United States
Environmental Protection Agency

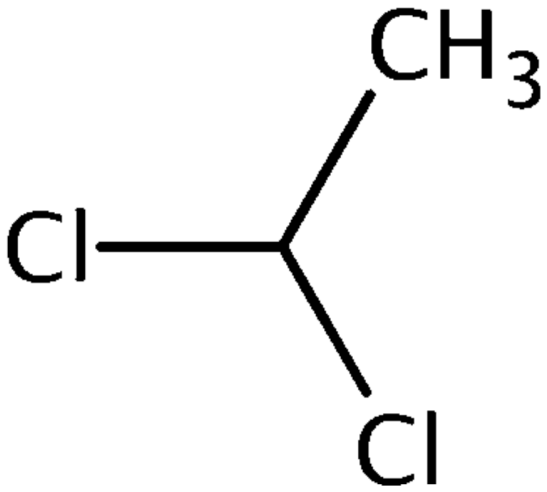
July 2024
Office of Chemical Safety and
Pollution Prevention

Draft Risk Evaluation for 1,1-Dichloroethane

Systematic Review Supplemental File:

Data Quality Evaluation and Data Extraction Information for Environmental Fate and Transport

CASRN: 75-34-3



July 2024

This supplemental file contains information regarding the data extraction and evaluation results for data sources that were considered for the *Draft Risk Evaluation for 1,1-Dichloroethane* that underwent systematic review. EPA used the TSCA systematic review process described in the *Draft Systematic Review Protocol Supporting TSCA Risk Evaluations for Chemical Substances* (also referred to as the '2021 Draft Systematic Review Protocol'). The systematic review steps are further described in the *Draft Risk Evaluation for 1,1-Dichloroethane - Systematic Review Protocol*. EPA conducted data extractions and data quality evaluations based on author-reported descriptions and results; additional analyses (*e.g.*, statistical analyses) potentially conducted by EPA are not contained in this supplemental file. Additionally, the overall quality determination (OQD) for each reference represents the data as a whole for each study, and not for individual metric domains within a study. Within the contents of this document, 1,1-dichloroethane may be referred to as the acronyms 1,1-DCA and 1,1-DCE. The acronyms 1,2-DCA, 1,2-DCE, and DCE refer to the chemical 1,2-dichloroethane. The acronyms 1,1,2-TCE, 1,1,2-TCA, and TCE refer to the chemical 1,1,2-trichloroethane. The acronym trans-1,2-DCE refers to the chemical trans-1,2-dichloroethylene. The acronym 1,2-DCP refers to the chemical 1,2-dichloropropane.

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Study Citation:	Howard, C. J., Evenson, K. M. (1976). Rate constants for the reactions of OH with ethane and some halogen substituted ethanes at 296 K. Journal of Chemical Physics 64(11):4303-4306.
OECD Harmonized Template:	Photolysis in Air
HERO ID:	29180

EXTRACTION

Parameter	Data
CASRN and Test Material	Not Reported; 1,1-dichloroethane
Confidentiality, Type, Guideline	No; Experimental; other: Discharge-flow system and laser magnetic resonance detection of OH used for the absolute reaction rate constants
Solvent, Reactivity, Storage, Stability	Helium; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; Not Reported; 99.86%
Duration and Test Temperature	Not Reported; 296 K
Light Source, Intensity, and additional light details	NA; Not Reported; Not applicable; OH radicals generated from H and NO2
Source Wavelength Lower and Upper	Not Reported; Not Reported
Test Details and Control	At pressures of 100 to 1000 Pa (0.7-7 torr); results compared to measurements on similar compounds
Initial Concentration, Reference Compound	Not Reported Not Reported; Not Reported
Substance Wavelength Lower and Upper	NA; NA
Direct Quantum Yield Results, Direct Half Life by Loss Lower and Upper	Not Reported; Not Reported; Not Reported
Indirect Type Results, Indirect Rate Constant Lower and Upper	Not Reported; 260E-15 cm3/molecule.sec; Not Reported
Method Details Results and Products Details Results	Not Reported; Not Reported
Parameter Value and Parameter Results	Not Reported; Not Reported
Reference Substance Results, Percent Degradation Results and Standard Deviation Results	Not Reported; Not Reported; ±60
Results Remarks, Sample time Results, Results Details	tropospheric lifetime (SRC calculated) = 44.5 days based on τ= 1/k[OH], where [OH]=10E6; Not Reported; Not Reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
Metric 2:	Test Substance Purity	Medium	The test substance source was not reported.
Domain 2: Test Design			
Metric 3:	Study Controls	Medium	Some concurrent control group details were not included; however, the lack of data was not likely to have a substantial impact on study results.

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Study Citation:	Howard, C. J., Evenson, K. M. (1976). Rate constants for the reactions of OH with ethane and some halogen substituted ethanes at 296 K. Journal of Chemical Physics 64(11):4303-4306.
OECD Harmonized Template:	Photolysis in Air
HERO ID:	29180

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.
	Metric 7:	Testing Consistency	N/A	Test conditions were consistent across samples or study groups.
	Metric 8:	System Type and Design	N/A	Some system type and design info was not reported but this was not likely to have a substantial impact on study res
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.
	Metric 12:	Test Substance Purity	Medium	Details regarding sampling methods of the outcome(s) were not fully reported, and the omissions were not likely to have a substantial impact on study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups (if applicable) were considered and accounted for in data evaluation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.

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OECD Harmonized Template:	Photolysis in Air
HERO ID:	29180

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Jiang, Z., Taylor, P. H., Dellinger, B. (1992). Laser photolysis laser-induced fluorescence studies of the reaction of OH with 1,1-dichloroethane over an extended temperature-range. The Journal of Physical Chemistry 96(22):8964-8966.
OECD Harmonized Template:	Photolysis in Air
HERO ID:	1937630

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Experimental; other: laser photolysis/laser-induced fluorescence technique
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Duration and Test Temperature	45-90 seconds; 294-800K
Light Source, Intensity, and additional light details	laser-induced fluorescence; 1-2 mJ/cm2; Not applicable
Source Wavelength Lower and Upper	193.3 nm; Not applicable
Test Details and Control	Hydroxyl radicals produced by 193.3-nm photodissociation of CH3CHC12/N20/H20/He gas mixtures; Not reported
Initial Concentration, Reference Compound	Not reported OH concentration ranged from 2E+10 to 4E+10 molecules/cm3 as estimated using published values of the N2O absorption coefficient; Not reported
Substance Wavelength Lower and Upper	Not reported; Not reported
Direct Quantum Yield Results, Direct Half Life by Loss Lower and Upper	Not reported; Not reported; Not reported
Indirect Type Results, Indirect Rate Constant Lower and Upper	Not reported; Not reported; Not reported
Method Details Results and Products Details Results	Not reported; Not reported
Parameter Value and Parameter Results	absolute rate coefficient; k1 = 2.82x10-13 cm3/molecule.sec at 294 Kk2 = 1.7x10-11 cm3/molecule.s
Reference Substance Results, Percent Degradation Results and Standard Deviation Results	Not reported; Not applicable; ±0.14
Results Remarks, Sample time Results, Results Details	GC/MS analysis indicated a purity of>99% with no detectable olefinic impuritiesk2: factor estimated by analogy with other chlorocarbon radical recombination reactions; Not reported; .alpha.-hydrogen abstractionk1: CH3-CHCl2 + OH -> CH3CCl2 (+ CH2CHCl2) + H20k2: CH3CCl2 + OH -> CH3C(OH)Cl2

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	High	The test substance purity was reported. The test substance source was not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.

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Study Citation:	Jiang, Z., Taylor, P. H., Dellinger, B. (1992). Laser photolysis laser-induced fluorescence studies of the reaction of OH with 1,1-dichloroethane over an extended temperature-range. The Journal of Physical Chemistry 96(22):8964-8966.
OECD Harmonized Template:	Photolysis in Air
HERO ID:	1937630

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	High	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 8:	System Type and Design	Medium	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some data and half-life data was not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — High

Study Citation:	Salomon, D., Kirk, A. W., Tschuikowroux, E. (1977). Primary processes in 147-nm photolysis of 1,1-dichloroethane. International Journal of Chemical Kinetics 9(4):619-628.
OECD Harmonized Template:	Photolysis in Air
HERO ID:	1937710

EXTRACTION

Parameter	**Data**
CASRN and Test Material	Not Reported; 1,1-Dichloroethane
Confidentiality, Type, Guideline	no; experimental; other: non-guideline: photolysis
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Eastman Kodak; NR; ca. 99.9% (fractionally distilled in a conventional glass apparatus) Notes: NR
Duration and Test Temperature	not specified; room temperature
Light Source, Intensity, and additional light details	liquid oxygen cooled xenon resonance lamp; relative intensity of the 129.5 nm line was never greater than 1%; intensities ca. 1.5±0.15E13 photons/s; not reported
Source Wavelength Lower and Upper	147 nm; not reported
Test Details and Control	not reported; not reported
Initial Concentration, Reference Compound	not reported; not reported
Substance Wavelength Lower and Upper	not reported; not reported
Direct Quantum Yield Results, Direct Half Life by Loss Lower and Upper	CH3CHCl2 -> CH2CHCl + HCl ≥ 0.65; CH3CHCl2 -> CH2CCl2 + H2 ca. 0.05; CH3CHCl2 -> CH3CH + Cl2 ≥ 0.20; CH3CHCl2 -> CH4 + CCl2 = 0.03; CH3CHCl2 -> CH3 + CHCl2 = 0.02; not reported; not reported
Indirect Type Results, Indirect Rate Constant Lower and Upper	not reported; not reported; not reported
Method Details Results and Products Details Results	Product identification via isothermal GC; In order of decreasing quantum yields: C2H3Cl, C2H4, C2H2, 1,1-C2H2Cl2, and CH4; 90% was identified as vinyl chloride, ethylene, and acetylene; small quantities of C2H6, C2H5Cl, and CH2Cl2 detected
Parameter Value and Parameter Results	not reported; not reported
Reference Substance Results, Percent Degradation Results and Standard Deviation Results	not reported; not reported; not reported
Results Remarks, Sample time Results, Results Details	not reported; not reported; not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified.
	Metric 2:	Test Substance Purity	High	The source and purity were reorted.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.
Domain 3: Test Conditions				

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Study Citation:	Salomon, D., Kirk, A. W., Tschuikowroux, E. (1977). Primary processes in 147-nm photolysis of 1,1-dichloroethane. International Journal of Chemical Kinetics 9(4):619-628.
OECD Harmonized Template:	Photolysis in Air
HERO ID:	1937710

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	Low	The test method was conducted at 147 nm.
	Metric 6:	Testing Conditions	Low	Specific test conditions were not reported.
	Metric 7:	Testing Consistency	High	Testing was consistent across study groups.
	Metric 8:	System Type and Design	Medium	Limited detail regarding the system type and design.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Rates and half-lives were not reported; however, degradation products were identified.
	Metric 12:	Test Substance Purity	High	Sampling was appropriate.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to the study type.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Analytical details were limited
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited detail regarding calculations.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination — Medium

Study Citation:	Jeffers, P. M., Ward, L. M., Woytowitch, L. M., Wolfe, N. L. (1989). Homogeneous hydrolysis rate constants for selected chlorinated methanes, ethanes, ethenes, and propanes. Environmental Science & Technology 23(8):965-969.
OECD Harmonized Template:	Hydrolysis
HERO ID:	661098

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Experimental; other: Neutral and base catalyzed hydrolysis; a range of pH and temperature evaluated. Arrhenius temperature dependence assumed.
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Either Aldrich, Eastman, Pfaltz or Bauer (generalized for all substances tested); NR; Highest purity available Notes: 11-DCA
Buffer, Test Temperature, Number of Replicates	0.1 M pH 7 phosphate buffer or dilute NaOH or HCl solutions as necessary to achieve the desired conditions; 85-170°C; 5-20 time-concentration points analyzed in triplicate
Positive Controls and Negative Controls	Positive: Not reported; Negative: Not reported
pH and Duration	3-12; 30 min to several days (for all test materials; specific duration for tetrachloroethylene not specified)
Sampling Frequency and Test Setup	Not reported; zero dead-volume stainless steel tubes, glass bulbs drawn from 7-mm-o.d. borosilicate tubing, or zero dead-volume septum vial capped with a Teflon-lined septum
Concentration	Final solutions were less than 10% saturated with organic test material -
Analytical Method, Analytical Details, and Statistics	GC using aqueous on-column injections with FID, ECD and/or HELCD; Details specific to target were not reported; r squared >0.95
Transformation Products	vinyl chloride (alkaline hydrolysis); ethylene glycol (neutral hydrolysis)
Reference Substance and Reference Substance Results	NR; several test substances included; Not reported
Percent Recovery, Hydrolysis Rate Constant, and Half-life	Not reported; k neutral=2.15E-8/min; k basic=7.20E-14/min; k observed=2.15E-8/min; 61.3 years
Results Remarks	k observed=k neutral + k basic

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name and CASRN.
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were stated in a general manner relating to all materials in the study.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Study controls were not included but this did not limit the interpretation of the results.
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were limited but this did not limit the interpretation of the results.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The method was suitable for the substance; test substance concentration was no higher than 10% of its water solubility limit.

