	3	No variability or discussion on uncertainties.
Overall Quality Determination*		Unacceptable	4.0	Metric mean score**: 2.8.
Extracted		No		

** 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.

† High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

‡ The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Usgs,. 1994. Organic compounds downstream from a treated-wastewater discharge near Dalls, Texas, March 1987.				
Data Type	Monitoring				
Hero ID	3975036				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Water samples for nutrient, organic, and inorganic determinations were collected and preserved according to standard USGS procedures (Wells and others, 1990).	
	Metric 2: Analytical Methodology	Medium	2	Methods described and cited, but no indication of recoveries. Tentative compound identification from GC/MS analyses was based on computer matching of samplemass spectra with the National Bureau of Standards library. Identification of all compounds extracted by PT and other selected methods, and indicated with a (b) in the data tables, was confirmed by matching the mass spectrum and retention time of the sample with those of authentic standards.(1987).	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	March 9 and 10, 1987	
	Metric 6: Spatial and Temporal Variability	Low	3	4 sites, but appears to be one sample per site.	
	Metric 7: Exposure Scenario	High	1	Media of interest. Location well described.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	No summary stats or raw data.	
	Metric 9: Quality Assurance	Low	3	one upstream control site. QA assumed, but not discussed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Discussed uncertainty of analysis methods	
Overall Quality Determination *		Medium	2.0		
Extracted		No			
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Study Citation:	Usgs,. 1994. Organic compounds downstream from a treated-wastewater discharge near Dalls, Texas, March 1987.
Data Type	Monitoring
Hero ID	3975036

Domain	Metric	Rating [†]	Score	Comments [‡]
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[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Usgs,. 2006. Water-quality conditions of Chester Creek, Anchorage, Alaska, 1998-2001.				
Data Type	Monitoring				
Hero ID	3975042				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Data collection and analysis described in pages 5-7	
	Metric 2: Analytical Methodology	High	1	Data collection and analysis described in pages 5-7	
	Metric 3: Biomarker Selection	N/A	N/A	No biomarker	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	Chester Creek, Alaska	
	Metric 5: Currency	Low	3	Data collected 1998-2001 (15+ years ago)	
	Metric 6: Spatial and Temporal Variability	Medium	2	11 samples analyzed for VOCs, including PERC	
	Metric 7: Exposure Scenario	High	1	For PCE, only concentration in surface water. Fish tissue analysis did not include VOCs.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Summary data only; Table 3	
	Metric 9: Quality Assurance	Low	3	No specific discussion of quality control/assurance	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	No specific discussion of uncertainty/variability	
Overall Quality Determination *		Medium	1.9		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Usgs,. 2003. A national survey of methyl tert-butyl ether and other volatile organic compounds in drinking-water sources: Results of the random survey.				
Data Type	Monitoring				
Hero ID	3975046				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	Sampling equipment and procedures described; sampling performed by different community water systems personnel across country	
	Metric 2: Analytical Methodology	High	1	Analytical methods and equipment discussed including detection limits	
	Metric 3: Biomarker Selection	N/A	N/A	No biomarker used	
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1	United States	
	Metric 5: Currency	Low	3	Data collected between 1999-2000 (15+ years ago)	
	Metric 6: Spatial and Temporal Variability	Medium	2	954 samples submitted from across the US, with field blanks included	
	Metric 7: Exposure Scenario	Medium	2	Data collected on many different chemicals in drinking water sources; only PERC in surface water is of interest	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	Summary only; PERC is in Appendix 2 on pg 76	
	Metric 9: Quality Assurance	High	1	Quality control samples	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1	Uncertainty discussed extensively	
Overall Quality Determination *		Medium	1.7		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Helz, G. R., Hsu, R. Y.. 1978. Volatile chloro- and bromocarbons in coastal waters. <i>Limnology and Oceanography</i> .				
Data Type	Monitoring				
Hero ID	4140523				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
Metric 1:	Sampling Methodology	Medium	2	Sampling methodology discussed. To obtain data on the character of volatile halocarbons in waste discharges, we collected a series of samples from Back River, Maryland (Fig. 1B). This is a shallow, 12 km long tributary estuary to the Chesapeake Bay, with a salinity range of about 04 g* kg-l. Its mean depth is about 1 m and it is well mixed vertically. Near its upper end, Back River receives 1.5- 1.9 x 10 ⁸ liter. d-r of wastewater from Baltimore's main sewage treatment plant; the waste discharges often exceed the freshwater flow from the watershed by a factor of two (Helz et al. 1975). The plant provides 100 percent secondary treatment, mostly by the trickling filter process, to wastes of both domestic and commercial origin. The effluent is chlorinated before discharge. The first series of samples from Back River (No. 8-12) was collected in early February 1977, after northern Chesapeake Bay had been covered with ice for more than a month. The only uncovered area was a 0.2-km-diameter patch of water immediately above the underwater diffusers at the discharge point in midriver. The second set of samples (No. 13-23) was collected in early May 1977, well after the spring thaw.	
Metric 2:	Analytical Methodology	Medium	2	Analytical methodology discussed. GC equipped with a Hall electrolytic conductivity detector (TRACOR). In early stages of the work, some identifications were checked by mass spectrometry, but the high selectivity of the method for only volatile chloro- and bromocarbons minimizes the danger of misidentification when only GC retention time is used. Limit of detection not specified.	
Metric 3:	Biomarker Selection	N/A	N/A	Biomarker not used.	
Domain 2: Representativeness					
Metric 4:	Geographic Area	High	1	Maryland (Back River estuary)	
Metric 5:	Currency	Low	3	>15 years (February and May 1977)	
Metric 6:	Spatial and Temporal Variability	Low	3	The first series of samples from Back River (No. 8-12; 5 samples) was collected in early February 1977, after northern Chesapeake Bay had been covered with ice for more than a month. The second set of samples (No. 13-23; 11 samples) was collected in early May 1977, well after the spring thaw (open water).	

