United States
Environmental Protection Agency

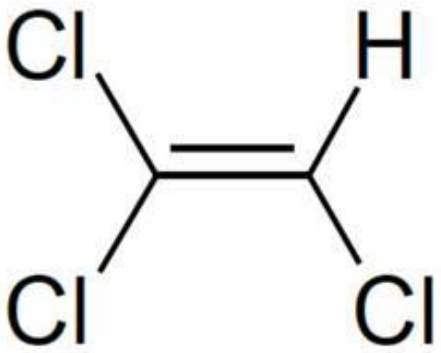
Office of Chemical Safety and
Pollution Prevention

Risk Evaluation for Trichloroethylene

Systematic Review Supplemental File:

Data Quality Evaluation for Data Sources on Consumer and Environmental Exposure

CASRN: 79-01-6



February 2020

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	75108	Monitoring	Murray, A. J.,Riley, J. P.. 1973. Occurrence of some chlorinated aliphatic hydrocarbons in the environment. Nature 242	**14**
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	632310	Monitoring	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 112	**17**
	632484	Monitoring	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 366	**18**
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	658643	Monitoring	Amaral, O. C.,Otero, R.,Grimalt, J. O.,Albaiges, J.. 1996. Volatile and semivolatile organochlorine compounds in tap and riverine waters in the area of influence of a chlorinated organic solvent factory. Water Research 30	**23**
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	660096	Monitoring	Huybrechts, T.,Dewulf, J.,Van Langenhove, H.. 2005. Priority volatile organic compounds in surface waters of the southern North Sea. Environmental Pollution 133	**25**
	730121	Monitoring	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 70	**26**

733119	Monitoring	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 111	**28**
824555	Monitoring	Chao, C. Y.,Chan, G. Y.. 2001. Quantification of indoor VOCs in twenty mechanically ventilated buildings in Hong Kong. Atmospheric Environment 35	**29**
1024859	Monitoring	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 40	**30**
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1066049	Monitoring	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 14	**32**
1391354	Monitoring	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.	**34**
1441544	Monitoring	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 18	**35**
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1940132	Monitoring	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 90	**37**
1940784	Monitoring	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 79	**38**
1946098	Monitoring	McDonald, T. J.,Kennicutt M C, I. I.,Brooks, J. M.. 1988. VOLATILE ORGANIC COMPOUNDS AT A COASTAL GULF OF MEXICO SITE. Chemosphere 17	**39**
2095308	Monitoring	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 407	**40**

2128010	Monitoring	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 177	**41**
2128575	Monitoring	Su, F. C.,Mukherjee, B.,Batterman, S.. 2013. Determinants of personal, indoor and outdoor VOC concentrations: An analysis of the RIOPA data. Environmental Research 126	**42**
2189687	Monitoring	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 84	**43**
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2277377	Monitoring	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 54	**45**
2310570	Monitoring	Yamamoto, K.,Fukushima, M.,Kakutani, N.,Tsuruho, K.. 2001. Contamination of vinyl chloride in shallow urban rivers in Osaka, Japan. Water Research 35	**46**
2331366	Monitoring	D'Souza, J. C.,Jia, C.,Mukherjee, B.,Batterman, S.. 2009. Ethnicity, housing and personal factors as determinants of VOC exposures. Atmospheric Environment 43	**47**
2442846	Monitoring	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 40	**48**
2443355	Monitoring	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 24	**49**
2532227	Monitoring	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 80	**50**
2799613	Monitoring	Yang, G. uiP,Yang, B. in,Lu, X. L. an,Ding, H. aiB,He, Z.. 2014. Spatio-temporal variations of sea surface halocarbon concentrations and fluxes from southern Yellow Sea. Biogeochemistry 121	**51**
2800175	Monitoring	Insogna, S.,Frison, S.,Marconi, E.,Bacaloni, A.. 2014. Trends of volatile chlorinated hydrocarbons and trihalomethanes in Antarctica. International Journal of Environmental Analytical Chemistry 94	**52**
2801663	Monitoring	Ofstad, E. B.,Drangsholt, H.,Carlberg, G. E.. 1981. Analysis of volatile halogenated organic compounds in fish. Science of the Total Environment 20	**53**