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Study Citation:	Jeffers, P. M., Ward, L. M., Woytowitch, L. M., Wolfe, N. L. (1989). Homogeneous hydrolysis rate constants for selected chlorinated methanes, ethanes, ethenes, and propanes. Environmental Science & Technology 23(8):965-969.
OECD Harmonized Template:	Hydrolysis
HERO ID:	661098

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	Medium	Details regarding this metric were general but this did not limit the interpretation of the results.
	Metric 7:	Testing Consistency	Medium	Details regarding this metric were general but this did not limit the interpretation of the results.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 12:	Test Substance Purity	Medium	Details regarding this metric were not reported but this did not limit the interpretation of the results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Details regarding the analytical procedure were very general; this may limit meaningful/precise interpretation of the results.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — High

* Related References: HSDB; HERO ID 6629204

Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Hydrolysis
HERO ID:	6629204

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, Type, Guideline	None; Experimental; other: Guideline not specified
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Buffer, Test Temperature, Number of Replicates	Not reported; 25°C; Not reported
Positive Controls and Negative Controls	Positive: Not reported; Negative: Not reported
pH and Duration	3 - 12, results reported at pH 7; Not reported
Sampling Frequency and Test Setup	Not reported; Not reported
Concentration	Not reported
Analytical Method, Analytical Details, and Statistics	Not reported; Not reported; Not reported
Transformation Products	Not reported
Reference Substance and Reference Substance Results	Not reported; Not reported
Percent Recovery, Hydrolysis Rate Constant, and Half-life	Not reported; Neutral hydrolysis rate constant: 2.15x10-8/minBase-catalyzed rate constant: 7.2 x10-14/min; at pH 7: 61.3 years
Results Remarks	Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 8:	System Type and Design	N/A	Rating of this factor is not applicable to this kind of information.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.

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Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Hydrolysis
HERO ID:	6629204

Domain		Metric	EVALUATION Rating	Comments
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Rating of this factor is not applicable to this kind of information.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	The results are reasonable based on the data's inclusion in a peer- reviewed/recognized database or other secondary source.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results are reasonable based on the data's inclusion in a peer- reviewed/recognized database or other secondary source.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.

Overall Quality Determination Medium

* Related References: Jeffers PM et al; Environ Sci Technol 23: 965-969 (1989); HSDB

Study Citation:	Rathbun, R. E. (1998). Transport, behavior, and fate of volatile organic compounds in streams.
OECD Harmonized Template:	Hydrolysis
HERO ID:	29959

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	No; Experimental; other: Not reported; secondary source
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, Purity	Not Reported; Not Reported; Not Reported; Not Reported Notes: Not reported; secondary source
Buffer, Test Temperature, Number of Replicates	Not Reported; 25 C; Not Reported
Positive Controls and Negative Controls	Positive: Not Reported; Negative: Not Reported
pH and Duration	7; Not Reported
Sampling Frequency and Test Setup	Not Reported; Not Reported
Concentration	Not Reported
Analytical Method, Analytical Details, and Statistics	Not Reported; Not Reported; Not Reported
Transformation Products	Not Reported
Reference Substance and Reference Substance Results	Not Reported; Not Reported
Percent Recovery, Hydrolysis Rate Constant, and Half-life	Not Reported; Not Reported; 688 years
Results Remarks	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 8:	System Type and Design	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.

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Study Citation:	Rathbun, R. E. (1998). Transport, behavior, and fate of volatile organic compounds in streams.
OECD Harmonized Template:	Hydrolysis
HERO ID:	29959

Domain		Metric	EVALUATION Rating	Comments
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Due to limited information, evaluation of the reasonableness of the study results was not possible; however, additional information may be included in the source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination Medium

* Related References: Citing Mabey, W. R., Smith, J. H., Podoll, R. T., Johnson, H. L.,Mill, T., Chou, T.W., Gates, J., Waight Partridge, I., Jaber, H., Vandenberg, D. Aquatic fate data for organic priority pollutants. 1982. Not in HERO at the time of extraction, closest HERO IDs could be 18147 or 2531325.

Study Citation:	Rathbun, R. E. (1998). Transport, behavior, and fate of volatile organic compounds in streams.
OECD Harmonized Template:	Hydrolysis
HERO ID:	29959

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	No; Experimental; other: Not reported; secondary source
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, Purity	Not Reported; Not Reported; Not Reported; Not Reported Notes: Not reported; secondary source
Buffer, Test Temperature, Number of Replicates	Not Reported; 25 C; Not Reported
Positive Controls and Negative Controls	Positive: Not Reported; Negative: Not Reported
pH and Duration	7; Not Reported
Sampling Frequency and Test Setup	Not Reported; Not Reported
Concentration	Not Reported
Analytical Method, Analytical Details, and Statistics	Not Reported; Not Reported; Not Reported
Transformation Products	Not Reported
Reference Substance and Reference Substance Results	Not Reported; Not Reported
Percent Recovery, Hydrolysis Rate Constant, and Half-life	Not Reported; Not Reported; 58.2 years
Results Remarks	Half-life = 606 years at pH 7 and 10 deg C; 58.2 years at pH 5.6 and 25 deg C; 606 years at pH 5.6 and 10 deg C;

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 8:	System Type and Design	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.

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Study Citation:	Rathbun, R. E. (1998). Transport, behavior, and fate of volatile organic compounds in streams.
OECD Harmonized Template:	Hydrolysis
HERO ID:	29959

Domain		Metric	EVALUATION Rating	Comments
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Due to limited information, evaluation of the reasonableness of the study results was not possible; however, additional information may be included in the source cited.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination Medium

* Related References: Citing Washington, JW. 1995. Hydrolysis Rates of Dissolved Volatile Organic Compounds Principles Temperature Effects and Literature Review. HERO ID 658879.

Study Citation:	Rathbun, R. E. (1998). Transport, behavior, and fate of volatile organic compounds in streams.
OECD Harmonized Template:	Photolysis in Water
HERO ID:	29959

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-dichloroethane
Confidentiality, Type, Guideline	No; Experimental; Not Reported
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, Purity	Not Reported; Not Reported; Not Reported; Not Reported
Duration and Test Temperature	Not Reported; Not Reported
Light Source, Intensity, and additional light details	Not Reported; Not Reported; Not Reported
Source Wavelength Lower and Upper	Not Reported; Not Reported
Test Details and Control	Not Reported; Not Reported
Initial Concentration and Reference Compound	Not Reported Not Reported; Not Reported
Substance Wavelength Lower and Upper	Not Reported; Not Reported
Direct Quantum Yield Results, Direct Half Life by Loss Lower and Upper	Not Reported; Not Reported; Not Reported
Indirect Rate Constant Lower and Upper	Not Reported; Not Reported
Method Details Results and Products Details Results	Not Reported; Not Reported
Parameter Value and Parameter Results	Not Reported; Not Reported
Reference Compound, Reference Substance Results, Percent Degradation Results and Standard Deviation Results	Not Reported; Not Reported; Not Reported; Not Reported
Results Remarks, Sample time Results, Results Details	Not Reported; Not Reported; Oxidant = 1O2, singlet oxygen at a concentration of 10^-12 moles per liter, t1/2 = >2.2E5 years; Oxidant = R02•, peroxy radical at a concentration of 10^-9 moles per liter, t1/2 = 7.9E4 years; where t1/2 = half-life for the oxidation process

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the source cited likely contains more detail.

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Study Citation:	Rathbun, R. E. (1998). Transport, behavior, and fate of volatile organic compounds in streams.
OECD Harmonized Template:	Photolysis in Water
HERO ID:	29959

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 8:	System Type and Design	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the source cited likely contains more detail.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Not reported in this secondary source; the source cited likely contains more detail.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Medium

* Related References: Citing Mabey, W. R., Smith, J. H., Podoll, R. T., Johnson, H. L., Mill, T., Chou, T. W., Gates, J., Waight Partridge, I., Jaber, H., Vandenberg, D. Aquatic fate data for organic priority pollutants. 1982. Not in HERO at the time of extraction.

Study Citation:	Chen, C., Ballapragada, B. S., Puhakka, J. A., Strand, S. E., Ferguson, J. F. (1999). Anaerobic transformation of 1,1,1-trichloroethane by municipal digester sludge. Biodegradation 10(4):297-305.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1747965

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: degradation in anaerobic digester sludge
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Aldrich Chemical Company, Inc. Milwaukee, Wisconsin; NR; 99%
Blank and Control	Autoclaved killed controls included; Toxicity controls included using 1,1,1-trichloroethane
Oxygen and Inoculum	anaerobic; digested sludge: anaerobic sludge from a laboratory-scale digester primarily fed with WWTP sludge along with a mix of chlorinated compounds excluding TCA and other chloroethanes
Duration, Parameter, System, and Sampling Frequency	55 days; test mat.: Serum bottles incubated on a shaker at 150 rpm; liquid sampled at intervals ranging from every other day to every other week, depending on the rate of transformations
pH Adjusted and pH	Not Reported; 7
Concentration	Not Reported
Composition and Test Temperature	Reduced anaerobic mineral medium; mediumwas autoclaved and subsequently boiled while beingpurged with oxygen-free N2. NaHCO3 and Na2S.9H2O were added to the media after cooling; 35C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not applicable; Not Reported; volatile suspended solids=1.5-2.5 g/L in bottles; lactate was used as an electron donor
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Purge and trap with GC analysis with an electrolytic conductivity detector; LOD $\leq$0.5 umol/L; CH4 and CO2 analyzed by GC with a thermal conductivity detector; removal of test material; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	>70% after 2 weeks; ca. 75% after 54 days; Not reported; 14 days; 54 days; 30% loss of test material
Results Remarks and Results Details	chloroethane was the main byproduct formed and traces of ethane were detected; Not reported
Results Mean Total Recovery and Results per Recovery	Not reported; Not reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.
Domain 2: Test Design			
Metric 3:	Study Controls	High	Controls were included and appropriate.
Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.

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Study Citation:	Chen, C., Ballapragada, B. S., Puhakka, J. A., Strand, S. E., Ferguson, J. F. (1999). Anaerobic transformation of 1,1,1-trichloroethane by municipal digester sludge. Biodegradation 10(4):297-305.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1747965

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The method was suitable for test material.
	Metric 6:	Testing Conditions	High	Testing conditions were reported.
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Appropriate inoculum type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The method is suitable for biodegradation assessment.
	Metric 12:	Test Substance Purity	Medium	Sampling methods were appropriate.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Degradation in abiotic control reported but not addressed or corrected for in viable test.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			**High**	

Study Citation:	Enzminger, J. D. (1988). Anaerobic reductive dechlorination of C2 hydrocarbons in batch and fixed-film bioreactors.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5443549

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Non-guideline anaerobic serum bottle test
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Autoclaved, sterile controls; Not reported
Oxygen and Inoculum	anaerobic; sewage, domestic, non-adapted: Berkeley Heights or OldbridgeTownship sewage treatment plants in New Jersey
Duration, Parameter, System, and Sampling Frequency	9 weeks; test mat.: serum bottles with anaerobic sludge; time 0, week 1,2,3,5 from figure 4.24
pH Adjusted and pH	Not Reported; 7
Concentration	ca. 12 ppm
Composition and Test Temperature	Two salt solutions; 35°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; NA; media sparged with 30% carbon dioxide and 70% nitrogen; yes; Not Reported
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC-ECD, Cl by HPLC anion chromatography, methane, carbon dioxide, and nitrogen by GC-thermal conductivity detector; test substance disappearance; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	100% conversion to chloroethane in 2 weeks after 3 week lag period; Not reported; 9 weeks; Not reported
Results Remarks and Results Details	Not applicable; Not applicable
Results Mean Total Recovery and Results per Recovery	quantification by retention times and peak areas with standards prepared in n-pentane; Not applicable