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Study Citation:	Helz, G. R., Hsu, R. Y.. 1978. Volatile chloro- and bromocarbons in coastal waters. Limnology and Oceanography.				
Data Type	Monitoring				
Hero ID	4140523				
Domain	Metric	Rating [†]	Score	Comments [‡]	
	Metric 7: Exposure Scenario	Medium	2	Back River: This is a shallow, 12 km long tributary estuary to the Chesapeake Bay, with a salinity range of about 04 g* kg-l. Its mean depth is about 1 m and it is well mixed vertically. Near its upper end, Back River receives 1.5-1.9 x 10 ⁸ liter. d-r of wastewater from Baltimore's main sewage treatment plant; the waste discharges often exceed the freshwater flow from the watershed by a factor of two (Helz et al. 1975). The plant provides 100 percent secondary treatment, mostly by the trickling filter process, to wastes of both domestic and commercial origin. The effluent is chlorinated before discharge.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	No supplemental or raw data. Table 3 lists DCM, TCE, and PERC concentrations in NM for Back River samples collected in February 1977 (ice cover) and May 1977 (open water). Some values are ND, but LOD is not reported.	
	Metric 9: Quality Assurance	Low	3	QA/QC procedures not directly discussed.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	Some discussion of variability due to sampling times, February (ice cover) and May (open water), and concentration decrease seaward due to tidal mixing of the effluent. Some uncertainty regarding the factors causing volatilization and its influence on May samples.	
Overall Quality Determination *		Medium	2.2		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Aggazzotti, G.,Predieri, G.. 1986. SURVEY OF VOLATILE HALOGENATED ORGANICS (VHO) IN ITALY - LEVELS OF VHO IN DRINKING WATERS, SURFACE WATERS AND SWIMMING POOLS. Water Research.				
Data Type	Monitoring				
Hero ID	4149721				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Low	3	Minimal details for the surface water. collected from 31 stations	
	Metric 2: Analytical Methodology	Medium	2	No standard method, but GC-EC conditions described.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	prior to November 1984	
	Metric 6: Spatial and Temporal Variability	Low	3	31 stations, collected multiples time per year. But exact number of samples not reported.	
	Metric 7: Exposure Scenario	Medium	2	a canal which collects the wastes of the city of Modena	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	no number of samples, no SD, no raw data	
	Metric 9: Quality Assurance	Low	3	Mentions calibration for VHO, but no mention of field blanks, lab blanks, recoveries	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Medium	2	limited characterization of variability in the population/media studied.	
Overall Quality Determination *		Low	2.4		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Fytianos, K., Vasilikiotis, G., Weil, L.. 1985. Identification and determination of some trace organic compounds in coastal seawater of Northern Greece. Bulletin of Environmental Contamination and Toxicology.				
Data Type	Monitoring				
Hero ID	4149731				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
Metric 1:	Sampling Methodology	Low	3	Described sample containers and filtration method. no info on sample storage or duration.	
Metric 2:	Analytical Methodology	Low	3	gc-ms-eqd. Standard method not used. Operating conditions not reported., although may be in Garrison et al. 1978; Shino-hara et al. 1981).	
Metric 3:	Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
Metric 4:	Geographic Area	High	1		
Metric 5:	Currency	Low	3	1980s	
Metric 6:	Spatial and Temporal Variability	Low	3	Not explicit. 2 rivers, samples collected twice a month for two years = 24 samples per station	
Metric 7:	Exposure Scenario	Medium	2	Not US, but sites described. The former is situated close to a large city, Thessaloniki, and a large industrial area, including a refinery unit. The latter is close to a smaller city, Kavala, which is rapidly developing due to off-shore oil wells.	
Domain 3: Accessibility/Clarity					
Metric 8:	Reporting of Results	Low	3	only mean values reported	
Metric 9:	Quality Assurance	Low	3	No recoveries, blanks discussed.	
Domain 4: Variability and Uncertainty					
Metric 10:	Variability and Uncertainty	Low	3	No SD reported.	
Overall Quality Determination *		Low	2.7		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Sauer, T. C.. 1981. Volatile organic compounds in open ocean and coastal surface waters. Organic Geochemistry.				
Data Type	Monitoring				
Hero ID	4152375				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	sampling equipments, storage conditions are described. but no information of calibration, storage duration.	
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Low	3	>15yrs old	
	Metric 6: Spatial and Temporal Variability	Low	3	<10 samples for open ocean. <5 samples for coast.	
	Metric 7: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	no raw data. no mean or SD. no discussion of blanks.	
	Metric 9: Quality Assurance	Medium	2	discussed extraction efficiency.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	discussion of variability/uncertainty is limited.	
Overall Quality Determination *		Medium	2.1		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Ec., 2014. SINPHONIE: Schools Indoor Pollution and Health Observatory Network in Europe.				
Data Type	Monitoring				
Hero ID	4440449				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Medium	2	calibration of sampler is not provided.	
	Metric 2: Analytical Methodology	Low	3	calibration of instrument ,detection limit are not provided	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	<15yrs old (2010-2011)	
	Metric 6: Spatial and Temporal Variability	High	1		
	Metric 7: Exposure Scenario	Medium	2	not directly related to consumer product.	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Medium	2	raw data is not provided	
	Metric 9: Quality Assurance	High	1		
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	High	1		
Overall Quality Determination *		Medium	1.7		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Wetzel, T. A.. 2014. Volatile Organic Compounds (VOCs) In Indoor Air: Emission From Consumer Products and the Use of Plants for Air Sampling.				
Data Type	Monitoring				
Hero ID	4442460				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	Low	3	There are just name of equipment.	
	Metric 2: Analytical Methodology	Low	3	Standard EPA method, but no LOQ.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representativeness					
	Metric 4: Geographic Area	High	1		
	Metric 5: Currency	Medium	2	some of them are a bit old (>5yrs)	
	Metric 6: Spatial and Temporal Variability	Low	3	few samples(4 houses)	
	Metric 7: Exposure Scenario	Low	3	use pattern, use of exposure controls are less described	
Domain 3: Accessibility/Clarity					
	Metric 8: Reporting of Results	Low	3	Only one sample per location. Frequency of detections, statistical methods are not described.	
	Metric 9: Quality Assurance	Low	3	Quality assurance only briefly discussed, but a standard method was used.	
Domain 4: Variability and Uncertainty					
	Metric 10: Variability and Uncertainty	Low	3	Uncertainty, variation across houses are not discussed.	
Overall Quality Determination *		Low	2.7		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Wallace, L. A., Pellizzari, E., Leaderer, B., Zelon, H., Sheldon, L.. 1987. Emissions of volatile organic compounds from building materials and consumer products. Atmospheric Environment.				
Data Type	Experimental				
Hero ID	23126				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology and Conditions	High	1		
	Metric 2: Analytical Methodology	Low	3	instrument calibration, detection limit, recovery samples are not discribed.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representative					
	Metric 4: Testing Scenario	High	1		
	Metric 5: Sample Size and Variability	Low	3	just 3 samples for each 4 products	
	Metric 6: Temporality	Low	3	> 15yrs old study	
Domain 3: Accessibility/Clarity					
	Metric 7: Reporting of Results	Medium	2	no raw data	
	Metric 8: Quality Assurance	N/A	N/A		
Domain 4: Variability and Uncertainty					
	Metric 9: Variability and Uncertainty	Low	3	The uncertainties are discussed. That's because equirbrium is assumed, the values might be underestimated.	
Overall Quality Determination*		Low	2.3		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Sack, T. M., Steele, D. H., Hammerstrom, K., Remmers, J.. 1992. A survey of household products for volatile organic compounds. Atmospheric Environment.				
Data Type	Experimental				
Hero ID	28339				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology and Conditions	High	1		
	Metric 2: Analytical Methodology	Low	3	detection limits, recovery samples are not discribed.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representative					
	Metric 4: Testing Scenario	Medium	2	exposure control is not discussed.	
	Metric 5: Sample Size and Variability	Medium	2	number of products per category varied. Replicates tests for some products, but not all.	
	Metric 6: Temporality	Low	3	>15 yrs old	
Domain 3: Accessibility/Clarity					
	Metric 7: Reporting of Results	Medium	2	no raw data. Only average is reported.	
	Metric 8: Quality Assurance	N/A	N/A		
Domain 4: Variability and Uncertainty					
	Metric 9: Variability and Uncertainty	Low	3	uncertainties, limitations are not discussed.	
Overall Quality Determination*		Low	2.3		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	S. Kezic, A. C. Monster, I. van de Gevel, J. Krüse, J. G. Opdam, M. M. Verberk. 2001. Dermal absorption of neat liquid solvents on brief exposures in volunteers. American Industrial Hygiene Association Journal.				
Data Type	Experimental				
Hero ID	706419				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology and Conditions	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A	Biomarkers are not used.	
Domain 2: Representative					
	Metric 4: Testing Scenario	Medium	2	Testing was not conducted under a broad range of conditions for factors such as temperature, humidity, pressure, airflow, and chemical mass /weight fraction.	
	Metric 5: Sample Size and Variability	Medium	2	<10 samples (n=6)	
	Metric 6: Temporality	Medium	2	Although the study was published >15 years (2001) the test substance was a neat solvent and therefore temporality does not effect the test substance; however, it may influence the methodology used.	
Domain 3: Accessibility/Clarity					
	Metric 7: Reporting of Results	Medium	2	Supplementary or raw data (i.e., individual data points) are not reported, and therefore summary statistics cannot be re-produced	
	Metric 8: Quality Assurance	N/A	N/A	QA/QC techniques and results were not directly discussed, but can be implied through the study's use of standard field and laboratory protocols.	
Domain 4: Variability and Uncertainty					
	Metric 9: Variability and Uncertainty	Medium	2	The study has limited discussion of key uncertainties, limitations, and data gaps. The authors realize that the extrapolation of the exposed area is not truly justified, because of the regional variations in skin permeability.	
Overall Quality Determination*		Medium	1.7		
Extracted		Yes			
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Study Citation:	S. Kezic, A. C. Monster, I. van de Gevel, J. Krüse, J. G. Opdam, M. M. Verberk. 2001. Dermal absorption of neat liquid solvents on brief exposures in volunteers. American Industrial Hygiene Association Journal.
Data Type	Experimental
Hero ID	706419

Domain	Metric	Rating [†]	Score	Comments [‡]
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[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Wallace, L.,Nelson, W.,Pellizzari, E.,Raymer, J.. 1997. Uptake and decay of volatile organic compounds at environmental concentrations: application of a four-compartment model to a chamber study of five human subjects. Journal of Exposure Analysis and Environmental Epidemiology.				
Data Type	Experimental				
Hero ID	708344				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology and Conditions	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	High	1		
Domain 2: Representative					
	Metric 4: Testing Scenario	High	1		
	Metric 5: Sample Size and Variability	Medium	2	only 5 subjects	
	Metric 6: Temporality	N/A	N/A	lab study, date not applicable	
Domain 3: Accessibility/Clarity					
	Metric 7: Reporting of Results	Medium	2	no raw data.	
	Metric 8: Quality Assurance	N/A	N/A	no discussion, but field blanks and controls used.	
Domain 4: Variability and Uncertainty					
	Metric 9: Variability and Uncertainty	Low	3	no discussion.	
Overall Quality Determination*		High	1.6		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	S. Kim, J. A. Kim, J. Y. An, H. J. Kim, S. D. Kim, J. C. Park. 2007. TVOC and formaldehyde emission behaviors from flooring materials bonded with environmental-friendly MF/PVAc hybrid resins. Indoor Air.				
Data Type	Experimental				
Hero ID	1512515				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology and Conditions	High	1	flooring prep discussed, chamber set up discussed	
	Metric 2: Analytical Methodology	Medium	2	GC/MS. conditions in table 5. no info on calibration or recoveries.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representative					
	Metric 4: Testing Scenario	Medium	2	one set of sampling conditions, table 2. Not sure if resin is considered an adhesive. Korean study. exact product not known.	
	Metric 5: Sample Size and Variability	Low	3	number of tests is uncertain.	
	Metric 6: Temporality	Medium	2	10 yrs old	
Domain 3: Accessibility/Clarity					
	Metric 7: Reporting of Results	Medium	2	no raw data. Uncertain if the EF is a mean or s	
	Metric 8: Quality Assurance	N/A	N/A	QC not explicitly discussed.	
Domain 4: Variability and Uncertainty					
	Metric 9: Variability and Uncertainty	Low	3	No SD	
Overall Quality Determination*		Medium	2.1		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Kwon, K. iD,Jo, W.,Lim, H.,Jeong, W.. 2008. Volatile pollutants emitted from selected liquid household products. Environmental Science and Pollution Research.				
Data Type	Experimental				
Hero ID	1752751				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology and Conditions	Medium	2	Experimental protocol and equipment are described thoroughly.	
	Metric 2: Analytical Methodology	High	1	Analytical procedures given in detail, including mention of detection limits and recovery	
	Metric 3: Biomarker Selection	N/A	N/A	No biomarker	
Domain 2: Representative					
	Metric 4: Testing Scenario	Low	3	Household products tested, but under laboratory conditions. Goal was to determine composition of products	
	Metric 5: Sample Size and Variability	Medium	2	42 household products tested	
	Metric 6: Temporality	Medium	2	Tests conducted prior to article publication in 2008 (5-15 years ago)	
Domain 3: Accessibility/Clarity					
	Metric 7: Reporting of Results	Low	3	Summary data only, data is product compositions and not air concentration or consumer dose	
	Metric 8: Quality Assurance	N/A	N/A	No specific discussion of quality assurance/control	
Domain 4: Variability and Uncertainty					
	Metric 9: Variability and Uncertainty	Medium	2	Some discussion of limitations in section 6	
Overall Quality Determination*		Medium	2.1		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Odabasi, M.,Elbir, T.,Dumanoglu, Y.,Sofuoglu, S. C.. 2014. Halogenated volatile organic compounds in chlorine-bleach-containing household products and implications for their use. Atmospheric Environment.				
Data Type	Experimental				
Hero ID	2443539				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology and Conditions	High	1		
	Metric 2: Analytical Methodology	High	1		
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representative					
	Metric 4: Testing Scenario	High	1		
	Metric 5: Sample Size and Variability	High	1		
	Metric 6: Temporality	High	1		
Domain 3: Accessibility/Clarity					
	Metric 7: Reporting of Results	Medium	2	no raw data.	
	Metric 8: Quality Assurance	N/A	N/A	calibration, correction for blanks are described. but no recoveries reported.	
Domain 4: Variability and Uncertainty					
	Metric 9: Variability and Uncertainty	High	1		
Overall Quality Determination*		High	1.1		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