2802879	Monitoring	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 24	**54**
2803418	Monitoring	Dawes, V. J.,Waldock, M. J.. 1994. Measurement of Volatile Organic Compounds at UK National Monitoring Plan Stations. Marine Pollution Bulletin 28	**55**
3004792	Monitoring	Wallace, L. A.. 1987. The total exposure assessment methodology (TEAM) study: Summary and analysis: Volume I. 1	**56**
3052892	Monitoring	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 95	**57**
3242836	Monitoring	Christof, O.,Seifert, R.,Michaelis, W.. 2002. Volatile halogenated organic compounds in European estuaries. Biogeochemistry 59	**58**
3488897	Monitoring	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 186	**59**
3501965	Monitoring	Blanco, S.,Bécares, E.. 2010. Are biotic indices sensitive to river toxicants? A comparison of metrics based on diatoms and macro-invertebrates. Chemosphere 79	**60**
3503486	Monitoring	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 568	**61**
3543217	Monitoring	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 54	**62**
3545469	Monitoring	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 8	**63**
3570809	Monitoring	Fielding, M.,Gibson, T. M.,James, H. A.. 1981. Levels of trichloroethylene, tetrachloroethylene and para-dichlorobenzene in groundwaters. Environmental Technology Letters 2	**64**
3572385	Monitoring	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 91	**65**
3580141	Monitoring	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 54	**66**

380600	Completed Exposure Assessment	Duboudin, C.. 2010. Pollution inside the home: descriptive analyses Part II: Identification of groups of homogenous homes in terms of pollution. Environnement, Risques & Sante 9	**95**
695495	Completed Exposure Assessment	C. J. Weschler. 2009. Changes in indoor pollutants since the 1950s. Atmospheric Environment 43	**96**
724225	Completed Exposure Assessment	Wu, C.,Schaum, J.. 2000. Exposure assessment of trichloroethylene. Environmental Health Perspectives 108	**97**
735303	Completed Exposure Assessment	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 29	**98**
864159	Completed Exposure Assessment	J. M. Logue, T. E. McKone, M. H. Sherman, B. C. Singer. 2011. Hazard assessment of chemical air contaminants measured in residences. Indoor Air 21	**99**
1265174	Completed Exposure Assessment	. 1988. Toxic Air Pollutant Emission Factors Compilation For Selected Air Toxic Compounds and Sources.	**100**
1788276	Completed Exposure Assessment	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 426	**101**
2382442	Completed Exposure Assessment	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 20	**102**
2519571	Completed Exposure Assessment	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)	**103**
2536230	Completed Exposure Assessment	Du, Z.,Mo, J.,Zhang, Y.. 2014. Risk assessment of population inhalation exposure to volatile organic compounds and carbonyls in urban China. Environment International 73	**104**
3543741	Completed Exposure Assessment	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 27	**105**
3571605	Completed Exposure Assessment	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 53	**106**
3809353	Completed Exposure Assessment	Ec,. 2004. European Union risk assessment report: Trichloroethylene. Cas No: 79-01-6. EINECS No: 201-167-4. 1st Priority List, Vol. 31. 31	**107**

3827392	Completed Exposure Assessment	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.	**108**
3970201	Completed Exposure Assessment	U.S, E. P. A.. 2014. TSCA Work plan chemical risk assessment: Trichloroethylene: Degreasing, spot cleaning and arts & crafts use.	**109**
3970280	Completed Exposure Assessment	ToxNet Hazardous Substances Data, Bank. 2017. HSDB: Trichloroethylene.	**110**
3970803	Completed Exposure Assessment	Chimcomplex, S. A. Borzesti. 2014. Chemical safety report: Industrial use of trichloroethylene (TCE) as a solvent as a degreasing agent in closed systems.	**111**
3970804	Completed Exposure Assessment	Geiss, Richard. 2014. Chemical safety report: Use of trichloroethylene in formulation.	**112**
3970805	Completed Exposure Assessment	Geiss, Richard. 2014. Chemical safety report: Use of trichloroethylene in packaging.	**113**
3970807	Completed Exposure Assessment	Spolana, a s. 2014. Chemical safety report: Trichloroethylene.	**114**
3970809	Completed Exposure Assessment	Domo Caproleuna GmbH. 2014. Chemical safety report: Industrial use as an extractive solvent for the purification of caprolactam from caprolactam oil.	**115**
3970810	Completed Exposure Assessment	D. O. W. Deutschland. 2014. Chemical safety report: Uses of trichloroethylene in formulation.	**116**
3970811	Completed Exposure Assessment	D. O. W. Deutschland. 2014. Chemical safety report: Industrial use as process chemical (enclosed systems) in Alcantara material production.	**117**
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.	**118**
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.	**119**
3970837	Completed Exposure Assessment	. 2014. Exposure assessment: Trichloroethylene.	**120**
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).	**121**
3970841	Completed Exposure Assessment	R. A. G. Aktiengesellschaft. 2014. Chemical safety report: Trichloroethylene.	**122**
3970842	Completed Exposure Assessment	. 2014. Exposure assessment: Trichloroethylene, Part 3.	**123**