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified by name.
Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported or explicitly verified by analytical means.
Domain 2: Test Design			
Metric 3:	Study Controls	Medium	A concurrent negative control was not reported.
Metric 4:	Test Substance Stability	High	Test substance preparation and storage conditions were reported and were appropriate for the study.
Domain 3: Test Conditions			

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Study Citation:	Enzminger, J. D. (1988). Anaerobic reductive dechlorination of C2 hydrocarbons in batch and fixed-film bioreactors.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5443549

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	Some matrix and test parameters (pH, temperature) were not explicitly reported.
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these discrepancies were not likely to have a substantial impact on study results.
	Metric 8:	System Type and Design	Medium	Equilibrium was likely established and the system was capable of maintaining substance concentrations.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcomes of interest.
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods were not fully reported, and the omissions may have a substantial impact on study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Variability in measurements were addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Extraction efficiency and mass balance were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Medium

Study Citation:	Huff, G. F., Braun, C. L., Lee, R. W. (2000). Assessment of potential for natural attenuation of chlorinated ethenes and ethanes in ground water at a petrochemical reclamation site, Harris County, Texas.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	664358

EXTRACTION

Parameter	Data
CASRN and Test Material	Not Reported; Not Reported
Confidentiality, EndPoint, Type, Guideline	No; Screening model used for assessment of reductive dechlorination in ground water; Field study with screening model BIOCHLOR; other: Natural attenuation at a petroleum chemical reclamation site
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, Purity	Not Reported; Contaminated groundwater; Not Reported; Not Reported
Blank and Control	Field blanks, trip blanks and method blanks included; Not applicable
Oxygen and Inoculum	Concentrations of dissolved oxygen in all well samples were â%■f0.37 mg/L indicating anaerobic conditions; Not Reported: Groundwater/sediment
Duration, Parameter, System, and Sampling Frequency	Not applicable; test material analysis: Ground water evaluated in Numerous Sand Channels Zone to assess natural attenuation; Ground water samples were collected from 16 wells
pH Adjusted and pH	No; pH measured in 16 wells ranged from 6.88-7.63
Concentration	< 10 - = 10180 Âµg/L
Composition and Test Temperature	Groundwater was contaminated with 1,1-dichloroethene; trans-1,2-dichloroethene; 1,1-dichloroethane; 1,2-dichloroethane; trichloroethene; and 1,1,2-trichloroethane; associated chemicals identified were vinyl chloride, 1,1-DCE, trans-1,2-DCE, 1,1-DCA, 1,2-DCA, TCE, 1,1,2-TCE, PCE; Not Reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not Reported; Not Reported; Yes; Site analysis indicated iron-III-reducing conditions, sulfate-reducing conditions, and methanogenic conditions; sediment bulk density: 2.27 g/cm3, 0.16% organic carbon; steady-state conditions assumed for simulations.
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	EPA method 8260 (volatile organic compounds), EPA method 8015 (ethene, ethane, and 2-chloroethanol), EPA method 415.1 (dissolved organic carbon), EPA method 325.3 (dissolved chloride), EPA method 353.2 (dissolved nitrite plus nitrate, as N), and EPA method 375.4 (dissolved sulfate); First-order decay constant; Not reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	Not reported; Not reported; Not reported; Not reported
Results Remarks and Results Details	Reductive dechlorination products of 1,1-DCA were not reported. BIOCHLOR indicated strong evidence for anaerobic degradation of chlorinated organic compounds.; First order decay = 0.45 per year (for upgradient segment of flowpath); 0.10 per year (for downgradient segment of flow path)
Results Mean Total Recovery and Results per Recovery	Not reported; Not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	Medium	The source was reported; analytical standards were not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Appropriate blanks were included.

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Study Citation:	Huff, G. F., Braun, C. L., Lee, R. W. (2000). Assessment of potential for natural attenuation of chlorinated ethenes and ethanes in ground water at a petrochemical reclamation site, Harris County, Texas.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	664358

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	Medium	Preparation and storage conditions of samples were not reported; however, these factors were not likely to have a substantial impact on study results.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	Non-guideline field study
	Metric 6:	Testing Conditions	High	Field conditions were analyzed and reported.
	Metric 7:	Testing Consistency	High	Testing was consitent.
	Metric 8:	System Type and Design	High	Field study; steady state can be assumed.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	Microbial viability of system was not assessed or discussed.
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Limited detail regarding the outcome assessment; BIOCHLOR was cited as the modeling tool. Endpoint of interest was reported.
	Metric 12:	Test Substance Purity	High	Sampling methods were appropriate.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	More sensitive analysis of transformation products would help in evaluating the potential for ultimate degradation in natural groundwater systems.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	Data reporting was appropriate.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not well described, but calculated using BIOCHLOR and assumed to be first order decay.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.

Overall Quality Determination — High

Study Citation:	Mcnab W W, , J. R., Narasimhan, T. N. (1994). Degradation of chlorinated hydrocarbons and groundwater geochemistry: A field study. Environmental Science and Technology 28(5):769-775.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1742673

EXTRACTION

Parameter	Data
CASRN and Test Material	Not Reported; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	Not Reported; other; field study; other: non-guideline: field study with degradation modeling
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Blank and Control	model assuming no degradation and both contaminants were present initially at 1 ppm; not applicable
Oxygen and Inoculum	aerobic; natural water: not reported
Duration, Parameter, System, and Sampling Frequency	not reported; not reported: not reported; not reported
pH Adjusted and pH	mean = 7.6; not reported
Concentration	not reported not reported - not reported 1 ppm
Composition and Test Temperature	not reported; not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	not reported; not reported; not reported; Field study conducted at a contaminated site: Livermore Valley of California Coast Ranges. VOCs detected in soil and ground water; predominate species: trichloroethene (4.8 ppm) and tetrachloroethene (1.1 ppm), additional contaminants detected include: 1,1-dichloroethene, cis- and trans-1,2-DCE, 1,1,1-trichloroethane, 1,1-dichloroethane, 1,2-dichloroethane, Freon-113, carbon tetrachloride, andchloroform. Up to 8 mg/L of dissolved O2 levels were measured in groundwater at the site. Model assumed 1,1,1-TCA (as exclusive contaminant) degraded into 1,1-DCE at a spatially and temporally constant rate, half-life = 2.0 yrs. Simulated ratios (based on mol/L) were predicted to evaluate degradation and retardation at the site.
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	not reported; not reported; not reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	not reported; not reported; not reported; not reported
Results Remarks and Results Details	Results demonstrate the difference between the two modeling cases is the change in the concentration ratios over time at individual locations; reactive case: an increase in the ratio is predicted for at each observation point; nonreactive case: ratio declines. According to the model, degradation effects would overwhelm retardation effects. Additionally, based on the oxidizing nature of the site and the lack of consistent detectable transformation products (chloroethane), reductive dehalogenation reactions were unlikely. An increasing trend of the 1,1-DCE:1,1,1-TCA concentration ratio was observed in field data which suggests degradation of 1,1,1-TCA is occurring. Degradation of 1,1-DCE was not evaluated.; not reported
Results Mean Total Recovery and Results per Recovery	not reported; not reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified.
Metric 2:	Test Substance Purity	N/A	The metric is not applicable to this study type.

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Study Citation:	Mcnab W W, , J. R., Narasimhan, T. N. (1994). Degradation of chlorinated hydrocarbons and groundwater geochemistry: A field study. Environmental Science and Technology 28(5):769-775.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1742673

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 2: Test Design				
	Metric 3:	Study Controls	High	A control was included.
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	N/A	The metric is not applicable to this study type.
	Metric 6:	Testing Conditions	N/A	The metric is not applicable to this study type.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.
	Metric 8:	System Type and Design	High	Field study; equilibrium is assumed.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	Field study; microbial viability was not specifically evaluated.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Uninformative	Results were not reported for the target chemical.
	Metric 12:	Test Substance Purity	N/A	The metric is not applicable to this study type.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	N/A	The metric is not applicable to this study type.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	The metric is not applicable to this study type.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Uninformative	Results were not reported for target chemical.
	Metric 18:	QSAR Models	High	Model was clearly described, with a defined endpoint.

Overall Quality Determination — Uninformative

Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	6629204

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Guideline not specified; aerobic static-screening-flask test method
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Not reported; Not reported
Oxygen and Inoculum	aerobic; sewage, domestic (adaptation not specified): Municipal wastewater sewage inoculum
Duration, Parameter, System, and Sampling Frequency	7 days; test mat.: Not reported; Not reported
pH Adjusted and pH	Not Reported; Not reported
Concentration	5 - 10 ppm
Composition and Test Temperature	Not reported; Not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; Not Reported; Not Reported
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Not reported; Not reported; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	50 and 29%; Not reported; 7 days; Not reported
Results Remarks and Results Details	50 and 29%/7 d for 5 and 10 ppm test substance. 19 and 4% evaporation also observed during the test period.; Not reported
Results Mean Total Recovery and Results per Recovery	Not reported; Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
Domain 3: Test Conditions				

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Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	6629204

Domain		Metric	EVALUATION Rating	Comments
	Metric 5:	Test Method Suitability	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
	Metric 6:	Testing Conditions	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
	Metric 7:	Testing Consistency	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
	Metric 8:	System Type and Design	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Details regarding this metric were limited; however, additional information may be included in the primary source.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The outcome of interest was reported clearly.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Due to limited information in the secondary source, the plausibility of the study results cannot be determined.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.

Overall Quality Determination — Medium

* Related References: Tabak HH et al; J Water Pollut Contr Fed 53: 1503-18 (1981)

Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	6629204

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Manometric respirometry test
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Not reported; Not reported
Oxygen and Inoculum	aerobic; other:: Inoculum not acclimated prior to test
Duration, Parameter, System, and Sampling Frequency	26 days; test mat.: Not reported; Not reported
pH Adjusted and pH	Not Reported; Not reported
Concentration	50 mg/L
Composition and Test Temperature	Not reported; Not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; Not Reported; Not reported
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Not reported; Not reported; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	25%; Not reported; 26 days; Not reported
Results Remarks and Results Details	Not reported; Not reported
Results Mean Total Recovery and Results per Recovery	Not reported; Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
	Metric 4:	Test Substance Stability	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.

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Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	6629204

Domain	Metric		EVALUATION Rating	Comments
	Metric 6:	Testing Conditions	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
	Metric 7:	Testing Consistency	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
	Metric 8:	System Type and Design	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Details regarding this metric were limited; however, additional information may be included in the primary source.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Details regarding this metric were limited; however, additional information may be included in the primary source.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The outcome of interest was reported clearly.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Due to limited information in the secondary source, the plausibility of the study results cannot be determined.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.

Overall Quality Determination — Medium

* Related References: Lapertot ME, Pulgarin C; Chemosphere 65: 682-90 (2006)

Study Citation:	Suarez, M. P., Rifai, H. S. (1999). Biodegradation Rates for Fuel Hydrocarbons and Chlorinated Solvents in Groundwater. Bioremediation Journal 3(4):337-362.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5442956

EXTRACTION

Parameter	**Data**
CASRN and Test Material	Not Reported; dichloroethane (all isomers)
Confidentiality, EndPoint, Type, Guideline	No; Not Reported; experimental; other
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, Purity	Not Reported; Not Reported; Not Reported; Not Reported
Blank and Control	Not Reported; Not Reported
Oxygen and Inoculum	Not Reported; Not Reported
Duration, Parameter, System, and Sampling Frequency	Not Reported; Not Reported: Not Reported; Not Reported
pH Adjusted and pH	Not Reported; Not Reported
Concentration	Not Reported
Composition and Test Temperature	Not Reported; Not Reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not Reported; Not Reported; Not Reported; Not Reported
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Not Reported; Not Reported; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	Not Reported; Not Reported; Not Reported; Not Reported
Results Remarks and Results Details	Summary for all studies for DCA: 25 rates, mean decay coefficients derived from all studies = 0.017 day-1standard deviation = 0.036 day-1; 90th percentile = 0.046 day-1; geometric mean = 0.001 day-1;first-order rate coefficient range = 0 day-1 to 0.131 day-1; Not Reported
Results Mean Total Recovery and Results per Recovery	Not Reported; Not Reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
Domain 2: Test Design			
Metric 3:	Study Controls	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
Domain 3: Test Conditions			

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Study Citation:	Suarez, M. P., Rifai, H. S. (1999). Biodegradation Rates for Fuel Hydrocarbons and Chlorinated Solvents in Groundwater. Bioremediation Journal 3(4):337-362.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	5442956

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
	Metric 8:	System Type and Design	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the primary sources likely contains more detail.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical methods or kinetic calculations were clearly described and address the dataset(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.