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* 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 .

Study Citation:	Kowalska, J.,Szewczyńska, M.,Pośniak, M.. 2014. Measurements of chlorinated volatile organic compounds emitted from office printers and photocopiers. Environmental Science and Pollution Research.				
Data Type	Experimental				
Hero ID	2534318				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
Metric 1:	Sampling Methodology and Conditions	Medium	2	No standard method method mentioned, but chamber size, temp, RH, air volume, duration reported.	
Metric 2:	Analytical Methodology	Medium	2	Discussed method, calibration curve. For substance identification, the mass spectrum library NIST 05 was available.	
Metric 3:	Biomarker Selection	N/A	N/A		
Domain 2: Representative					
Metric 4:	Testing Scenario	Medium	2	Office printers is on PECO for PERC.	
Metric 5:	Sample Size and Variability	Medium	2	7 different office equipment devices. Appears that replicates were conducted since mean and SD provided for each device.	
Metric 6:	Temporality	Low	3	Test date not specified, although assumed to be recent based on pub date.	
Domain 3: Accessibility/Clarity					
Metric 7:	Reporting of Results	Medium	2	No raw data, mean and SD provided for each device.	
Metric 8:	Quality Assurance	N/A	N/A	calibration provided. no discussion of controls.	
Domain 4: Variability and Uncertainty					
Metric 9:	Variability and Uncertainty	Medium	2	Discussed different equipment types.	
Overall Quality Determination*		Medium	2.1		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

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* 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 .

Study Citation:	Wetzel, T. A.. 2014. Volatile Organic Compounds (VOCs) In Indoor Air: Emission From Consumer Products and the Use of Plants for Air Sampling.				
Data Type	Experimental				
Hero ID	4442460				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology and Conditions	Low	3	Some info is described in another report. But missing key pieces of information such as the exact times samples were collected from the chamber.	
	Metric 2: Analytical Methodology	Medium	2	Analytical method described, but no limits reported.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representative					
	Metric 4: Testing Scenario	Low	3	Chemical content or weight fraction of product not reported.	
	Metric 5: Sample Size and Variability	Low	3	<5 samples	
	Metric 6: Temporality	High	1	current	
Domain 3: Accessibility/Clarity					
	Metric 7: Reporting of Results	Low	3	The report lacked a lot of information and organization. no raw data, no results per sampling interval.	
	Metric 8: Quality Assurance	N/A	N/A		
Domain 4: Variability and Uncertainty					
	Metric 9: Variability and Uncertainty	Medium	2	Discussed calibration. Assessed reproducibility and accuracy of the emission rates generated from the chamber. No recoveries mentioned.	
Overall Quality Determination*		Low	2.4		
Extracted		Yes			

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* 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 .

Study Citation:	Won, D. Yang W.. 2012. Material emission information from: 105 building materials and consumer products.				
Data Type	Experimental				
Hero ID	4663242				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology and Conditions	High	1		
	Metric 2: Analytical Methodology	Medium	2	analytical method is well described. but no recovery samples.	
	Metric 3: Biomarker Selection	N/A	N/A		
Domain 2: Representative					
	Metric 4: Testing Scenario	Low	3	Consumer uses(subcategory in table 2) don't match for use of interest of EPA very much.	
	Metric 5: Sample Size and Variability	Low	3	only one sample collected per test	
	Metric 6: Temporality	Medium	2	2010 and 2011(>5 yrs old)	
Domain 3: Accessibility/Clarity					
	Metric 7: Reporting of Results	High	1		
	Metric 8: Quality Assurance	N/A	N/A	calibration, comparison to past data are described. but recoveries is not discussed.	
Domain 4: Variability and Uncertainty					
	Metric 9: Variability and Uncertainty	High	1		
Overall Quality Determination*		Medium	1.9		
Extracted		Yes			

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* 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 .

Study Citation:	C Solal, C. Rousselle, C. Mandin, J. Manel, F. Maupetit. 2008. VOCs and formaldehyde emissions from cleaning products and air fresheners. International Conference on Indoor Air Quality and Climate (Indoor Air 2008).				
Data Type	Experimental				
Hero ID	4683353				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
Metric 1:	Sampling Methodology and Conditions	Medium	2	Although it appears that standard methods were used, not many details were provided. The emission test chamber method is described in EN ISO 16000-9 (Determination of the emission of volatile organic compounds from building products and furnishing " Emission test chamber method). VOCs were sampled on Tenax-TA and analysed using TD/GC/MSD/FID according to ISO 16000-6.	
Metric 2:	Analytical Methodology	Medium	2	Although it appears that standard methods were used, not many details were provided. Samples were analysed using TD/GC/MSD/FID according to ISO 16000-6.	
Metric 3:	Biomarker Selection	N/A	N/A	no biomarkers	
Domain 2: Representative					
Metric 4:	Testing Scenario	Low	3	Not US products. Don't know weight fractions of products.	
Metric 5:	Sample Size and Variability	Low	3	Only two samples per product type.	
Metric 6:	Temporality	Medium	2	10 years	
Domain 3: Accessibility/Clarity					
Metric 7:	Reporting of Results	Low	3	Only the maximum concentration provided.	
Metric 8:	Quality Assurance	N/A	N/A	Implied through the use of standard methods.	
Domain 4: Variability and Uncertainty					
Metric 9:	Variability and Uncertainty	Medium	2	only limited discussion of variability.	
Overall Quality Determination*		Low	2.4		
Extracted		Yes			
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Study Citation:	C Solal, C. Rousselle, C. Mandin, J. Manel, F. Maupetit. 2008. VOCs and formaldehyde emissions from cleaning products and air fresheners. International Conference on Indoor Air Quality and Climate (Indoor Air 2008).
Data Type	Experimental
Hero ID	4683353

Domain	Metric	Rating [†]	Score	Comments [‡]
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[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Jia, C. R.,D'Souza, J.,Batterman, S.. 2008. Distributions of personal VOC exposures: A population-based analysis. Environ-ment International.				
Data Type	Databases Not Unique to a Chemical				
Hero ID	484177				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	NHANES	
	Metric 2: Analytical Methodology	High	1	NHANES	
Domain 2: Representative					
	Metric 3: Geographic Area	High	1		
	Metric 4: Temporal	Low	3	Over 15 years old	
	Metric 5: Exposure Scenario	Medium	2	Indoor air, but not specifically linked to a consumer use.	
Domain 3: Accessibility/Clarity					
	Metric 6: Availability of DB and Supporting Documents	High	1		
	Metric 7: Reporting Results	Medium	2	No raw data, but complete summary stats	
Domain 4: Variability and Uncertainty					
	Metric 8: Variability and Uncertainty	N/A	N/A	Discussed exposure factors.	
Overall Quality Determination *		High	1.6		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Arif, A. A., Shah, S. M.. 2007. Association between personal exposure to volatile organic compounds and asthma among US adult population. International Archives of Occupational and Environmental Health.				
Data Type	Databases Not Unique to a Chemical				
Hero ID	729385				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	NHANES. Also contains VOC personal monitoring data.	
	Metric 2: Analytical Methodology	High	1	NHANES. Detailed description of laboratory protocols is available from the NCHS web site.	
Domain 2: Representative					
	Metric 3: Geographic Area	High	1	US	
	Metric 4: Temporal	Low	3	>15 yrs	
	Metric 5: Exposure Scenario	Low	3	Sample collected for 24-48 hrs. Not specific to indoors or to a consumer product. Personal activities were investigated.	
Domain 3: Accessibility/Clarity					
	Metric 6: Availability of DB and Supporting Documents	High	1	NHANES	
	Metric 7: Reporting Results	Medium	2	no min or max (but 95th CI provided)	
Domain 4: Variability and Uncertainty					
	Metric 8: Variability and Uncertainty	N/A	N/A		
Overall Quality Determination [*]		Medium	1.7		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

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^{*} 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 .