56224	Modeling	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 1	**141**
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	**142**
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	**143**
3393249	Modeling	Coulibaly, L.,Labib, M. E.,Hazen, R.. 2004. A GIS-based multimedia watershed model: development and application. Chemosphere 55	**144**

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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 detailes 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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			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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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.
Domain 3: Accessibility/Clarity					

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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‡
	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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	Detailed methods. Samples packed on ice and then frozen until analysis. No length of storage provided.
	Metric 2:	Analytical Methodology	Medium	2	Analysis using National Bureau of Standards procedure, but modified. Older method (1976). Three recovery internal standards added. GC/MS.
	Metric 3:	Biomarker Selection	N/A	N/A	
Domain 2: Representativeness					
	Metric 4:	Geographic Area	High	1	
	Metric 5:	Currency	Low	3	1980
	Metric 6:	Spatial and Temporal Variability	Low	3	Either 5 individual or 1 composite sample per biota type
	Metric 7:	Exposure Scenario	Medium	2	Media and chemical of interest, and in US, however, it is an older study so may not reflect current conditions,
Domain 3: Accessibility/Clarity					
	Metric 8:	Reporting of Results	Medium	2	No raw data. Only mean provided if 5 samples collected.
	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	Not dicsussed
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	
	Metric 5:	Currency	Low	3	Over 15 years old
	Metric 6:	Spatial and Temporal Variability	High	1	Over 90 individuals
	Metric 7:	Exposure Scenario	Medium	2	Indoor air samples not linked to specific consumer products.
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	The method of sampling is well discribed. But its duration is not discribed.
	Metric 2:	Analytical Methodology	High	1	
	Metric 3:	Biomarker Selection	N/A	N/A	No biomarker
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	Enough number of samples(50 normal houses and 38 "sick" houses), but no mention of replicates.
	Metric 7:	Exposure Scenario	High	1	
Domain 3: Accessibility/Clarity					
	Metric 8:	Reporting of Results	Medium	2	Data mostly presented as summary statistics. But just part of raw data is shown.
	Metric 9:	Quality Assurance	Low	3	Quality assurance is not directly 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 infomation 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:	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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 noncarbonyls, 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	N/A	N/A	>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*			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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 discus any uncertainities.
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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		

[†] 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.,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	Inddor 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 etal.,2006).
	Metric 2:	Analytical Methodology	Medium	2	GC with FID/MS.. Few details provided. but more info in companion doc (Ramalho etal.,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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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-MSConcentrations 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 cosumer 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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. Journal of Exposure Analysis and Environmental Epidemiology.
Data Type	Monitoring
Hero ID	1066049

Domain	Metric	Rating†	Score	Comments‡
	Metric 10: Variability and Uncertainty	High	1	Indoor"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"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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	NAWQA protocols for fixed-site sampling are designed to assess the spatial and temporal distribution of water quality in relation to various streamflow conditions and consist of water-quality sample collection at each fixed site monthly or more frequently (Gilliom and others, 1995).
	Metric 2:	Analytical Methodology	Low	3	USGS lab, but no details in this report on the insstruments. "All other water-quality samples were shipped to the USGS National Water-Quality Laboratory (NWQL) in Denver, Colo., for analysis."
	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	Low	3	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*			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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 calubration 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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, liiations
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ to ≤ 3.

Study Citation:	Jia, C.,Batterman, S.,Godwin, C.,Charles, S.,Chin, J. Y.. 2010. Sources and migration of volatile organic compounds in mixed-use buildings. Indoor Air.
Data Type	Monitoring
Hero ID	2214330

Domain		Metric	Rating†	Score	Comments‡
Domain 1: Reliability					
	Metric 1:	Sampling Methodology	Medium	2	sampling method is simply described. but calibration, storage condition are not provided. they might be in reference articles.
	Metric 2:	Analytical Methodology	Medium	2	analytical method is simply described. but calibration,detection limits, recovery are not provided. they might be in reference articles..
	Metric 3:	Biomarker Selection	N/A	N/A	indoor air study
Domain 2: Representativeness					
	Metric 4:	Geographic Area	High	1	
	Metric 5:	Currency	Medium	2	Samples collected in 2005-2006 and 2008 (>5yrs old)
	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	data is summarized as a table. but no raw data.
	Metric 9:	Quality Assurance	Medium	2	Some discussion of QA/QC measures and issues.
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	
	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	>5 yrs old
	Metric 6:	Spatial and Temporal Variability	High	1	
	Metric 7:	Exposure Scenario	Medium	2	Indoor air study, but not for consumer exposure.
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	1.3	
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	Low	3	no details. (they are reported in another paper, Lu et al., 2010)
	Metric 2:	Analytical Methodology	Low	3	no details. (they are reported in another 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	Medium	2	samples are collected in 2012.
	Metric 6:	Spatial and Temporal Variability	Medium	2	no replicate.
	Metric 7:	Exposure Scenario	High	1	
Domain 3: Accessibility/Clarity					
	Metric 8:	Reporting of Results	Medium	2	no summary or statistical results.
	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	2.2	
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ to ≤ 3.