Overall Quality Determination — Medium

Study Citation:	Tabak, H. H., Quave, S. A., Mashni, C. I., Barth, E. F. (1981). Biodegradability studies with organic priority pollutant compounds. Journal of Water Pollution Control Federation 53(10):1503-1518.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	9861

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Biodegradation in domestic wastewater, static-culture flask-screening
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Synthetic medium containing 5mg yeast extract; Not reported
Oxygen and Inoculum	aerobic; sewage, domestic, non-adapted: Weekly "subcultures" involved adding fresh test samples to existing cultures to test for inoculum adaptation.
Duration, Parameter, System, and Sampling Frequency	28 days (includes 7 day static incubation and 3 weekly subcultures); test mat.: Static-culture in 250 mL Erlenmeyer flask.; Days 7, 14, 21, and 28
pH Adjusted and pH	Not Reported; Not reported
Concentration	5 - 10 mg/L
Composition and Test Temperature	BOD dilution water with 5 mg/L yeast extract; 25°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; yes; Homogenous suspensions of the test substance in the chilled synthetic medium were prepared in a heavy duty blender for 2 minutes. Replicate studies with 5 mg/L and 10 mg/L substrate.
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC and TOC determinations. GC LOD: 0.1 mg/L; Average loss of test substance after 7 days; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	50-91% (at 5 mg/L); 29-83% (at 10 mg/L); Not reported; 7 days; Not reported
Results Remarks and Results Details	Significant degradation with rapid adaptation; at 25°C: 19% volatilization loss at 5mg/l, 4% volatilization loss at 10mg/l
Results Mean Total Recovery and Results per Recovery	Not Reported; Not Reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
Metric 2:	Test Substance Purity	N/A	The test substance purity was not reported; however, the omission is unlikely to have an impact on the study results.
Domain 2: Test Design			
Metric 3:	Study Controls	High	Appropriate blanks were used without inoculum and without substrate.
Metric 4:	Test Substance Stability	High	The test substance preparation and storage conditions were reported and appropriate.

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Study Citation:	Tabak, H. H., Quave, S. A., Mashni, C. I., Barth, E. F. (1981). Biodegradability studies with organic priority pollutant compounds. Journal of Water Pollution Control Federation 53(10):1503-1518.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	9861

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Low	The test substance was tested above its aqueous solubility which may have had an impact on the study results.
	Metric 6:	Testing Conditions	High	The testing conditions were reported and appropriate.
	Metric 7:	Testing Consistency	High	The testing conditions were consistent across the sample groups.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The inoculum type was reported and appropriate for the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	The sampling methods were reported and appropriate.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Sources of uncertainty were not reported which may impact the study results.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The data reporting was appropriate, percentage removal of the test substance was reported, and the analytical method was suitable.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical analysis was not reported; however, the omission is unlikely to have a substantial impact on the study results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination — High

Study Citation:	Van Eekert, M. H., Stams, A. J., Field, J. A. (1999). Gratuitous dechlorination of chloroethanes by methanogenic granular sludge. Applied Microbiology and Biotechnology 51(1):46-52.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	645784

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Static batch experiments using methanogenic sludge for the dechlorination of chloroethanes.
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; E. Merck (Amsterdam, The Netherlands); NR; NR; p.a. quality
Blank and Control	Autoclaved sludge and no sludge controls included; Not reported
Oxygen and Inoculum	anaerobic; anaerobic sludge: Granular sludge: unadapted methanogenic consortium grown in UASB reactor, methanol as the carbon source.
Duration, Parameter, System, and Sampling Frequency	25 days; test mat.: Sealed bottles; Not reported
pH Adjusted and pH	Not Reported; 7.2-7.3
Concentration	1500 other
Composition and Test Temperature	Methanol: 71 mM; test substance in acetone: 1500 nmol;; 30°C
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; No; Not reported; Amount of sludge: 79.5 mg VSS/batch (living sludge); 73.1 mg VSS/batch (autoclaved sludge)
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Total mass measured by head-space analysis using GC/FID; %Ct/C0: concentration after time t divided by concentration at time 0; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	31.1; Not reported; Not reported; 10.1%, Removal rate constant=5 nmol/day, 0.1 umol g/VSS day; 0% Removal rate constant=0 nmol/day
Results Remarks and Results Details	Transformation products, main: C2H5Cl (14.5%); minor: C2H6 (trace); no products observed in the autoclaved sludge; Removal rate constant=20 nmol/day; 0.3 umol g/VSS day
Results Mean Total Recovery and Results per Recovery	Not reported; Not reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	High	The test substance source and purity or quality were reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 4:	Test Substance Stability	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 3: Test Conditions				

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Study Citation:	Van Eekert, M. H., Stams, A. J., Field, J. A. (1999). Gratuitous dechlorination of chloroethanes by methanogenic granular sludge. Applied Microbiology and Biotechnology 51(1):46-52.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	645784

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 7:	Testing Consistency	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Details omitted; however, the lack of data is not likely to hinder the interpretation of the results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis reported and acceptable.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — High

Study Citation:	Vargas, C., Ahlert, R. C. (1987). Anaerobic degradation of chlorinated solvents. Journal of Water Pollution Control Federation 59(11):964-968.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1946074

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Batch and semi-batch anaerobic studies
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; Nr; NR
Blank and Control	unspiked controls included; No significant inhibition was observed at concentrations ranging from 0.58-35 mg/L in batch studies; Half-kill dose from batch reactions = 26.1 mg/L
Oxygen and Inoculum	anaerobic; anaerobic bacteria: Mixed anaerobic culture obtained from Berkley Heights Sewage Treatment Plant; acclimation was achieved after ca. 5 months
Duration, Parameter, System, and Sampling Frequency	Batch: 1-2 weeks; semi-batch: 23 days; other; theoretical gas production (CH4 + CO2): 100 mL amber serum bottles; gas production measured daily
pH Adjusted and pH	Not Reported; near neutral (adjusted as necessary with 1 N NaOH)
Concentration	0.58 - 35 mg/L
Composition and Test Temperature	1g yeast extract, 2.96g NH4Cl, 0.34 g KH2PO4, I mg resazurin, 0.5 g cysteine hydrochloride, 1 mL trace metal solution, 4 mL absolute ethanol; Not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; Not Reported; reactors were fed ethanol after cessation of gas production
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	GC; CH4 and CO2 analyzed with a thermal conductivity detector; Not reported; Not reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	Not reported; Not reported; Not reported; Not reported
Results Remarks and Results Details	Daily gas production (mL/day liter) depicted in graphs; specific quantitative results not reported. In batch tests DCE daily gas production followed controls with little variation and inhibition was insignificant at all concentrations tested. In semi-batch acclimation tests gas production ceased after 23 days at test substance concentrations of 25, 30, and 35 mg/L at which time ethanol feed was discontinued to the three reactors and they were set aside. Growth occurred for 37 days at concentrations under 21 mg/L, increased inhibition was observed at the higher concentrations.; Mixed anaerobic population can degrade or acclimate; no apparent inhibition was observed up to 35 mg/L
Results Mean Total Recovery and Results per Recovery	Not reported; Not reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	Test substance was definitively identified.
Metric 2:	Test Substance Purity	Uninformative	Test substance source and purity were not reported.
Domain 2: Test Design			

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Study Citation:	Vargas, C., Ahlert, R. C. (1987). Anaerobic degradation of chlorinated solvents. Journal of Water Pollution Control Federation 59(11):964-968.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1946074

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 3:	Study Controls	High	Controls were included.
	Metric 4:	Test Substance Stability	Low	The test substance stability, homogeneity, preparation, and storage conditions were not reported and these factors likely influenced the test substance or are likely to have a substantial impact on the study results.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Uninformative	The use of an ethanol fed system and acclimated culture inoculum greatly limits the results unacceptable for use to determine environmental fate.
	Metric 6:	Testing Conditions	Medium	Test conditions were not fully reported.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.
	Metric 8:	System Type and Design	Medium	The system type and design details were limited.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	The selected test organism is not typical for environmental fate degradation.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Uninformative	The assessment methodology did not report the outcome of interest. Detail in graphs for 2/10 concentrations tested, limited information for informative quantitative results.
	Metric 12:	Test Substance Purity	Low	Sampling details were omitted.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Other loss processes such as adsorption and volatilization not discussed/addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Uninformative	Target chemical concentrations, extraction efficiency, percent recovery, or mass balance were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	The metric is not applicable to this study type.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Uninformative	There are serious flaws that make this study unusable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Uninformative

Study Citation:	Washington, J. W., Cameron, B. A. (2001). Evaluating degradation rates of chlorinated organics in groundwater using analytical models. Environmental Toxicology and Chemistry 20(9):1909-1915.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1937750

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Calculation; other: Mass-balance box model; Monitoring of contaminants at a location in an landfill to evaluate and model their transformation rates
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Blank and Control	Not reported; Not reported
Oxygen and Inoculum	aerobic; other:: landfill site in the Reading Prong of southeastern PA
Duration, Parameter, System, and Sampling Frequency	Not reported; test mat.: Not reported; Not reported
pH Adjusted and pH	Not Reported; field=6.11; lab=6.43
Concentration	Not Reported
Composition and Test Temperature	Not reported; Not reported
CEC, Water Aeration Dilution, Continuous Darkness, and Other Design	Not reported; Not reported; Not Reported; Mass-balance box model
Results Details Method, Results per Degradation Parameter, and Direct Quantum Yield Results	Not reported; Half-life; Not Reported
Results Value, Results Standard Deviation, Results Sample Time, and Results Reference Substance Compartments	115.0 days; Not reported; Not reported; Not reported
Results Remarks and Results Details	Mass-balance box model used to characterize changes in solute composition due to advective loss, adsorption and pseudo-first-order degradation; based on data from monitoring at a single site, assuming steady state, a single completely dissolved compound initially present, all up-gradient inflow solute concentration=zero, dispersive effects remain ca. constant through time; pseudo-first-order rate constant=6.0E-3/day
Results Mean Total Recovery and Results per Recovery	Not reported; Modeled Koc was included in the evaluation of transformation to account for sorption; estimated Koc=1.68

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to this study type.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.

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Study Citation:	Washington, J. W., Cameron, B. A. (2001). Evaluating degradation rates of chlorinated organics in groundwater using analytical models. Environmental Toxicology and Chemistry 20(9):1909-1915.
OECD Harmonized Template:	Biodegradation in Water
HERO ID:	1937750

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	N/A	The metric is not applicable to this study type.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	N/A	The outcome assessment methodology addressed or reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	N/A	The metric is not applicable to this study type.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of uncertainty in the model predictions was reported and accounted for in the data evaluation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Detail on monitoring data used or the basis of the model was not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Model calculations were described with limited detail; statistical analysis of monitoring data was not included.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — High

* Related References: HSDB

Study Citation:	Dow Chemical, (2004). [Redacted] Twins Inn site remediation treatability study.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	10609984

EXTRACTION

Parameter	**Data**
CASRN and Test Material	Not Reported; 1,1-dichloroethane
Confidentiality, EndPoint, Type, Guideline	yes; inherent biodegradability; experimental; other: intrinsic in-situ aerobic biodegradation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Sigma-Aldrich, St. Louis, Missouri; NR; NR
Oxygen and Inoculum	aerobic; natural water / sediment: Groundwater and sediment core samples from downgradient plume source. Twins Inn site, Arvada, Colorado.
Duration, Parameter, System, and Sampling Frequency	12 months; test mat; incubation temperature: 20°C; glass serum bottles; sequential sampling
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	0, 2, 4, 6, 9, 12 months; groundwater/sediment; sediment: core samples; groundwater; not reported; not reported
Control Dark, Control, and Blank	yes; not reported; heat and biocide sterilized
Concentration	> 1000 ug/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC/MS; Not Reported; test mat.
Results Remarks	first order rate constant: 0.230 L/month
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	92 days; not reported; 14C-TCE; Not Reported
Results Details	half-life in abiotic control 126 days; first order rate constant 0.167 L/month
Mean Total Recovery Results and Results Per Recovery	not reported; not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	not reported; not reported; no dechlorination products were observed

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified by name.
Metric 2:	Test Substance Purity	Medium	The test substance source was reported, but the test substance purity was not reported; however, the omission was not likely to have a substantial impact on the study results.
Domain 2: Test Design			
Metric 3:	Study Controls	High	Concurrent controls were included.
Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

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Study Citation:	Dow Chemical, (2004). [Redacted] Twins Inn site remediation treatability study.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	10609984

		EVALUATION		
Domain	Metric		Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	The test method was suitable for the test substance with minor deviations.
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions; however, sufficient data were reported to determine that the omissions were not likely to have a substantial impact on study results.
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these discrepancies were not likely to have a substantial impact on study results.
	Metric 8:	System Type and Design	N/A	Rating of this factor is not applicable to this kind of information.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Low	An inoculum that was pre-adapted to the test substance was used for a biodegradation rate study.
	Metric 10:	Sampling Methods	N/A	Rating of this factor is not applicable to this kind of information.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods; however, such differences or absence of details were not likely to be severe or have a substantial impact on the study results.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Variability and uncertainty were not explicitly addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Rating of this factor is not applicable to this kind of information.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were not reported; however, these omissions were not likely to have a substantial impact on study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	Rating of this factor is not applicable to this kind of information.