Study Citation:	Staples, C. A., Werner, A. F., Hoogheem, T. J.. 1985. Assessment of priority pollutant concentrations in the United States using STORET database. Environmental Toxicology and Chemistry.				
Data Type	Databases Not Unique to a Chemical				
Hero ID	1359400				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
Metric 1:	Sampling Methodology	High	1	STORET refers overall to "STORage and RETrieval", an electronic data system for water quality monitoring data; developed and approved source by EPA	
Metric 2:	Analytical Methodology	High	1	STORET refers overall to "STORage and RETrieval", an electronic data system for water quality monitoring data; developed and approved source by EPA	
Domain 2: Representative					
Metric 3:	Geographic Area	High	1		
Metric 4:	Temporal	Low	3	>15 yrs	
Metric 5:	Exposure Scenario	High	1	STORET refers overall to "STORage and RETrieval", an electronic data system for water quality monitoring data; developed and approved source by EPA	
Domain 3: Accessibility/Clarity					
Metric 6:	Availability of DB and Supporting Documents	High	1		
Metric 7:	Reporting Results	Medium	2	only median and number of samples	
Domain 4: Variability and Uncertainty					
Metric 8:	Variability and Uncertainty	N/A	N/A		
Overall Quality Determination *		High	1.4		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Oppt Monitoring Database. 2017. Trichloroethylene.			
Data Type	Databases Not Unique to a Chemical			
Hero ID	3970237			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Sampling Methodology	Medium	2	
	Metric 2: Analytical Methodology	Medium	2	
Domain 2: Representative				
	Metric 3: Geographic Area	High	1	
	Metric 4: Temporal	Medium	2	
	Metric 5: Exposure Scenario	Low	3	
Domain 3: Accessibility/Clarity				
	Metric 6: Availability of DB and Supporting Documents	Medium	2	
	Metric 7: Reporting Results	Medium	2	
Domain 4: Variability and Uncertainty				
	Metric 8: Variability and Uncertainty	N/A	N/A	
Overall Quality Determination *		Medium	2.0	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Household Products, Database. 2017. Household products database: Chemical information: Trichloroethylene.				
Data Type	Databases Not Unique to a Chemical				
Hero ID	3970269				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Sampling Methodology	High	1	Data submitted to EPA by manufacturers.	
	Metric 2: Analytical Methodology	N/A	N/A		
Domain 2: Representative					
	Metric 3: Geographic Area	High	1	US database.	
	Metric 4: Temporal	High	1	Data appears to be for 2010-2011 production volumes. 2016 data available.	
	Metric 5: Exposure Scenario	High	1	Indicates if a consumer use product.	
Domain 3: Accessibility/Clarity					
	Metric 6: Availability of DB and Supporting Documents	High	1	Widely accepted. Users Guide.	
	Metric 7: Reporting Results	Medium	2	Data is organized. Typically only provides range or max concentration for product category.	
Domain 4: Variability and Uncertainty					
	Metric 8: Variability and Uncertainty	N/A	N/A		
Overall Quality Determination [*]		High	1.2		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Consumer Product Information, Database. 2017. What's in it? trichloroethylene.				
Data Type	Databases Not Unique to a Chemical				
Hero ID	3981164				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
Metric 1:	Sampling Methodology	Low	3	Webpage provides only very limited info. Brands selected based on market share.	
Metric 2:	Analytical Methodology	N/A	N/A	Shelf survey. Just data	
Domain 2: Representative					
Metric 3:	Geographic Area	High	1	USA and canada database	
Metric 4:	Temporal	High	1	"Date verified" provided, some <5 yrs old.	
Metric 5:	Exposure Scenario	High	1	Weight fractions of consumer products.	
Domain 3: Accessibility/Clarity					
Metric 6:	Availability of DB and Supporting Documents	Low	3	No info how data collected or QC provided.	
Metric 7:	Reporting Results	Medium	2	Data is organized. No summary provided, so summary stats not applicable	
Domain 4: Variability and Uncertainty					
Metric 8:	Variability and Uncertainty	N/A	N/A		
Overall Quality Determination *		Medium	1.8		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Bartzis, J.. 2018. Prioritization of building materials as indoor pollution sources (BUMA).			
Data Type	Databases Not Unique to a Chemical			
Hero ID	4663145			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Sampling Methodology	N/A	N/A	
	Metric 2: Analytical Methodology	N/A	N/A	
Domain 2: Representative				
	Metric 3: Geographic Area	High	1	
	Metric 4: Temporal	Medium	2	
	Metric 5: Exposure Scenario	Medium	2	
Domain 3: Accessibility/Clarity				
	Metric 6: Availability of DB and Supporting Documents	High	1	
	Metric 7: Reporting Results	High	1	
Domain 4: Variability and Uncertainty				
	Metric 8: Variability and Uncertainty	N/A	N/A	
Overall Quality Determination *		High	1.4	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Page, G. W.. 1981. Comparison of groundwater and surface water for patterns and levels of contamination by toxic substances. Environmental Science and Technology.				
Data Type	Completed Exposure Assessment				
Hero ID	18169				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	Medium	2	measurements, approaches are described briefly. But not in detail.	
Domain 2: Representative	Metric 2: Exposure Scenario	Medium	2	surface water study. geography of area is described. but it's quite old study.(data collected in 1979)	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Low	3	variability/uncertainty is not discussed.	
Overall Quality Determination *		Medium	2.0		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Wallace, L. A., Pellizzari, E., Leaderer, B., Zelon, H., Sheldon, L.. 1987. Emissions of volatile organic compounds from building materials and consumer products. Atmospheric Environment.				
Data Type	Completed Exposure Assessment				
Hero ID	23126				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	Medium	2	Did not describe why selected the one study to compare vs others.	
Domain 2: Representative	Metric 2: Exposure Scenario	Medium	2	Indoor air concentrations, but not specific to a product.	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	Medium	2	secondary data - only the average concentration was reported for comparison.	
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Medium	2	No SD provided for indoor concentrations. They did explain why chamber vs indoor air concentrations may differ.	
Overall Quality Determination*		Medium	2.0		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	U.S, E. P. A.. 2001. Sources, emission and exposure for trichloroethylene (TCE) and related chemicals.				
Data Type	Completed Exposure Assessment				
Hero ID	35002				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	Medium	2	Government report, but did not describe lit search methods	
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	For surface water secondary data, does not provide location within US.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	High	1		
Overall Quality Determination *		High	1.5		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Fuller, B. B.. 1976. Air pollution assessment of tetrachloroethylene.				
Data Type	Completed Exposure Assessment				
Hero ID	58062				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	Low	3	No description of literature search method.	
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	US study and media of interest (water, biota on pg 64), but the secondary data is from 1975.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Low	3	no discussion related to the concentrations in the environment	
Overall Quality Determination *		Medium	2.2		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Hughes, K., Meek, M. E., Windle, W.. 1994. Trichloroethylene: evaluation of risks to health from environmental exposure in Canada. Journal of environmental Science and Health, Part C: Environmental Carcinogenesis & Ecotoxicology Reviews.				
Data Type	Completed Exposure Assessment				
Hero ID	62268				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	Low	3	Detailed intake equation and lit search methods not provided.	
Domain 2: Representative					
	Metric 2: Exposure Scenario	Low	3	Based on air concentration over 15 years old	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Medium	2	intake calculated for various age groups, but no detailed discussions.	
Overall Quality Determination *		Medium	2.2		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Yeh, H. C.,Kastenberg, W. E.. 1991. Health risk assessment of biodegradable volatile organic chemicals: a case study of PCE, TCE, DCE and VC. Journal of Hazardous Materials.			
Data Type	Completed Exposure Assessment			
Hero ID	79798			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Methodology	High	1	
Domain 2: Representative				
	Metric 2: Exposure Scenario	Low	3	The study is quite old(>15 yrs old). Surved data is not identified as drinking/surface water, indoor/outdoor air.
Domain 3: Accessibility/Clarity				
	Metric 3: Documentation of References	High	1	
Domain 4: Variability and Uncertainty				
	Metric 4: Variability and Uncertainty	High	1	
Overall Quality Determination *		High	1.5	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Shah, J. J.,Singh, H. B.. 1988. Distribution of volatile organic chemicals in outdoor and indoor air: a national VOCs data base. Environmental Science and Technology.				
Data Type	Completed Exposure Assessment				
Hero ID	95570				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	Medium	2	data source and collection method is briefly described. but details are not served(just quote from references).	
Domain 2: Representative	Metric 2: Exposure Scenario	Low	3	Indoor and outdoor air study. but it's quite old (1988) and indoor/outdoor is not identified because graphs and table are not visible.	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	Low	3	References provided, but not sure if they are for the data presented or not.	
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Low	3	No discussion	
Overall Quality Determination *		Low	2.8		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Duboudin, C.. 2010. Pollution inside the home: descriptive analyses Part II: Identification of groups of homogenous homes in terms of pollution. Environnement, Risques & Sante.				
Data Type	Completed Exposure Assessment				
Hero ID	380600				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	Medium	2	Limited discussion of methods, but references provided for sampling and analytical methodology.	
Domain 2: Representative	Metric 2: Exposure Scenario	Medium	2	survey from 2003-2005	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	Medium	2	Some references that would be useful to review are in French.	
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Medium	2	Conducted statistical analysis to group comparable homes. No CV of concentrations provided.	
Overall Quality Determination *		Medium	2.0		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	C. J. Weschler. 2009. Changes in indoor pollutants since the 1950s. Atmospheric Environment.				
Data Type	Completed Exposure Assessment				
Hero ID	695495				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	Low	3	Little discussion on methodology. Table 1 provides a sense of how and why an indoor environment in 2008 is so different from its counterpart in the early 1950s.	
Domain 2: Representative	Metric 2: Exposure Scenario	Medium	2	Article discusses trends in indoor pollutants. Table 2 reports selected pollutants (includes DCM, Carbon Tet, TCE, and PERC) and trends in their indoor concentrations since the 1950s. There are no concentration measurement; trends are broadly summarized by up and down arrows. Figure 4(a) reports median indoor concentrations of Carbon Tet, PERC, and TCE, but these data are derived from 1981-1984 TEAM Study and the 1999-2001 RIOPA study (secondary studies will not be extracted)	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	Medium	2	References are listed	
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Medium	2	The study has limited discussion of key uncertainties and limitations.	
Overall Quality Determination [*]		Medium	2.2		
Extracted		No			

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^{*} 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 .