Study Citation:	Yang, G. uiP,Yang, B. in,Lu, X. L. an,Ding, H. aiB,He, Z.. 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 refered.
	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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 darta.
	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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 notes, 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	
	Metric 5:	Currency	High	1	
	Metric 6:	Spatial and Temporal Variability	Medium	2	sample size may be large. but not described clearly.
	Metric 7:	Exposure Scenario	Unacceptable	4	study does not separate out surface water from ground water samples
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 collocted >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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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		

[†] 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:	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‡
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 lo8 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).

Continued on next page

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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 about1 m and it is well mixed vertically. Near its upper end, Back River receives 1.5-1.9 x lo8 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	
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 equiribrium 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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.
[‡] 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:	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.
[‡] 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:	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		

[†] 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:	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		

[†] 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:	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	Sampling method is based on widely accepted standard. But the calibration of sample storages/sampler is not described. The emission test chamber method is described in ISO 16000-9. VOCs were sampled based on ISO 16000-6.
	Metric 2:	Analytical Methodology	Medium	2	Analytical method is based on widely accepted standard. But the instrument calibration, recovery samples are not described 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	High	1	
	Metric 5:	Sample Size and Variability	Low	3	Only two samples per product type.
	Metric 6:	Temporality	Medium	2	10 years(>5yrs)
Domain 3: Accessibility/Clarity					
	Metric 7:	Reporting of Results	Medium	2	Raw data is showed. But only the maximum concentration is provided.
	Metric 8:	Quality Assurance	N/A	N/A	Widely accepted standards are described however, exact description of QA is missed.
Domain 4: Variability and Uncertainty					
	Metric 9:	Variability and Uncertainty	Low	3	discussion of uncertainty/variability is quite 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ to ≤ 3.

Study Citation:	Jia, C. R.,D'Souza, J.,Batterman, S.. 2008. Distributions of personal VOC exposures: A population-based analysis. Environment 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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.
[‡] 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:	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
	Metric 2:	Analytical Methodology	High	1	STORET
Domain 2: Representative					
	Metric 3:	Geographic Area	High	1	
	Metric 4:	Temporal	Low	3	>15 yrs
	Metric 5:	Exposure Scenario	High	1	STORET
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	Sampling method not discussed - secondary source of info.
	Metric 2:	Analytical Methodology	N/A	N/A	Analytical method not discussed - secondary source of info.
Domain 2: Representative					
	Metric 3:	Geographic Area	High	1	
	Metric 4:	Temporal	Medium	2	Data of various ages.
	Metric 5:	Exposure Scenario	Medium	2	Not an exact match except for NMP
Domain 3: Accessibility/Clarity					
	Metric 6:	Availability of DB and Supporting Documents	High	1	
	Metric 7:	Reporting Results	High	1	References listed. Emission rates were from fits to concentration data.
Domain 4: Variability and Uncertainty					
	Metric 8:	Variability and Uncertainty	N/A	N/A	
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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		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:	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	
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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		

[†] 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:	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		

[†] 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:	. 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		

[†] 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:	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		

[†] 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:	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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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.
[‡] 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:	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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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		

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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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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		

[**] 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:	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		

[†] 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:	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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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 uncertinty.
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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.
[*] 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:	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		

[†] 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:	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		

[†] 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:	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 paramater values which introduces large degrees of uncertainty.
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	
Domain 3: Accessibility/Clarity					
	Metric 6:	Reporting of Results	High	1	
	Metric 7:	Quality Assurance	Medium	2	
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 uncertainities discussed.
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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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	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.

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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/m3 (in a living room) and 0.02 mg/m3 (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/m3 and 0.063 mg/m3, 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				
	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.

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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 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/m3. 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.
‡ 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:	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		

[†] 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:	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		

[†] 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:	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.
[‡] 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:	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:	Mathematicl 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: $=\geq 1.7$ to < 2.3; Low: $=\geq 2.3$ 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		

[†] 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.