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Study Citation:	Dow Chemical, (2004). [Redacted] Twins Inn site remediation treatability study.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	10609984

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**Low**	

Study Citation:	Grostern, A., Edwards, E. A. (2006). A 1,1,1 -Trichloroethane-Degrading Anaerobic Mixed Microbial Culture Enhances Biotransformation of Mixtures of Chlorinated Ethenes and Ethanes[white triangle down]. Applied and Environmental Microbiology 72(12):7849.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	10159218

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; Screening; Experimental; other: microcosm degradation time course experiment
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen and Inoculum	Anaerobic; natural sediment: Groundwater and solids were collected from an industrial area contaminated with high concentrations of 1,1,1-trichloroethane and trichloroethene. Subsurface and cores were collected in the saturated anoxic zone at a depth of approximately 30 feet. Enrichment culture, "MS", a mixed anaerobic microbial culture that reductivelydechlorinates 1,1,1-TCA to 1,1-DCA and CA, was prepared from this microcosm.
Duration, Parameter, System, and Sampling Frequency	14 days; Test material; 45 mL screw top vials with 10 mL of mineral medium and 10 mL of MS culture were amended with 1,1-DCA.; 10 samples were taken over 12 days (figure 1B).
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	NR; NR; NR; NR; NR; NR
Control Dark, Control, and Blank	NR; NR; no-electron-acceptor controls
Concentration	10 mg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-FID; Headspace or liquid samples were analyzed using an HP 5890A gas chromatograph fitted with a GSQ column and a flame ionization detector.; Test material
Results Remarks	1,1-DCA was reductively dechlorinated to chloroethane in 12 days with no lag. Methanogenesis occurred throughout the 1,1-DCA degradation. In 1,1,1-TCA amended bottles, 1,1-DCA was reductively dechlorinated to CA in 14 days, after the 10 days where 1,1,-TCA was reductively dechlorinated to 1,1-DCA (with no lag).
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Approximately 3-4 days (derived from graph).; reported in figures; Not Reported; Not Reported
Results Details	Not Reported
Mean Total Recovery Results and Results Per Recovery	Not Reported; Not Reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Not Reported; Not Reported; Chloroethane

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified using established nomenclature.
Metric 2:	Test Substance Purity	High	The test substance was verified by analytical means.
Domain 2: Test Design			

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Study Citation:	Grostern, A., Edwards, E. A. (2006). A 1,1,1 -Trichloroethane-Degrading Anaerobic Mixed Microbial Culture Enhances Biotransformation of Mixtures of Chlorinated Ethenes and Ethanes[white triangle down]. Applied and Environmental Microbiology 72(12):7849.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	10159218

EVALUATION

Domain	Metric		Rating	Comments
	Metric 3:	Study Controls	High	Appropriate controls were used.
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance storage conditions were not reported; however, the omissions are unlikely impact on the study results.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	Some details regarding the testing conditions were not reported; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 7:	Testing Consistency	High	There were no reported changes across sample groups.
	Metric 8:	System Type and Design	Medium	Some details regarding the system type and design were not reported; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum was described and appropriate for the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Some details regarding the sampling methods were not reported; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty in the test substance and degradation product concentrations were reported and acceptable.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The analytical method was reported and appropriate. Test substance and degradation product concentrations were reported graphically.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not reported; however, the omissions are unlikely to impact the study results.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

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Study Citation:	Grostern, A., Edwards, E. A. (2006). A 1,1,1 -Trichloroethane-Degrading Anaerobic Mixed Microbial Culture Enhances Biotransformation of Mixtures of Chlorinated Ethenes and Ethanes[white triangle down]. Applied and Environmental Microbiology 72(12):7849.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	10159218

EVALUATION

Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Hamonts, K., Kuhn, T., Maesen, M., Bronders, J., Lookman, R., Kalka, H., Diels, L., Meckenstock, R. U., Springael, D., Dejonghe, W. (2009). Factors determining the attenuation of chlorinated aliphatic hydrocarbons in eutrohic river sediment impacted by discharging polluted groundwater. Environmental Science & Technology 43(14):5270-5275.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	11147658

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; Screening test; Experimental; other: Batch biodegradation test/microcosm study
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen and Inoculum	Anaerobic; natural sediment: Sediment samples were collected from 0-20, 20-60, and 60-100 cm depth at four locations along the Zenne River, which receives chlorinated aliphatic hydrocarbon polluted groundwater.
Duration, Parameter, System, and Sampling Frequency	46 days; Test material; 160mL glass vial under 100% nitrogen atmosphere; NR
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	NR; Not Reported; Not Reported; Not Reported; Not Reported; NR
Control Dark, Control, and Blank	Yes; Formaldehyde spiked abiotic controls were used; Not Reported
Concentration	0.19 - 0.27 µmol/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS; Thermo Finnigan Trace GC-MS equipped with a DB5-MS column. Headspace analysis was performed.; Test material
Results Remarks	Highest organic carbon content in the upper layer (0-20 cm) correlated with the fastest biodegradation.
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	NR; NR; Not Reported; Not Reported
Results Details	Not Reported
Mean Total Recovery Results and Results Per Recovery	Not Reported; Not Reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Reductive dechlorination of 0.19-0.27 uM 1,1-DCA was observed within 13-46 days at 9 of the 12 testing positions.; Not Reported; Chloroethane was the observed transformation product.

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified using established nomenclature.
Metric 2:	Test Substance Purity	High	The test substance was verified by appropriate analytical means.
Domain 2: Test Design			
Metric 3:	Study Controls	High	A abiotic control was used.

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Study Citation:	Hamonts, K., Kuhn, T., Maesen, M., Bronders, J., Lookman, R., Kalka, H., Diels, L., Meckenstock, R. U., Springael, D., Dejonghe, W. (2009). Factors determining the attenuation of chlorinated aliphatic hydrocarbons in eutrohic river sediment impacted by discharging polluted groundwater. Environmental Science & Technology 43(14):5270-5275.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	11147658

EVALUATION

Domain	Metric		Rating	Comments
	Metric 4:	Test Substance Stability	High	The details regarding the stability, homogeneity, preparation and storage conditions of the samples containing the test substance were reported and appropriate.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were reported and appropriate.
	Metric 7:	Testing Consistency	High	Testing conditions were consistent across sample groups and triplicate samples were tested.
	Metric 8:	System Type and Design	Medium	Some details regarding the system type and design were not reported; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum was described and appropriate for the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	Details regarding the sampling methods were reported and appropriate for the study type.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Sources of uncertainty in the measurements were not discussed; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some details, such as the target chemical concentrations in individual microcosms were not provided; however, an appropriate analytical method was used.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Statistical analysis or kinetic calculations were not described clearly.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

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Study Citation:	Hamonts, K., Kuhn, T., Maesen, M., Bronders, J., Lookman, R., Kalka, H., Diels, L., Meckenstock, R. U., Springael, D., Dejonghe, W. (2009). Factors determining the attenuation of chlorinated aliphatic hydrocarbons in eutrohic river sediment impacted by discharging polluted groundwater. Environmental Science & Technology 43(14):5270-5275.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	11147658

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Lookman, R., Borremans, B., De Ceuster, T., Gemoets, J., Diels, L. (2005). Effects of carbon source amendment on the anaerobic degradation of 1,1,1-trichloroethane (TCA) in a contaminated aquifer. Water, Air, and Soil Pollution 166(1-4):197-216.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1739430

EXTRACTION

Parameter	Data
CASRN and Test Material	Not Reported; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	none; other; experimental; other: Non-guideline: laboratory microcosm
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; degradation product of 1,1,1-tricholroethane; NR; NR Notes: NR
Oxygen and Inoculum	anaerobic; natural water / sediment: freshwater: Samples from a TCA-contaminated site were collected for use in laboratory microcosm consisting of 40 g aquifer material and 40 mL groundwater; microcosms tested with lactate, lactate and nutrients, and molasses amendments at ambient temperatures. Living and dead controls were included.
Duration, Parameter, System, and Sampling Frequency	10 months; test mat.; anaerobic glove-box: 150 mL glass vials with butyl/PFTE grey septum and crimp-cap seals; not reported
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	0, 1.5, 4, 6, 10 months; Not Reported; aquifer material; groundwater; not reported; Reported as 'near-neutral', measured several times during the test with a pH meter
Control Dark, Control, and Blank	not reported; not reported; sterile control: addition of HgCl2 in demineralized water; living control also included (40 g aquifer material and 40 mL groundwater); 120 mg of formaldehyde added after 6 months as additional biocide
Concentration	Not Reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-FID; MDL = 1 µg/L; test mat.
Results Remarks	TCA (1,1,1-trichloroethane) degradation and production of daughter products observed, most pronounced during 4-6 month period when DCA concentrations were elevated but decreased to initial values at the end; pathway: TCA -> DCA -> CA. DCA concentrations in living control at 0, 1.5, 4, 6, 10 months were ca. 1750, 1600, 2400, 1400, and 1390 µg/L, respectively; DCA concentrations in dead control at 0, 1.5, 4, 6, 10 months were ca. 1750, 1600, 2400, 1400, and 1390 µg/L, respectively. TCA/DCA mass ratio decreased from ca. 7.8 (0 months) to ca. 4.1 (10 months)
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	not reported; not reported; sterile controls; Comparable rates of TCA levels decreasing were observed; TCA degradation likely abiotic..
Results Details	not reported
Mean Total Recovery Results and Results Per Recovery	not reported; not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	concentrations at the start ca. 1750 and end 1390 µg/L; not reported; methane (CH4), ethene (C2H4), and ethane (C2H6) were detected in microcosms after 10 months

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified.
Metric 2:	Test Substance Purity	Uninformative	The source of the test substance was as a degradation product of TCA.

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Study Citation:	Lookman, R., Borremans, B., De Ceuster, T., Gemoets, J., Diels, L. (2005). Effects of carbon source amendment on the anaerobic degradation of 1,1,1-trichloroethane (TCA) in a contaminated aquifer. Water, Air, and Soil Pollution 166(1-4):197-216.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	1739430

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 2: Test Design				
	Metric 3:	Study Controls	High	A sterile control was included.
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	N/A	The metric is not applicable to this study type.
	Metric 6:	Testing Conditions	Medium	Limited detail regarding test conditions.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Uninformative	Microbial viability not validated.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	Biodegradation rates not reported; however, degradation products and a degradation pathway were presented.
	Metric 12:	Test Substance Purity	Medium	Limited detail regarding sampling methods.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Sources of variability and uncertainty in the measurements were not discussed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Uninformative	Analytical details were limited; there was insufficient evidence presented to confirm that parent compound disappearance was not likely due to some other process.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	The metric is not applicable to the study type.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination — Uninformative

Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	6629204

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, EndPoint, Type, Guideline	None; inherent biodegradability; Experimental; other: Guideline not specified
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Oxygen and Inoculum	not specified; natural water / sediment: Collected above and below the water table at Pickett, OK, and Fort Polk, LA
Duration, Parameter, System, and Sampling Frequency	8 - 16 wk; not specified; Not reported; Not reported
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Not reported; Not reported; Not reported; Not reported; Not reported
Control Dark, Control, and Blank	Not reported; Not reported; Not reported
Concentration	Not reported Not reported - Not reported Not reported Not reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not reported; Not reported; Not reported
Results Remarks	No degradation observed
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not reported; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Not reported; Not reported; Not reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified by name.
Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 2: Test Design			
Metric 3:	Study Controls	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 3: Test Conditions			
Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the primary source likely contains more detail.