Study Citation:	Wu, C.,Schaum, J.. 2000. Exposure assessment of trichloroethylene. Environmental Health Perspectives.			
Data Type	Completed Exposure Assessment			
Hero ID	724225			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Methodology	High	1	
Domain 2: Representative				
	Metric 2: Exposure Scenario	Low	3	The data of ambient air, SW, GW, and DW are served. but geography of SW is not clear, and data source is quite old (1995).
Domain 3: Accessibility/Clarity				
	Metric 3: Documentation of References	High	1	
Domain 4: Variability and Uncertainty				
	Metric 4: Variability and Uncertainty	High	1	
Overall Quality Determination *		High	1.5	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Dawson, H. E.,McAlary, T.. 2009. A compilation of statistics for VOCs from post-1990 indoor air concentration studies in North American residences unaffected by subsurface vapor intrusion. Ground Water Monitoring and Remediation.				
Data Type	Completed Exposure Assessment				
Hero ID	735303				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	High	1	Detailed description of literature evaluated and statistical analysis.	
Domain 2: Representative	Metric 2: Exposure Scenario	Low	3	Most studies are >15 yrs old, and not directly tied to consumer products.	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	High	1	robust discussion, discussed variability	
Overall Quality Determination *		High	1.5		
Extracted		No			

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* 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 .

Study Citation:	J. M. Logue, T. E. McKone, M. H. Sherman, B. C. Singer. 2011. Hazard assessment of chemical air contaminants measured in residences. Indoor Air.				
Data Type	Completed Exposure Assessment				
Hero ID	864159				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	High	1	Described lit search method. Compared concentrations to hazard levels.	
Domain 2: Representative	Metric 2: Exposure Scenario	Medium	2	Indoor air, but not consumer specific.	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	High	1	Provided mid range and upper range stats.	
Overall Quality Determination *		High	1.2		
Extracted		No			

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* 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 .

Study Citation:	. 1988. Toxic Air Pollutant Emission Factors Compilation For Selected Air Toxic Compounds and Sources.				
Data Type	Completed Exposure Assessment				
Hero ID	1265174				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	Low	3	mathematical approach is described very simply. But the discussion of the approach like validity is missed.	
Domain 2: Representative	Metric 2: Exposure Scenario	Medium	2	there are tables of emission factors of TCE and perc for industrial process. But data is quite old (>15yrs).	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	Low	3	input data is missed. some of un-peer reviewed sources are cited.	
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Low	3	variability/uncertainty is a bit discussed.	
Overall Quality Determination *		Low	2.8		
Extracted		Yes			

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* 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 .

Study Citation:	de Blas, M.,Navazo, M.,Alonso, L.,Durana, N.,Gomez, M. C.,Iza, J.. 2012. Simultaneous indoor and outdoor on-line hourly monitoring of atmospheric volatile organic compounds in an urban building. The role of inside and outside sources. Science of the Total Environment.			
Data Type	Completed Exposure Assessment			
Hero ID	1788276			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Methodology	High	1	
Domain 2: Representative				
	Metric 2: Exposure Scenario	High	1	The contractor comment downgraded the paper because it does not link directly to a consumer product, but that is not the purpose of the study. The indoor/outdoor mixing ration measurements can help inform background indoor air concentrations when considering risk due to use scenarios.
Domain 3: Accessibility/Clarity				
	Metric 3: Documentation of References	High	1	
Domain 4: Variability and Uncertainty				
	Metric 4: Variability and Uncertainty	High	1	
Overall Quality Determination *		High	1.0	
Extracted		No		

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[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Zaatari, M., Nirlo, E., Jareemit, D., Crain, N., Srebric, J., Siegel, J.. 2014. Ventilation and indoor air quality in retail stores: A critical review (RP-1596). HVACandR Research.			
Data Type	Completed Exposure Assessment			
Hero ID	2382442			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Methodology	High	1	
Domain 2: Representative				
	Metric 2: Exposure Scenario	High	1	
Domain 3: Accessibility/Clarity				
	Metric 3: Documentation of References	High	1	
Domain 4: Variability and Uncertainty				
	Metric 4: Variability and Uncertainty	High	1	
Overall Quality Determination [*]		High	1.0	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Batterman, S., Su, F. C., Li, S., Mukherjee, B., Jia, C., H. E. I. Health Review Committee. 2014. Personal exposure to mixtures of volatile organic compounds: modeling and further analysis of the RIOPA data. Research report (Health Effects Institute).				
Data Type	Completed Exposure Assessment				
Hero ID	2519571				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	Indoor analysis, but not directly related to a particular consumer product.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	High	1		
Overall Quality Determination *		High	1.2		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

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* 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 .

Study Citation:	Du, Z., Mo, J., Zhang, Y.. 2014. Risk assessment of population inhalation exposure to volatile organic compounds and carbonyls in urban China. Environment International.				
Data Type	Completed Exposure Assessment				
Hero ID	2536230				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	indoor air study. but not specified as consumer products.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	High	1		
Overall Quality Determination [*]		High	1.2		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	McDonald, G. J., Wertz, W. E.. 2007. PCE, TCE, and TCA vapors in subslab soil gas and indoor air: A case study in upstate New York. Ground Water Monitoring and Remediation.			
Data Type	Completed Exposure Assessment			
Hero ID	3543741			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Methodology	High	1	
Domain 2: Representative				
	Metric 2: Exposure Scenario	Medium	2	Indoor air study. but not specialized as consumer products.
Domain 3: Accessibility/Clarity				
	Metric 3: Documentation of References	High	1	
Domain 4: Variability and Uncertainty				
	Metric 4: Variability and Uncertainty	High	1	
Overall Quality Determination [*]		High	1.2	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Boutonnet, J. C.,De Rooij, C.,Garny, V.,Lecloux, A.,Papp, R.,Thompson, R. S.,Van Wijk, D.. 1998. Euro Chlor risk assessment for the marine environment OSPARCOM region: North sea - Trichloroethylene. Environmental Monitoring and Assessment.				
Data Type	Completed Exposure Assessment				
Hero ID	3571605				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	Geography is clear and there is surface water data. But the data is quite old. (>15 yrs old)	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Medium	2	variability is a little discussed.	
Overall Quality Determination *		High	1.5		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Ec., 2004. European Union risk assessment report: Trichloroethylene. Cas No: 79-01-6. EINECS No: 201-167-4. 1st Priority List, Vol. 31.			
Data Type	Completed Exposure Assessment			
Hero ID	3809353			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Methodology	High	1	
Domain 2: Representative				
	Metric 2: Exposure Scenario	Low	3	about 15 yrs old
Domain 3: Accessibility/Clarity				
	Metric 3: Documentation of References	High	1	
Domain 4: Variability and Uncertainty				
	Metric 4: Variability and Uncertainty	High	1	
Overall Quality Determination [*]		High	1.5	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	U.S, E. P. A.. 2011. Background indoor air concentrations of volatile organic compounds in North American residences (1990-2005): A compilation of statistics for assessment vapor intrusion.				
Data Type	Completed Exposure Assessment				
Hero ID	3827392				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	Medium	2	The assessment methods , assumptions are discribed simply for each studies which are collected by EPA.	
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	>10 yrs old	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	Medium	2	References are peer reviewed sources and compiled data are summarized. But no raw data.	
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	High	1		
Overall Quality Determination *		Medium	1.8		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	U.S, E. P. A.. 2014. TSCA Work plan chemical risk assessment: Trichloroethylene: Degreasing, spot cleaning and arts & crafts use.				
Data Type	Completed Exposure Assessment				
Hero ID	3970201				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	some of data source are >5yrs old.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	High	1		
Overall Quality Determination [*]		High	1.2		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	ToxNet Hazardous Substances Data, Bank. 2017. HSDB: Trichloroethylene.				
Data Type	Completed Exposure Assessment				
Hero ID	3970280				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	Some values are from quite old studies.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Medium	2	no overall summarization or discussion of uncertainty.	
Overall Quality Determination [*]		High	1.5		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Chimcomplex, S. A. Borzesti. 2014. Chemical safety report: Industrial use of trichloroethylene (TCE) as a solvent as a degreasing agent in closed systems.				
Data Type	Completed Exposure Assessment				
Hero ID	3970803				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Unacceptable	4	Applicable data is limited to occupational exposure.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	Low	3	not clear whether the references are peer-reviewed or not.	
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Low	3	no discussion.	
Overall Quality Determination [*]		Unacceptable	4.0	Metric mean score ^{**} : 2.8.	
Extracted		No			

^{**} 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.