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Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	6629204

Domain		Metric	EVALUATION Rating	Comments
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 8:	System Type and Design	N/A	Rating of this factor is not applicable to this kind of information.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Some details in this secondary source; the primary source likely contains more detail.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Rating of this factor is not applicable to this kind of information.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results are reasonable based on the data's inclusion in a peer- reviewed/recognized database or other secondary source.
	Metric 18:	QSAR Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

* Related References: Wilson JR et al; Devel Indust Microbiol 24: 225-33 (1983)

Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	6629204

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, EndPoint, Type, Guideline	None; other; Field monitoring data; other: Guideline not specified
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen and Inoculum	not specified; natural water / sediment: Well from a landfill with a contamination history
Duration, Parameter, System, and Sampling Frequency	Not reported; not specified; Not reported; Not reported
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	Not reported; Not reported; Not reported; Not reported; Not reported; Not reported
Control Dark, Control, and Blank	Not Reported; Not reported; Not reported
Concentration	Not reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not reported; Not reported; Not Reported
Results Remarks	Not Reported
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	115 d; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported
Results Value, Direct Quantum Yield Results, and Transformation Products	Not reported; Not Reported; Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the primary source likely contains more detail.

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Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	6629204

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 8:	System Type and Design	N/A	Rating of this factor is not applicable to this kind of information.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Rating of this factor is not applicable to this kind of information.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results are reasonable based on the data's inclusion in a peer- reviewed/recognized database or other secondary source.
	Metric 18:	QSAR Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination — Medium

* Related References: Washington JW, Cameron BA; Environ Toxicol Chem 20(9): 1909-1915 (2001)

Study Citation:	Scheutz, C., Durant, N. D., Broholm, M. M. (2014). Effects of bioaugmentation on enhanced reductive dechlorination of 1,1,1-trichloroethane in groundwater: a comparison of three sites. Biodegradation 25(3):459-478.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	3489148

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; screening test; Experimental; other: Microcosm study
Solvent, Reactivity, Storage, Stability	Filtered water; NA; NR; NA
Radiolabel, Source, State, Purity	NR; Degradation of 1,1,1-trichloroethane; NR; NA Notes: NA
Oxygen and Inoculum	anaerobic (Iron- to sulfate-reducing); natural sediment: freshwater: groundwater and sediment core samples from Baldersbækvej, Høje Tastrupvej, and Vadsbyvej
Duration, Parameter, System, and Sampling Frequency	601 days; test material; microcosm; reported to be periodically
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	NR; in sorbed, aqueous, and gaseous phases; sediment core samples; groundwater; NR; NR
Control Dark, Control, and Blank	NR; NR; 1,1-DCA production attributed to desorption from contaminated sediment and was not dechlorinated in the intrinsic controls during the 601-day incubation
Concentration	Not Reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	reported in the supplementary information; NR; test material concentration
Results Remarks	1,1-DCA was dechlorinated to CA after a lag phase of approximately 300 days and only in bioaugmented treatments.
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	NR; NR; NA; NA
Results Details	Figures present concentrations at different sampling points
Mean Total Recovery Results and Results Per Recovery	NR; NR
Results Value, Direct Quantum Yield Results, and Transformation Products	0%/601 days (without bioaugmentation); NA; 1,1,1-trichloroethane and 1,1-dichloroethane to chloroethane

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.
	Metric 2: Test Substance Purity	N/A	The metric is not applicable to this study type.
Domain 2: Test Design			
	Metric 3: Study Controls	Low	Reported results from control group indicated presence of the test substance from contaminated sites and absorption of the test substance into sediment.

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Study Citation:	Scheutz, C., Durant, N. D., Broholm, M. M. (2014). Effects of bioaugmentation on enhanced reductive dechlorination of 1,1,1-trichloroethane in groundwater: a comparison of three sites. Biodegradation 25(3):459-478.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	3489148

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type (test substance was a transformation product).
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	The test method was likely suitable for the test substance with minor deviations and omissions in reporting.
	Metric 6:	Testing Conditions	Medium	There were reported deviations or omissions in testing conditions.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.
	Metric 8:	System Type and Design	Low	There were reported deviations or omissions in system type and design.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test organism information or inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Uninformative	1,1-Dichloroethane was not the chemical of interest of this study (a transformation product).
	Metric 12:	Test Substance Purity	Medium	Details regarding sampling methods of the outcome(s) were not fully reported.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Uninformative	There were sources of variability and uncertainty in the measurements and statistical techniques or between study groups resulting in serious flaws that make the study unusable for 1,1-dichloroethane.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	There was insufficient evidence presented to confirm that parent compound disappearance was not likely due to some other process.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations described and address the dataset(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Uninformative

Study Citation:	Şimşir, B., Yan, J., Im, J., Graves, D., Löffler, F. E. (2017). Natural Attenuation in Streambed Sediment Receiving Chlorinated Solvents from Underlying Fracture Networks. Environmental Science & Technology 51(9):4821-4830.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	4852412

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; Other; Experimental; other: microcosm study
Solvent, Reactivity, Storage, Stability	Not Reported; Not Reported; Not Reported; Not Reported
Radiolabel, Source, State, Purity	Not Reported; Sigma-Aldrich-Fluka (St. Louis, MO); Not Reported; >99%
Oxygen and Inoculum	Anoxic; natural sediment: Chlorinated solvent contaminated sediment samples were collected from a former metal manufacturing facility, adjacent to Third Creek (Knoxville, TN). Sediment microcosms were made in 60 mL glass serum bottles with 4 g sediment and 26 mL of anoxic, bicarbonate-buffered mineral salts medium amended with 5 mM lactate.
Duration, Parameter, System, and Sampling Frequency	20 months; test mat.; 60 mL serum bottles; NR
Results Sample Time, Compartment, Sludge Compartment, Water Compartment, CEC, and pH	NR; Not Reported; Not Reported; Not Reported; Not Reported; NR
Control Dark, Control, and Blank	Not Reported; Not Reported; Autoclaved control (60 min at 121ºC) and blank controls were used.
Concentration	19.8 - mg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-FID; Agilent 7890 Gas chromatograph equipped with a flame ionization detector and a DB-624 capillary column.; Test material
Results Remarks	The time at which the biodegradation analysis was made was not clearly reported. (assumed to be 4-5 weeks based on reported conversion to ethene for other chemicals in the study).
Halflife, Standard Deviation Results, Reference Substance Results, and Reference Substance Compartment Results	Not Reported; Not Reported; Not Reported; Not Reported
Results Details	Not Reported
Mean Total Recovery Results and Results Per Recovery	Not Reported; Not Reported
Results Value, Direct Quantum Yield Results, and Transformation Products	75-100%; Not Reported; Chloroethane

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified using common nomenclature.
	Metric 2:	Test Substance Purity	High	The test substance purity was reported and appropriate.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Autoclaved and blank controls were used.

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Study Citation:	Şimşir, B., Yan, J., Im, J., Graves, D., Löffler, F. E. (2017). Natural Attenuation in Streambed Sediment Receiving Chlorinated Solvents from Underlying Fracture Networks. Environmental Science & Technology 51(9):4821-4830.
OECD Harmonized Template:	Biodegradation in Sediment
HERO ID:	4852412

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	High	Details regarding the test substance stability, preparation, and storage conditions were reported and appropriate.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	Some details regarding the testing conditions were not reported; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 7:	Testing Consistency	High	Triplicate samples were used and no differences across the sample groups were reported.
	Metric 8:	System Type and Design	Medium	Some details regarding the system type and design were not reported; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum type used was suitable for the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	Details regarding the sampling method were reported and appropriate.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty was accounted for in the reported biodegradation percentage.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	The analytical method was appropriate; however details on the target chemical and transformation product(s) concentrations (if required), extraction efficiency, percent recovery, or mass balance were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	Low	Kinetic calculations were not reported and data was not provided to make them independently.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination — Medium

Study Citation:	Aziz, C. E., Newell, C. J., Gonzales, J., Smith, A. P. (2000). Characteristics of chlorinated solvent plumes in the BIOCHLOR database. (1):117-124.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	5433869

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	No; Other; Calculated; other: None; field-scale biodegradation rate constants estimated by calibrating the BIOCHLOR model
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen, pH, and CEC	Anaerobic; Not Reported; Not Reported
Test Type, Test Temperature, and Test Details	field trial; Not Reported; Biodegradation rate constant was calculated from 1,1-DCA plumes at three sites.
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	Not Reported; Not Reported; Not Reported
Soil Classification, Microbial Biomass, and Humidity	Not Reported; Not Reported: Not Reported
Duration, Parameter, System, and Sampling Frequency	Not Reported; Not Reported; Not Reported; Not Reported
Control and Blank	Not Reported; Not Reported
Concentration	1.400 at Site 1; 0.443 at Site 2; 0.026 at Site 3. mg/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Field-scale biodegradation rate constants were estimated using the BIOCHLOR model.; Model simulates the reactive transport of chlorinated solvents in the subsurface and assumes sequential first order reductive dechlorination.; Not Reported
Results Remarks	BIOCHLOR median rate constants and half-lives are applicable for anaerobic plumes that are not electron donor-limited. The study states that 'the most rapid biodegradation rates, affecting the widest range of chlorinated aliphatic hydrocarbons occurs under sulfate-reducing and methanogenic conditions (Bouwer, 1994)' and that 'different amounts of native organic matter and fuel co-contaminants in the groundwater may be responsible for the difference in the incidence of complete reductive dechlorination...'
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	Not Reported; Not Reported; Not Reported; Not Reported; Not Reported
Results Details	Median half-life: 2.3 years. Rate constants at sites 1, 3 and 4 (1/yr): 1.2, 0.3, 0.2.
Mean Total Recovery Results and Results Per Recovery	Not Reported; Not Reported

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified using established nomenclature.
	Metric 2:	Test Substance Purity	Medium	The test substance was present in field samples.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	The use of controls was not reported in the secondary source; however, the omission is unlikely to have a substantial impact on the study results.

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Study Citation:	Aziz, C. E., Newell, C. J., Gonzales, J., Smith, A. P. (2000). Characteristics of chlorinated solvent plumes in the BIOCHLOR database. (1):117-124.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	5433869

EVALUATION

Domain	Metric		Rating	Comments
	Metric 4:	Test Substance Stability	Medium	The test substance was present in field samples.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	The site conditions were monitored and appropriate.
	Metric 7:	Testing Consistency	High	Changes in conditions across different sites were reported.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Details regarding the sampling methods were not reported by the secondary source; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability across the sample groups were considered.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Details regarding the analytical methodology across the studies were not reported in the secondary source.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods and kinetic calculations were reported and appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination — High

Study Citation:	Montgomery, L., Assaf-Anid, N., Nies, L., Anid, P. J., Vogel, T. M. (1994). Anaerobic biodegradation of chlorinated organic compounds. :256-276.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	2191741

EXTRACTION

Parameter	Data
CASRN and Test Material	Not Reported; dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; dehalogenation summary; none; other: None
Solvent, Reactivity, Storage, Stability	NA; NA; NA; NA
Radiolabel, Source, State, Purity	NA; NA; NA; NA Notes: NA
Oxygen, pH, and CEC	anaerobic; NA; NA
Test Type, Test Temperature, and Test Details	other; NA; NA
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	other; NA; NA
Soil Classification, Microbial Biomass, and Humidity	NA; NA: NA
Duration, Parameter, System, and Sampling Frequency	NA; NA; NA; NA
Control and Blank	NA; NA
Concentration	NA NA - NA NA NA
Analytical Method, Analytical Details, and Results Per Degredation Parameter	NA; NA; NA
Results Remarks	dichloroethane dehalogenated by mixed cultures of anaerobic bacteria and pure cultures of bacteria.
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	NR; NR; NA; NA; NA
Results Details	NA
Mean Total Recovery Results and Results Per Recovery	NA; NA

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
	Metric 1: Test Substance Identity	Medium	The test substance was identified by a general name characterization details were omitted that could affect interpretation of study results; however, the omission was not likely to have a substantial impact on the study results.
	Metric 2: Test Substance Purity	Uninformative	Review article; The nature and quantity of reported impurities were such that study results were unduly influenced by one or more of the impurities. These are serious flaws that make the study unusable.
Domain 2: Test Design			

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Study Citation:	Montgomery, L., Assaf-Anid, N., Nies, L., Anid, P. J., Vogel, T. M. (1994). Anaerobic biodegradation of chlorinated organic compounds. :256-276.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	2191741

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 3:	Study Controls	Uninformative	Review article; The study did not include or report crucial control groups that consequently made the study unusable (e.g., no positive control for a biodegradation study reporting 0% removal).
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this review article.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Uninformative	Review article; The test method was not reported or not suitable for the test substance. These deviations or lack of information resulted in serious flaws that make the study unusable.
	Metric 6:	Testing Conditions	Uninformative	Review article; Testing conditions were not reported and data provided were insufficient to interpret results.
	Metric 7:	Testing Consistency	Uninformative	Review article; Critical exposure details across samples or study groups were not reported and these omissions resulted in serious flaws that had a substantial impact on the overall confidence, consequently making the study unusable.
	Metric 8:	System Type and Design	Uninformative	Review article; Equilibrium was not established or reported preventing meaningful interpretation of study results.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Uninformative	The test organism, species, or inoculum source were not reported.
	Metric 10:	Sampling Methods	Uninformative	Review article; The test organism information was not reported.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	N/A	The metric is not applicable to this review article.
	Metric 12:	Test Substance Purity	N/A	The metric is not applicable to this review article.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this review article.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this review article.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Uninformative	Review article; The analytical method used was not suitable for detection of the test substance.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	The metric is not applicable to this review article.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	N/A	The metric is not applicable to this review article.
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.