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Geiss, Richard. 2014. Chemical safety report: Use of trichloroethylene in formulation.				
Data Type	Completed Exposure Assessment				
Hero ID	3970804				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	Unacceptable	4	assumptions for the surface water modeling not provided.	
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	Mostly about workers. But estimated concentration for surface water provided.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	Unacceptable	4	PEC (modeled estimates) from EUSES are provided for surface water, but no inputs provided. No references, however ,this appears to be only part of a report.	
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Low	3	no discussion for variability or uncertainty	
Overall Quality Determination *		Unacceptable	4.0	Metric mean score ^{**} : 3.2.	
Extracted		No			

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[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Geiss, Richard. 2014. Chemical safety report: Use of trichloroethylene in packaging.				
Data Type	Completed Exposure Assessment				
Hero ID	3970805				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	Unacceptable	4	They provided a PEC for surface water, but did not state the model used.	
Domain 2: Representative	Metric 2: Exposure Scenario	Medium	2	Germany	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	Unacceptable	4	no reference section	
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Low	3	nodiscussion for variability an uncertainty	
Overall Quality Determination *		Unacceptable	4.0	Metric mean score ^{**} : 3.2.	
Extracted		No			

^{**} 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.

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Spolana, a s. 2014. Chemical safety report: Trichloroethylene.				
Data Type	Completed Exposure Assessment				
Hero ID	3970807				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	report of EU. quite new report.(<5 yrs old)	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Low	3	no discussion of uncertainty.	
Overall Quality Determination*		Medium	1.8		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Domo Caproleuna GmbH. 2014. Chemical safety report: Industrial use as an extractive solvent for the purification of caprolactam from caprolactam oil.				
Data Type	Completed Exposure Assessment				
Hero ID	3970809				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	not US. quite new report.(<5 yrs old)	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	Low	3	consumer exposure is not applicable. brief result of risk characterization for water is shown.	
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Low	3	not discussed	
Overall Quality Determination *		Medium	2.2		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	D. O. W. Deutschland. 2014. Chemical safety report: Uses of trichloroethylene in formulation.				
Data Type	Completed Exposure Assessment				
Hero ID	3970810				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	Unacceptable	4	No assumption provided for PEC (estimated conc) of surface water)	
Domain 2: Representative	Metric 2: Exposure Scenario	Low	3	>15 years.	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	Unacceptable	4	No reference section.	
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Low	3	no discussion for variability and uncertainty	
Overall Quality Determination *		Unacceptable	4.0	Metric mean score ^{**} : 3.5.	
Extracted		No			

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[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	D. O. W. Deutschland. 2014. Chemical safety report: Industrial use as process chemical (enclosed systems) in Alcantara material production.				
Data Type	Completed Exposure Assessment				
Hero ID	3970811				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	Medium	2	EUSES is an accepted model. but part of information is black painted.	
Domain 2: Representative	Metric 2: Exposure Scenario	Medium	2	quite new report. but not US.	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Low	3	no discussion	
Overall Quality Determination *		Medium	2.0		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	D. O. W. Deutschland. 2014. Chemical safety report: Use of trichloroethylene in industrial parts cleaning by vapour degreasing in closed systems where specific requirements (system of use-parameters) exist.				
Data Type	Completed Exposure Assessment				
Hero ID	3970823				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	Unacceptable	4	It doesn't refer to how PECs were calculated.	
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	quite new report. values of fresh/marine water is shown. but not US.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	Low	3	no references	
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Low	3	no discussion	
Overall Quality Determination *		Unacceptable	4.0	Metric mean score ^{**} : 3.0.	
Extracted		No			

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[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Vlisco Netherlands, B. V.. 2014. Chemical safety report Part A: Use of trichloroethylene as a solvent for the removal and recovery of resin from dyed cloth.				
Data Type	Completed Exposure Assessment				
Hero ID	3970833				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Low	3	No discussion	
Overall Quality Determination [*]		High	1.5		
Extracted		Yes			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	. 2014. Exposure assessment: Trichloroethylene.			
Data Type	Completed Exposure Assessment			
Hero ID	3970837			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability	Metric 1: Methodology	Low	3	assumptions not well described
Domain 2: Representative	Metric 2: Exposure Scenario	Low	3	Estimates for a facility in EU that uses TCE as a processing aide.
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	Unacceptable	4	No reference section. Although this looks like it may be part of a larger report.
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Low	3	Not discussed.
Overall Quality Determination *		Unacceptable	4.0	Metric mean score ^{**} : 3.2.
Extracted		No		

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[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Parker Hannifin, Manufacturing. 2014. Chemical safety report: Use of trichloroethylene as a process solvent for the manufacturing of hollow fibre gas separation membranes out of polyphenylene oxide (PPO).				
Data Type	Completed Exposure Assessment				
Hero ID	3970838				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	not US(EU). quite new report (< 5 yrs old).	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	Medium	2	Some data are not clear whether it's based on peer reviewed references or not.	
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Medium	2	risk evaluation is conducted for multiple scenarios. uncertainty is not discussed.	
Overall Quality Determination *		Medium	1.8		
Extracted		Yes			

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[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	R. A. G. Aktiengesellschaft. 2014. Chemical safety report: Trichloroethylene.			
Data Type	Completed Exposure Assessment			
Hero ID	3970841			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability	Metric 1: Methodology	Unacceptable	4	No assumptions for the EUSES modeling for surface water
Domain 2: Representative	Metric 2: Exposure Scenario	Low	3	No consumer. Another country. Not many details provided on assumptions.
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	Unacceptable	4	No reference section.
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Low	3	no discussion for variability and uncertainty
Overall Quality Determination *		Unacceptable	4.0	Metric mean score ^{**} : 3.5.
Extracted		No		

^{**} 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.

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	. 2014. Exposure assessment: Trichloroethylene, Part 3.			
Data Type	Completed Exposure Assessment			
Hero ID	3970842			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
Metric 1:	Methodology	Low	3	Used EUSES but didn't describe inputs
Domain 2: Representative				
Metric 2:	Exposure Scenario	Medium	2	based on industrial releases but not in US (EU).
Domain 3: Accessibility/Clarity				
Metric 3:	Documentation of References	Low	3	no references are shown.
Domain 4: Variability and Uncertainty				
Metric 4:	Variability and Uncertainty	Low	3	No discussion of variability/uncertainty
Overall Quality Determination [*]		Low	2.8	
Extracted		Yes		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Iarc,. 2014. IARC Monographs on the evaluation of carcinogenic risks to humans: Trichloroethylene, tetrachloroethylene, and some other chlorinated agents.				
Data Type	Completed Exposure Assessment				
Hero ID	3970844				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	Some exposure data are quite old.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Medium	2	uncertainty of exposure data is not discussed	
Overall Quality Determination [*]		High	1.5		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	National Toxicology, Program. 2015. Monograph on trichloroethylene.			
Data Type	Completed Exposure Assessment			
Hero ID	3980992			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Methodology	High	1	
Domain 2: Representative				
	Metric 2: Exposure Scenario	High	1	
Domain 3: Accessibility/Clarity				
	Metric 3: Documentation of References	High	1	
Domain 4: Variability and Uncertainty				
	Metric 4: Variability and Uncertainty	High	1	
Overall Quality Determination [*]		High	1.0	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	. 2010. Case studies in environmental medicine: tetrachloroethylene toxicity.			
Data Type	Completed Exposure Assessment			
Hero ID	3980995			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Methodology	Low	3	no methodology or other details are shown.
Domain 2: Representative				
	Metric 2: Exposure Scenario	Medium	2	in US. a bit old. (> 5 yrs old)
Domain 3: Accessibility/Clarity				
	Metric 3: Documentation of References	High	1	
Domain 4: Variability and Uncertainty				
	Metric 4: Variability and Uncertainty	Medium	2	uncertainty is discussed in several section.
Overall Quality Determination [*]		Medium	2.0	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	U.S, E. P. A.. 2017. Trichloroethylene market and use report.				
Data Type	Completed Exposure Assessment				
Hero ID	3981036				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Low	3	No discussion	
Overall Quality Determination [*]		High	1.5		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Environment Canada, Health Canada. 1993. Canadian Environmental protection act priority substances list assessment report trichloroethylene.				
Data Type	Completed Exposure Assessment				
Hero ID	3981155				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	Media of interest and Canadian, but most of the data is old.(>15 yrs old)	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Medium	2	uncertainty is not discussed.	
Overall Quality Determination *		High	1.5		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Nih,. 2016. Report on carcinogens: Trichloroethylene.				
Data Type	Completed Exposure Assessment				
Hero ID	3982332				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	Medium	2	did not provide details on lit search method	
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	Secondary source of one indoor air study, not directly ties to consumer use (study in HERO). No surface water.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Low	3	No discussion of uncertainty.	
Overall Quality Determination *		Medium	2.0		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Atsdr,. 2014. Draft toxicological profile for trichloroethylene.			
Data Type	Completed Exposure Assessment			
Hero ID	3982339			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
	Metric 1: Methodology	High	1	
Domain 2: Representative				
	Metric 2: Exposure Scenario	High	1	
Domain 3: Accessibility/Clarity				
	Metric 3: Documentation of References	High	1	
Domain 4: Variability and Uncertainty				
	Metric 4: Variability and Uncertainty	High	1	
Overall Quality Determination [*]		High	1.0	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Ecsa,. 2015. Product safety summary on trichloroethylene.			
Data Type	Completed Exposure Assessment			
Hero ID	3982475			
Domain	Metric	Rating [†]	Score	Comments [‡]
Domain 1: Reliability				
Metric 1:	Methodology	Low	3	No documentation of lit search methods.
Domain 2: Representative				
Metric 2:	Exposure Scenario	Low	3	Not much exposure info in source.
Domain 3: Accessibility/Clarity				
Metric 3:	Documentation of References	Low	3	No reference section,
Domain 4: Variability and Uncertainty				
Metric 4:	Variability and Uncertainty	N/A	N/A	
Overall Quality Determination [*]		Low	3.0	
Extracted		No		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

^{*} 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 .

Study Citation:	Dhhs,. 2015. Draft: Skin notation (SK) profile trichloroethylene (TCE).				
Data Type	Completed Exposure Assessment				
Hero ID	3986442				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	Medium	2	No discussion of lit search methods.	
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	not exposure media interest.	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Medium	2	no discussion of uncertainty. Multiple studies summarized.	
Overall Quality Determination*		Medium	1.8		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	Wu.,et al.,. 2001. Sources, emissions and exposures for trichloroethylene (TCE) and related chemicals.				
Data Type	Completed Exposure Assessment				
Hero ID	4152270				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	High	1		
Domain 2: Representative					
	Metric 2: Exposure Scenario	Low	3	US study. but surface water or consumer exposure is described too simly. and quite old study (>15 yrs old)	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	High	1		
Overall Quality Determination *		High	1.5		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

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High: ≥ 1 to < 1.7 ; Medium: ≥ 1.7 to < 2.3 ; Low: ≥ 2.3 to ≤ 3 .

Study Citation:	Herbert, P.,Charbonnier, P.,Rivolta, L.,Servais, M.,Van Mensch, F.,Campbell, I.. 1986. The occurrence of chlorinated solvents in the environment. Prepared by a workshop of the European Chemical Industry Federation (CEFIC). Chemistry and Industry.				
Data Type	Completed Exposure Assessment				
Hero ID	4152304				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	Low	3	There is no actual description of assessment.	
Domain 2: Representative					
	Metric 2: Exposure Scenario	Low	3	The data of surface water is shown. but not US (Europe), and quite old (> 15 yrs)	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Medium	2	several scenarios are shown. no discussion for uncertainty.	
Overall Quality Determination *		Medium	2.2		
Extracted		No			

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* 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 .

Study Citation:	Department of National, Health, Welfare, . 1993. Trichloroethylene. Supporting documentation, health related sections for the Canadian Environmental Protection Act (CEPA) Priority Substances List assessment report.				
Data Type	Completed Exposure Assessment				
Hero ID	4152318				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Methodology	Medium	2	limited info on lit search method	
Domain 2: Representative					
	Metric 2: Exposure Scenario	Medium	2	Canadian, media of interest. but quite olde report (>15 yrs)	
Domain 3: Accessibility/Clarity					
	Metric 3: Documentation of References	High	1		
Domain 4: Variability and Uncertainty					
	Metric 4: Variability and Uncertainty	Medium	2	No discussion of uncertainties.	
Overall Quality Determination [*]		Medium	1.8		
Extracted		No			

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^{*} 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 .

Study Citation:	Delmaar, J. E.. Emission of chemical substances from solid matrices: a method for consumer exposure assessment.				
Data Type	Completed Exposure Assessment				
Hero ID	4663189				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability	Metric 1: Methodology	Low	3	The report discusses the literature review, assumptions, and limitations of the model. The discussion on data and extrapolations from the model are limited due to data availability and lack of tested data.	
Domain 2: Representative	Metric 2: Exposure Scenario	Low	3	The study models volatile substances using summarized data and does not specifically model 1-BP. Sample and surrogate data used may be similar, but the emphasis on building materials is not in alignment with 1BP uses.	
Domain 3: Accessibility/Clarity	Metric 3: Documentation of References	Low	3	Numerous studies are referenced, but their use is not always clear or directly related to the text and/or data.	
Domain 4: Variability and Uncertainty	Metric 4: Variability and Uncertainty	Low	3	Variabilities and uncertainties are addressed, but not as they apply to 1-BP or its specific exposure environments. Models are built on surrogate parameter values which introduces large degrees of uncertainty.	
Overall Quality Determination *		Low	3.0		
Extracted		No			

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* 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 .

Study Citation:	U.S, E. P. A.. 1987. Household solvent products: A national usage survey.				
Data Type	Survey				
Hero ID	1005969				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Data Collection Methodology	High	1		
	Metric 2: Data Analysis Methodology	High	1		
Domain 2: Representative					
	Metric 3: Geographic Area	High	1	Nationwide (U.S.A.) survey with outreach via random dialing and willingness to provide address and respond to survey.	
	Metric 4: Sampling / Sampling Size	High	1		
	Metric 5: Response Rate	Medium	2	The survey response rate is documented and the response rate is >40-70 percent, indicating that the survey results will likely represent the target population.	
Domain 3: Accessibility/Clarity					
	Metric 6: Reporting of Results	High	1		
	Metric 7: Quality Assurance	Medium	2	No quality control issues were identified that would impact the results.	
Domain 4: Variability and Uncertainty					
	Metric 8: Variability and Uncertainty	N/A	N/A	Variability of population studies through survey questions, but limited discussion of survey uncertainties discussed.	
Overall Quality Determination *		High	1.3		
Extracted		Yes			

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* 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 .

Study Citation:	Farrow, A., Taylor, H., Northstone, K., Golding, J., Avon Longitudinal, Study. 2003. Symptoms of mothers and infants related to total volatile organic compounds in household products. Archives of Environmental Health.				
Data Type	Survey				
Hero ID	2443306				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Data Collection Methodology	Medium	2	<p>Data collection methodology discussed. The Avon Longitudinal Study of Parents and Children (ALSPAC) is a population-based study of children born to women who resided in Avon (United Kingdom) during their pregnancy and who had an expected delivery date between April 1, 1991, and December 31, 1992. There were 14,541 pregnant women enrolled in this study, and a cohort of 13,971 of their children was still being followed at age 12 mo. The goal of the ALSPAC is to evaluate environmental, genetic, and social factors that can influence the health of infants and their mothers. Information was collected from mothers through self-report questionnaires at different times during their pregnancy, as well as after the infant's birth, to ascertain family and household characteristics, parental occupations, and other socioeconomic factors. The purpose of this study within the ALSPAC was (a) to determine indoor levels of VOCs relative to the use of specific household products and (b) to identify households in which total VOC (TVOC) levels were high. Investigation of the entire cohort of children and their parents further identified common health effects at different points of data collection. We asked subjects to complete a questionnaire that had questions about the frequency of use of 9 common household products that contain high proportions of VOCs. A total of 13,164 women completed the 1st questionnaire when they were 8 wk pregnant. Of these women, 10,976 completed a 2nd questionnaire 8 mo after birth, and 10,119 completed a 3rd questionnaire when their child was 21 mo of age. We assumed that information about household product use during early pregnancy reflected routine use of these products" rather than later uses which might include cleaning that occurred because the infant was now a member of the household (e.g., use of products to ensure special cleanliness in the infant's environment). The types of household products examined were window cleaners, carpet cleaners, dry-cleaning fluids, turpentine or white spirit, paint stripper, house paints or varnishes, pesticides, other aerosols or sprays, and air fresheners. The categories of use were (a) never or less than once per week, (b) once per week, and (c) daily on most days.</p>	
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Study Citation:	Farrow, A., Taylor, H., Northstone, K., Golding, J., Avon Longitudinal Study. 2003. Symptoms of mothers and infants related to total volatile organic compounds in household products. Archives of Environmental Health.			
Data Type	Survey			
Hero ID	2443306			

Domain	Metric	Rating [†]	Score	Comments [‡]
	Metric 2: Data Analysis Methodology	Medium	2	Statistical analyses. Mean TVOC levels were calculated on the basis of the monthly values from the living rooms and main bedrooms of the homes monitored in the BRE indoor air study (N = 170). Households with less than 5 TVOC readings for the year were excluded from the analysis. TVOC levels were dichotomized into 2 percentiles: < 75th percentile and " 75th percentile. Use of each of the 9 household products during early pregnancy was dichotomized to < 1/wk and " 1/wk. We used Pearson's chi-square and Fisher's Exact test (crosstabs) to evaluate the relationships between VOC levels in the homes and product use during early pregnancy. We then used products that were statistically significantly associated with higher TVOC levels in the analysis of the entire cohort to determine if use of these products was associated with reporting of symptoms for infants or mothers. For the total cohort, we applied logistic-regression analysis to obtain adjusted odds ratios (ORs) for each symptom with use of a specific product for different frequencies of use, to determine if the odds of experiencing a symptom increased as use of the product increased. Adjustments were made for education, mother's age, housing tenure, number of children in the home, number of smokers in the home, paid job subsequent to birth of the child, dampness or condensation in the home, mold in the home, type of winter heating fuel, and month the questionnaire was completed. The first 6 variables controlled for socioeconomic status; the latter 4 controlled for seasonal ventilation differences that might have influenced the build-up of VOCs (from indoor sources).

Domain 2: Representative				
	Metric 3: Geographic Area	High	1	United Kingdom

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Study Citation:	Farrow, A., Taylor, H., Northstone, K., Golding, J., Avon Longitudinal Study. 2003. Symptoms of mothers and infants related to total volatile organic compounds in household products. Archives of Environmental Health.			
Data Type	Survey			
Hero ID	2443306			

Domain	Metric	Rating [†]	Score	Comments [‡]
	Metric 4: Sampling / Sampling Size	Medium	2	The Avon Longitudinal Study of Parents and Children (ALSPAC) is a population-based study of children born to women who resided in Avon (United Kingdom) during their pregnancy and who had an expected delivery date between April 1, 1991, and December 31, 1992. There were 14,541 pregnant women enrolled in this study, and a cohort of 13,971 of their children was still being followed at age 12 mo. The goal of the ALSPAC is to evaluate environmental, genetic, and social factors that can influence the health of infants and their mothers. Information was collected from mothers through self-report questionnaires at different times during their pregnancy, as well as after the infant's birth, to ascertain family and household characteristics, parental occupations, and other socioeconomic factors. We asked subjects to complete a questionnaire that had questions about the frequency of use of 9 common household products that contain high proportions of VOCs.
	Metric 5: Response Rate	Medium	2	We asked subjects to complete a questionnaire that had questions about the frequency of use of 9 common household products that contain high proportions of VOCs. A total of 13,164 women completed the 1st questionnaire when they were 8 wk pregnant. Of these women, 10,976 completed a 2nd questionnaire 8 mo after birth, and 10,119 completed a 3rd questionnaire when their child was 21 mo of age. Of the 170 total homes included in this focused study, at least 10 samples were returned from each of 109 households, and at least 5 samples were returned from each of 148 households. The 3,339 total samples represented 73 percent of the number of potential samples. The highest and lowest TVOC concentrations from individual samples were 11.4 mg/m ³ (in a living room) and 0.02 mg/m ³ (in a main bedroom), respectively. The highest and lowest geometric mean concentrations of TVOCs in the living room and bedroom, from a total of 12 samples from any house, were 1.559 mg/m ³ and 0.063 mg/m ³ , respectively. The percentiles of mean TVOC concentrations in the living rooms and bedrooms are contained in the Notes in Table 1.

Domain 3: Accessibility/Clarity

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Study Citation:	Farrow, A., Taylor, H., Northstone, K., Golding, J., Avon Longitudinal Study. 2003. Symptoms of mothers and infants related to total volatile organic compounds in household products. Archives of Environmental Health.			
Data Type	Survey			
Hero ID	2443306			
Domain	Metric	Rating [†]	Score	Comments [‡]
	Metric 6: Reporting of Results	Medium	2	No supporting information or raw data available. Table 1 reports products used during pregnancy that were associated significantly with greater than/equal to 75th percentile geometric mean of measured Total Volatile Organic Compounds (TVOCs). No data reported specifically for TCE.
	Metric 7: Quality Assurance	Medium	2	No quality control issues were identified
Domain 4: Variability and Uncertainty				
	Metric 8: Variability and Uncertainty	N/A	N/A	For example, in 33 homes all readings in both the living room and the main bedroom were less than 0.4 mg/m ³ . In 5 homes, the TVOC concentrations for both rooms always exceeded the stated value. Caution is required when our data are compared with results reported by others and with recommended guidelines, which may be based on a different definition of TVOC.
Overall Quality Determination *		Medium	1.9	
Extracted		Yes		

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

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* 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 .

Study Citation:	S. L. Miller, M. J. Anderson, E. P. Daly, J. B. Milford. 2002. Source apportionment of exposures to volatile organic compounds I Evaluation of receptor models using simulated exposure data. Atmospheric Environment.				
Data Type	Modeling				
Hero ID	30661				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Mathematicl Equations	Medium	2	key equations or uptakes are not in the data source. But theory is described in detail.	
	Metric 2: Model Evaluation	Low	3	corroboration of model, QA are not described.	
Domain 2: Representative					
	Metric 3: Exposure Scenario	Low	3	all data set are >15yrs old.	
Domain 3: Accessibility/Clarity					
	Metric 4: Model and Model Documentation Availability	Low	3	insufficient documentation in the data source	
	Metric 5: Model Inputs and Defaults	Low	3	inputs are described, but description is not detail.	
Domain 4: Variability and Uncertainty					
	Metric 6: Variability and Uncertainty	Medium	2	discussion of uncertainty is limited though, differences between model results are described.	
Overall Quality Determination *		Low	2.7		
Extracted		No			

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High: ≥ 1 to < 1.7 ; Medium: ≥ 1.7 to < 2.3 ; Low: ≥ 2.3 to ≤ 3 .

Study Citation:	Serrano-Trespalacios, P. I., Ryan, L., Spengler, J. D.. 2004. Ambient, indoor and personal exposure relationships of volatile organic compounds in Mexico City metropolitan area. Journal of Exposure Analysis and Environmental Epidemiology.				
Data Type	Modeling				
Hero ID	56224				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Mathematicl Equations	Low	3	Not provided in source. Provided in Hamlett, 2003.	
	Metric 2: Model Evaluation	Low	3	Model described in supplemental source Hamlett, 2003. Monitoring results also provided to compare.	
Domain 2: Representative					
	Metric 3: Exposure Scenario	Medium	2	Indoor air	
Domain 3: Accessibility/Clarity					
	Metric 4: Model and Model Documentation Availability	Low	3	Model described in supplemental source Hamlett, 2003.	
	Metric 5: Model Inputs and Defaults	Medium	2		
Domain 4: Variability and Uncertainty					
	Metric 6: Variability and Uncertainty	Medium	2	Monitoring results also provided.	
Overall Quality Determination [*]		Low	2.5		
Extracted		Yes			

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High: ≥ 1 to < 1.7 ; Medium: ≥ 1.7 to < 2.3 ; Low: ≥ 2.3 to ≤ 3 .

Study Citation:	McKnight, U. S., Funder, S. G., Rasmussen, J., Finkel, M., Binning, P. J., Bjerg, P. L.. 2010. An integrated model for assessing the risk of TCE groundwater contamination to human receptors and surface water ecosystems. Ecological Engineering.				
Data Type	Modeling				
Hero ID	2128201				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Mathematicl Equations	High	1	equations presented	
	Metric 2: Model Evaluation	Medium	2	We additionally propose that conducting subsequent supplementary field studies is highly necessary to improve the evaluation of modeling results, when ecosystem modeling input is restricted to only a few species which potentially are not present at the site in question.	
Domain 2: Representative					
	Metric 3: Exposure Scenario	Low	3	Surface water concentrations from contaminated groundwater.	
Domain 3: Accessibility/Clarity					
	Metric 4: Model and Model Documentation Availability	High	1		
	Metric 5: Model Inputs and Defaults	High	1		
Domain 4: Variability and Uncertainty					
	Metric 6: Variability and Uncertainty	High	1		
Overall Quality Determination*		High	1.5		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

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High: ≥ 1 to < 1.7 ; Medium: ≥ 1.7 to < 2.3 ; Low: ≥ 2.3 to ≤ 3 .

Study Citation:	Rippen, G.,Klopffer, W.,Frische, R.,Gunther, K. O.. 1984. The Environmental Model Segment Approach For Estimating Potential Environmental Concentrations. II. Application Of The Model To p-Dichlorobenzene And Trichloroethane. Ecotoxicology and Environmental Safety.				
Data Type	Modeling				
Hero ID	2800950				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Mathematical Equations	High	1		
	Metric 2: Model Evaluation	Medium	2	limited validation against literature	
Domain 2: Representative					
	Metric 3: Exposure Scenario	Medium	2		
Domain 3: Accessibility/Clarity					
	Metric 4: Model and Model Documentation Availability	High	1		
	Metric 5: Model Inputs and Defaults	High	1		
Domain 4: Variability and Uncertainty					
	Metric 6: Variability and Uncertainty	High	1		
Overall Quality Determination *		High	1.3		
Extracted		No			

[†] High = 1; Medium = 2; Low = 3; Unacceptable = 4; N/A has no value.

[‡] The overall rating is calculated as necessary. EPA may not always provide a comment for a metric that has been categorized as High.

* 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 .

Study Citation:	H. F. Frasch, A. L. Bunge. 2015. The transient dermal exposure II: post-exposure absorption and evaporation of volatile compounds. Journal of Pharmaceutical Sciences.				
Data Type	Modeling				
Hero ID	3230538				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Mathematicl Equations	High	1	Key mathematical equations to calculate fractional absorption & evaporation are clearly defined.	
	Metric 2: Model Evaluation	Medium	2	It is not certain if this model has undergone extensive evaluation. The authors state that the theory should be tested by controlled in vitro experiments using skin or artificial membranes.	
Domain 2: Representative					
	Metric 3: Exposure Scenario	High	1		
Domain 3: Accessibility/Clarity					
	Metric 4: Model and Model Documentation Availability	High	1		
	Metric 5: Model Inputs and Defaults	Medium	2	Data quality acceptance criteria specified by the author are not discussed, but inputs appear appropriate.	
Domain 4: Variability and Uncertainty					
	Metric 6: Variability and Uncertainty	Low	3	Key uncertainties, limitations, and data gaps are not discussed.	
Overall Quality Determination *		Medium	1.7		
Extracted		No			

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* 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 .

Study Citation:	Coulibaly, L., Labib, M. E., Hazen, R.. 2004. A GIS-based multimedia watershed model: development and application. Chemosphere.				
Data Type	Modeling				
Hero ID	3393249				
Domain	Metric	Rating [†]	Score	Comments [‡]	
Domain 1: Reliability					
	Metric 1: Mathematicl Equations	High	1		
	Metric 2: Model Evaluation	Medium	2		
Domain 2: Representative					
	Metric 3: Exposure Scenario	Medium	2		
Domain 3: Accessibility/Clarity					
	Metric 4: Model and Model Documentation Availability	High	1		
	Metric 5: Model Inputs and Defaults	High	1		
Domain 4: Variability and Uncertainty					
	Metric 6: Variability and Uncertainty	Medium	2		
Overall Quality Determination *		High	1.5		
Extracted		Yes			

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