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Study Citation:	Montgomery, L., Assaf-Anid, N., Nies, L., Anid, P. J., Vogel, T. M. (1994). Anaerobic biodegradation of chlorinated organic compounds. :256-276.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	2191741

EVALUATION

Domain	Metric	Rating	Comments
Overall Quality Determination		**Uninformative**	

* Related References: Vogel, T. M. , and P. L. McCarty. 1987. Abiotic and biotic transformations of 1,1,1-trichloroethane under methanogenic conditions. Environ. Sci. Technol. 21:1208-1213. HERO ID 1740605 Egli, C., R. Scholtz, A. M. Cook, and T. Leisinger. 1987. Anaerobic dechlorination of tetrachloromethane and 1,2-dichloroethane to biodegradable products by pure cultures of Desulfobacterium sp. and Methanobacterium sp. FEMS Microbial. Lett. 43 :257-261. HERO ID 3629723Belay, N ., and L. Daniels. 1987. Production of ethane, ethylene, and acetylene from halogenated hydrocarbons by methanogenic bacteria. Appl. Environ. Microbial. 53:1604-1610. HERO ID 2310612

Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	6629204

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Guideline not specified; Anaerobic biodegradation half-life
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen, pH, and CEC	anaerobic; Not reported; Not reported
Test Type, Test Temperature, and Test Details	not specified; Not reported; Not reported
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	Not Reported; Not reported; Not reported
Soil Classification, Microbial Biomass, and Humidity	Not reported; Not reported: Not reported
Duration, Parameter, System, and Sampling Frequency	Not reported; not specified; Not reported; Not reported
Control and Blank	Not reported; Not reported
Concentration	Not reported
Analytical Method, Analytical Details, and Results Per Degredation Parameter	Not reported; Not reported; Not reported
Results Remarks	Not reported
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	Not reported; Not reported; Not reported; Not reported; Not reported
Results Details	Half-life: $>$ 30 - 60 d
Mean Total Recovery Results and Results Per Recovery	Not reported; Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the primary source likely contains more detail.

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Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	6629204

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 8:	System Type and Design	N/A	Rating of this factor is not applicable to this kind of information.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 10:	Sampling Methods	N/A	Rating of this factor is not applicable to this kind of information.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Rating of this factor is not applicable to this kind of information.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results are reasonable based on the data's inclusion in a peer- reviewed/recognized database or other secondary source.
	Metric 18:	QSAR Models	N/A	Rating of this factor is not applicable to this kind of information.

Overall Quality Determination Medium

* Related References: ATSDR; Toxicological Profile for 1,1-Dichloroethane. Atlanta, GA: Agency for Toxic Substances and Disease Registry, US Public Health Service (2015). Available from, as of April 10, 2018: http://www.atsdr.cdc.gov/toxprofiles/index.asp

Study Citation:	Scheutz, C., Mosbaek, H., Kjeldsen, P. (2004). Attenuation of methane and volatile organic compounds in landfill soil covers. Journal of Environmental Quality 33(1):61-71.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	2773700

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	No; screening test; Experimental; Not Reported
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NA; Aldrich (Steinheim, Germany); NR; 'high purity'
Oxygen, pH, and CEC	aerobic; 6.9; NR
Test Type, Test Temperature, and Test Details	laboratory; 22°C; Not Reported
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	loamy sand; 5.7% silt, 88.1% sand, 5.3% gravel, 3.2% ww organic carbon; 1.55
Soil Classification, Microbial Biomass, and Humidity	loamy sand per USDA classification; from soil 15-20 cm below the surface: 25% w/w
Duration, Parameter, System, and Sampling Frequency	12 hours; test material; soil microcosm; intermittently over study; about 1 time per hour
Control and Blank	Not Reported; chemically sterilized soil
Concentration	260 - ug/L
Analytical Method, Analytical Details, and Results Per Degredation Parameter	gas chromatograph with a flame ionization detector and an electron capture detector; gas samples (10–500 uL) were taken directly from reaction bottles; Degradation rate integrated over the depth
Results Remarks	Oxidation rate = 0.169 ug/g soil/hour; K0, trace (Degradation rate integrated over the depth) = 1,940 mg m-2 d-1
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	Not Reported; NR; 12 times per study (approx); Not Reported; Not Reported
Results Details	Not Reported
Mean Total Recovery Results and Results Per Recovery	Not Reported; Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	High	The source or purity of the test substance was reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	A concurrent negative control, or blank group, were included.
	Metric 4:	Test Substance Stability	Medium	Some details regarding the test substance storage conditions were not reported; however, the omissions are unlikely impact on the study results.

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Study Citation:	Scheutz, C., Mosbaek, H., Kjeldsen, P. (2004). Attenuation of methane and volatile organic compounds in landfill soil covers. Journal of Environmental Quality 33(1):61-71.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	2773700

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.
	Metric 8:	System Type and Design	Medium	Some details regarding the system type and design were not reported; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum was described and appropriate for the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Some details regarding the sampling methods were not reported; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Uncertainty in the test substance and degradation product concentrations were reported and acceptable.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The analytical method was reported and appropriate. Test substance and degradation product concentrations were reported graphically.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination — High

Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Persistence of VOCs in soils inoculated with anaerobically digested sludge using a method developed by the Water Technology International Corporation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen, pH, and CEC	aerobic; 5.4; 9.8 cmol/kg
Test Type, Test Temperature, and Test Details	laboratory; 22±2°C; Target compound was spiked into municipal sludge treated soils at 50 mg/kg dry weight; held w/o air for 1h, then air passed through at 50 cm3/min for 4 h followed by intermittent aeration in 24 h intervals
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	sandy loam; 74% sand 16% silt 10% clay 1.3% OC; Not reported
Soil Classification, Microbial Biomass, and Humidity	Vineland: fine sandy loam; anaerobically digested municipal sludge total solids: 36 g/L: Not reported
Duration, Parameter, System, and Sampling Frequency	288 hours; test mat.; Flask reaction vessel wrapped in foil; gas inlet/outlet, Teflon washer and plastic screw cap; 0.25, 1, 4, 24, 48, 144, 288 hours
Control and Blank	Not reported; Not reported
Concentration	50 other
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS/ECD; methanol analysis with GC equipped with autosampler and electron capture detector; half-life (hours)
Results Remarks	Not reported
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	53; R-squared: 0.43; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Recoveries were highly variable; specific recovery data for target not reported; VOC recoveries were reduced following 24h, the VOC remaining in the soil was determined by subtracting the recovery at 22°C from the observed total recovery

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
Metric 2:	Test Substance Purity	Low	The test substance source and purity were not reported.
Domain 2: Test Design			
Metric 3:	Study Controls	Uninformative	The study did not include or report crucial control groups (no sterile/abiotic/positive control).

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Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test organism information/inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The percent loss due to biodegradation and/or volatilization was unclear.
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Uninformative

Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Persistence of VOCs in soils inoculated with anaerobically digested sludge using a method developed by the Water Technology International Corporation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen, pH, and CEC	aerobic; 7.2; 15 cmol/kg
Test Type, Test Temperature, and Test Details	laboratory; 22±2°C; Target compound was spiked into municipal sludge treated soils at 50 mg/kg dry weight; held w/o air for 1h, then air passed through at 50 cm3/min for 4 h followed by intermittent aeration in 24 h intervals
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	sandy loam; 73% sand 20% silt 7% clay 1.3% OC; Not reported
Soil Classification, Microbial Biomass, and Humidity	Caledon: sandy loam; anaerobically digested municipal sludge total solids: 36 g/L: Not reported
Duration, Parameter, System, and Sampling Frequency	288 hours; test mat.; Flask reaction vessel; gas inlet/outlet, Teflon washer and plastic screw cap; 0.25, 1, 4, 24, 48, 144, 288 hours
Control and Blank	Not reported; Not reported
Concentration	50 other
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS/ECD; methanol analysis with GC equipped with autosampler and electron capture detector; half-life (hours)
Results Remarks	Not reported
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	23; R-squared: 0.59; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Recoveries were highly variable; specific recovery data for target not reported; VOC recoveries were reduced following 24h, the VOC remaining in the soil was determined by subtracting the recovery at 22°C from the observed total recovery

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
Metric 2:	Test Substance Purity	Low	The test substance source and purity were not reported.
Domain 2: Test Design			
Metric 3:	Study Controls	Uninformative	The study did not include or report crucial control groups (no sterile/abiotic/positive control).
Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

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Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test organism information/inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The percent loss due to biodegradation and/or volatilization was unclear.
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Uninformative

Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Persistence of VOCs in soils inoculated with anaerobically digested sludge using a method developed by the Water Technology International Corporation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen, pH, and CEC	aerobic; 7.1; 19 cmol/kg
Test Type, Test Temperature, and Test Details	laboratory; 22±2°C; Target compound was spiked into municipal sludge treated soils at 50 mg/kg dry weight; held w/o air for 1h, then air passed through at 50 cm3/min for 4 h followed by intermittent aeration in 24 h intervals
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	sandy loam; 28% sand 52% silt 20% clay 2.9% OC; Not reported
Soil Classification, Microbial Biomass, and Humidity	Conestogo: silt loam; anaerobically digested municipal sludge total solids: 36 g/L: Not reported
Duration, Parameter, System, and Sampling Frequency	288 hours; test mat.; Flask reaction vessel; gas inlet/outlet, Teflon washer and plastic screw cap; 0.25, 1, 4, 24, 48, 144, 288 hours
Control and Blank	Not reported; Not reported
Concentration	50 other
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS/ECD; methanol analysis with GC equipped with autosampler and electron capture detector; half-life (hours)
Results Remarks	Not reported
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	47; R-squared: 0.65; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Recoveries were highly variable; specific recovery data for target not reported; VOC recoveries were reduced following 24h, the VOC remaining in the soil was determined by subtracting the recovery at 22°C from the observed total recovery

EVALUATION

Domain		Metric	Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
	Metric 2:	Test Substance Purity	Low	The test substance source and purity were not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Uninformative	The study did not include or report crucial control groups (no sterile/abiotic/positive control).
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

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Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test organism information/inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The percent loss due to biodegradation and/or volatilization was unclear.
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Uninformative

Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Persistence of VOCs in soils inoculated with anaerobically digested sludge using a method developed by the Water Technology International Corporation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen, pH, and CEC	aerobic; 6.7; 23 cmol/kg
Test Type, Test Temperature, and Test Details	laboratory; 22±2°C; Target compound was spiked into municipal sludge treated soils at 50 mg/kg dry weight; held w/o air for 1h, then air passed through at 50 cm3/min for 4 h followed by intermittent aeration in 24 h intervals
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	sandy loam; 27% sand 57% silt 16% clay 2.6% OC; Not reported
Soil Classification, Microbial Biomass, and Humidity	Haldimand: silt loam; anaerobically digested municipal sludge total solids: 36 g/L: Not reported
Duration, Parameter, System, and Sampling Frequency	288 hours; test mat.; Flask reaction vessel; gas inlet/outlet, Teflon washer and plastic screw cap; 0.25, 1, 4, 24, 48, 144, 288 hours
Control and Blank	Not reported; Not reported
Concentration	50 other
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS/ECD; methanol analysis with GC equipped with autosampler and electron capture detector; half-life (hours)
Results Remarks	Not reported
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	55; R-squared: 0.33; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Recoveries were highly variable; specific recovery data for target not reported; VOC recoveries were reduced following 24h, the VOC remaining in the soil was determined by subtracting the recovery at 22°C from the observed total recovery

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
Metric 2:	Test Substance Purity	Low	The test substance source and purity were not reported.
Domain 2: Test Design			
Metric 3:	Study Controls	Uninformative	The study did not include or report crucial control groups (no sterile/abiotic/positive control).
Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

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Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test organism information/inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The percent loss due to biodegradation and/or volatilization was unclear.
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Uninformative

Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Persistence of VOCs in soils inoculated with anaerobically digested sludge using a method developed by the Water Technology International Corporation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen, pH, and CEC	aerobic; 6.0; 50 cmol/kg
Test Type, Test Temperature, and Test Details	laboratory; 22±2°C; Target compound was spiked into municipal sludge treated soils at 50 mg/kg dry weight; held w/o air for 1h, then air passed through at 50 cm3/min for 4 h followed by intermittent aeration in 24 h intervals
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	sandy loam; 3% sand 47% silt 50% clay 3.9% OC; Not reported
Soil Classification, Microbial Biomass, and Humidity	Lincoln: silty clay; anaerobically digested municipal sludge total solids: 36 g/L: Not reported
Duration, Parameter, System, and Sampling Frequency	288 hours; test mat.; Flask reaction vessel; gas inlet/outlet, Teflon washer and plastic screw cap; 0.25, 1, 4, 24, 48, 144, 288 hours
Control and Blank	Not reported; Not reported
Concentration	50 other
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS/ECD; methanol analysis with GC equipped with autosampler and electron capture detector; half-life (hours)
Results Remarks	Not reported
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	39; R-squared: 0.99; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Recoveries were highly variable; specific recovery data for target not reported; VOC recoveries were reduced following 24h, the VOC remaining in the soil was determined by subtracting the recovery at 22°C from the observed total recovery

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
Metric 2:	Test Substance Purity	Low	The test substance source and purity were not reported.
Domain 2: Test Design			
Metric 3:	Study Controls	Uninformative	The study did not include or report crucial control groups (no sterile/abiotic/positive control).
Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

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Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test organism information/inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The percent loss due to biodegradation and/or volatilization was unclear.
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Uninformative

Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Persistence of VOCs in soils inoculated with anaerobically digested sludge using a method developed by the Water Technology International Corporation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen, pH, and CEC	aerobic; 7.2; 21 cmol/kg
Test Type, Test Temperature, and Test Details	laboratory; 22±2°C; Target compound was spiked into municipal sludge treated soils at 50 mg/kg dry weight; held w/o air for 1h, then air passed through at 50 cm3/min for 4 h followed by intermittent aeration in 24 h intervals
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	sandy loam; 13% sand 52% silt 35% clay 6.9% OC; Not reported
Soil Classification, Microbial Biomass, and Humidity	Muck I: silty clay loam; anaerobically digested municipal sludge total solids: 36 g/L: Not reported
Duration, Parameter, System, and Sampling Frequency	288 hours; test mat.; Flask reaction vessel; gas inlet/outlet, Teflon washer and plastic screw cap; 0.25, 1, 4, 24, 48, 144, 288 hours
Control and Blank	Not reported; Not reported
Concentration	50 other
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS/ECD; methanol analysis with GC equipped with autosampler and electron capture detector; half-life (hours)
Results Remarks	Not reported
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	61; R-squared: 0.98; p</=0.01; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Recoveries were highly variable; specific recovery data for target not reported; VOC recoveries were reduced following 24h, the VOC remaining in the soil was determined by subtracting the recovery at 22°C from the observed total recovery

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
Metric 2:	Test Substance Purity	Low	The test substance source and purity were not reported.
Domain 2: Test Design			
Metric 3:	Study Controls	Uninformative	The study did not include or report crucial control groups (no sterile/abiotic/positive control).
Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

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Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test organism information/inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The percent loss due to biodegradation and/or volatilization was unclear.
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Uninformative

Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, EndPoint, Type, Guideline	None; other; Experimental; other: Persistence of VOCs in soils inoculated with anaerobically digested sludge using a method developed by the Water Technology International Corporation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Oxygen, pH, and CEC	aerobic; 7.0; 77 cmol/kg
Test Type, Test Temperature, and Test Details	laboratory; 22±2°C; Target compound was spiked into municipal sludge treated soils at 50 mg/kg dry weight; held w/o air for 1h, then air passed through at 50 cm3/min for 4 h followed by intermittent aeration in 24 h intervals
Soil Type, Clay Silts and Organic Carbon, and Bulk Density	sandy loam; 16% sand 54% silt 30% clay 12.0% OC; Not reported
Soil Classification, Microbial Biomass, and Humidity	Muck II: silty clay loam; anaerobically digested municipal sludge total solids: 36 g/L: Not reported
Duration, Parameter, System, and Sampling Frequency	288 hours; test mat.; Flask reaction vessel; gas inlet/outlet, Teflon washer and plastic screw cap; 0.25, 1, 4, 24, 48, 144, 288 hours
Control and Blank	Not reported; Not reported
Concentration	50 other
Analytical Method, Analytical Details, and Results Per Degredation Parameter	GC-MS/ECD; methanol analysis with GC equipped with autosampler and electron capture detector; half-life (hours)
Results Remarks	Not reported
Results Value, Standard Deviation Results, Sample Time Results, Reference Substance Results, and Referencs Substance Compartment Results	83; R-squared: 0.83; p</=0.05; Not reported; Not reported; Not reported
Results Details	Not reported
Mean Total Recovery Results and Results Per Recovery	Recoveries were highly variable; specific recovery data for target not reported; VOC recoveries were reduced following 24h, the VOC remaining in the soil was determined by subtracting the recovery at 22°C from the observed total recovery

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified clearly.
Metric 2:	Test Substance Purity	Low	The test substance source and purity were not reported.
Domain 2: Test Design			
Metric 3:	Study Controls	Uninformative	The study did not include or report crucial control groups (no sterile/abiotic/positive control).
Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

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Study Citation:	Webber, M. D., Goodin, J. D., Fowlie, P. J., Hong-You, R. L., Legault, J. (1997). Persistence of volatile organic compounds in sludge treated soils. Water Quality Research Journal of Canada 32(3):579-597.
OECD Harmonized Template:	Biodegredation in Soil
HERO ID:	645796

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups. The conditions of the exposure were documented.
	Metric 8:	System Type and Design	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The test organism information/inoculum source were reported.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The percent loss due to biodegradation and/or volatilization was unclear.
	Metric 12:	Test Substance Purity	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Uninformative

Study Citation:	Dewulf, J., Dewettinck, T., De Visscher, A., Van Langenhove, H. (1996). Sorption of chlorinated C1- and C2-hydrocarbons and monocyclic aromatic hydrocarbons on sea sediment. Water Research 30(12):3130-3138.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	1946157

EXTRACTION

Parameter	Data
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Experimental; other: Column sorption experiment using sea sediment
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Janssen; NR; NR Notes: used without further purification
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; closed two-phase systems samples were obtained; Not reported
pH, Test Temperature, Buffer, and Test Details	Not reported; 25.0±0.3C; Not reported; column characteristics: Total volume: 95.03 mL, 182.25 wet mass, 147.47 dry matter, 34.78g water content, 34.10 mL water volume, porosity: 0.359
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; OC: 0.030±0.004% (w/w); Not reported
Bulk Density and Matrix Details	Apparent density of column: 1.552 kg/L; density of saltwater at 25C: 1.020 kg/L; Sediment collected from the North Sea on the Belgian Continental Shelf Oct. 1993 sieved over 0.5 mm sieve before filling column
Media, Recovery, and Statistics	Artificial seawater; Not reported; SSQ (sum of squares deviations): 8.37E-3 (result from column experiment with off-line detection)
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not reported; Not reported; Not reported; Not reported
Partition Coefficient Type and Partition Coefficient Results	Kp,sw: solid phase/salt water partitioning coefficient L/kg; Koc/sw: organic matter/sea water partitioning coefficient L/kg; Koc: organic carbon-water partitioning coefficient; Ksed: equilibrium partitioning coefficient between wet sediment/water column; Kp,sw: 3.46E-3 (column experiment with off-line detection); Koc/sw: 11.5 (mole/kg over mole/L) Koc: 9.2 (mole /kg over mole/L) log Koc: 0.96; Ksed: 0.353
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; D (dispersion coefficient, m2/s) = 5.70E-8 (result from column experiment with off-line detection)
Mass Balance	Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	Medium	Source was reported, purity was not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Low	Data for study controls were not reported; use of sterile soil was not reported.

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Study Citation:	Dewulf, J., Dewettinck, T., De Visscher, A., Van Langenhove, H. (1996). Sorption of chlorinated C1- and C2-hydrocarbons and monocyclic aromatic hydrocarbons on sea sediment. Water Research 30(12):3130-3138.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	1946157

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Low	Some details for testing conditions and soil characteristics were not specified.
	Metric 7:	Testing Consistency	High	No inconsistencies were reported or identified.
	Metric 8:	System Type and Design	High	System design was reported and appropriate.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment was appropriate for this study.
	Metric 12:	Test Substance Purity	Medium	Limited sampling details were reported.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	Reporting details were omitted from this study (e.g., mass balance, analytical LOD, recovery).
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical analysis and kinetic calculations were appropriate.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	Lack of controls limit the validity of the results.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Medium

* Related References: HSDB; HERO ID 6629204

Study Citation:	Enzminger, J. D. (1988). Anaerobic reductive dechlorination of C2 hydrocarbons in batch and fixed-film bioreactors.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5443549

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, Type, Guideline	None; Experimental; other: Non-guideline column study
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; equilibration times were short enough so biodegradation was not expected; Not reported
pH, Test Temperature, Buffer, and Test Details	buffer used pH 7; NR, likely Room temperature; 10 mM phosphate buffer; sludge aerated and autoclaved in serum bottles
Matrix, Clay Silts and Organic Carbon, and CEC	other; Not reported; Not reported
Bulk Density and Matrix Details	Not reported; anaerobic sludge
Media, Recovery, and Statistics	anaerobic media; Same compared to buffer control; Not reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	NR in this study; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not reported; Not reported; Not reported; Not reported
Partition Coefficient Type and Partition Coefficient Results	Log Koc; 1.658 and 1.022
Partition Coefficient Phase and Partition Coefficient Results	solids-water in raw sewage sludge; Concentration adsorbed to the sludge solids = the total measured amount of substrate in the bottle minus the quantity measured in the aqueous phase divided by the measured quantity of sludge solids
Mass Balance	not discussed for this experiment

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	The source and purity of the test substance were not reported or explicitly verified by analytical means.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	A concurrent negative control was not reported.
	Metric 4:	Test Substance Stability	Medium	Test substance preparation and storage conditions were not reported.
Domain 3: Test Conditions				

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Study Citation:	Enzminger, J. D. (1988). Anaerobic reductive dechlorination of C2 hydrocarbons in batch and fixed-film bioreactors.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5443549

Domain		Metric	EVALUATION Rating	Comments
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	Some test parameters were not explicitly reported.
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these discrepancies were not likely to have a substantial impact on study results.
	Metric 8:	System Type and Design	Medium	Some test system details were not reported; however, it was likely capable of maintaining substance concentrations.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcomes of interest.
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods were not fully reported, and the omissions may have a substantial impact on study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Variability in measurements were addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Extraction efficiency and mass balance were not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Details regarding this metric were not reported; however, additional information may be included in the primary source.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Medium

Study Citation:	Lam, T. T. (1994). Adsorption and diffusive transport of chlorinated aliphatic solvents in unsaturated soil.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5443592

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Experimental; other: Adsorption of chlorinated hydrocarbons under water saturated conditions via a solid-liquid equilibrium batch method
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NA; Spectrum Chemical (Gardena, CA); Liquid; reagents grade quality or better
Sampling Frequency, Sampling Details, and Number of Replicates	48 hrs; Not reported; 6 for each point + 6 for control
pH, Test Temperature, Buffer, and Test Details	1.5, 2.7, 7; 21 C; 0.005 M CaCl2; 0.3 - 8 mmol/L test material; liquid:solid ratio for the soil was 2:1. Bottles were shaken and equilibrated for 48 to 55 hours
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Sand: 25%, Clay: 25%, Silt: 50%, Organic matter: 3.5%; 12.7 meq/100 g soil
Bulk Density and Matrix Details	Not Reported; 3.5% organic matter content
Media, Recovery, and Statistics	Quakertown soil; Not Reported; < 5% error
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	vinyls; Equilibrium results for 1,1-Dichloroethane were inconclusive; however, it was expected to reach equilibrium about the same time as trichloroethylene (20 hours); Not applicable
Reference Substance, Reference Substance Results, and Percent Adsorption	The measured steady state diffusioncoefficients (Dg) of TCE at soil water contents of 0.5,1.6, 3.8, 7.4, and 12.6% are 0.027, 0.026,0.024, 0.014, and 0.009 cm ?/s, respectively.; Blanks containing aqueous solution and no soil were set up in parallel with soil bottles to account for any solute vapor loss during the equilibration period; Kl (monolayer adsorption capacity) = 30.83
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	proportionality constant, Kp; Slope = 0.254; Calculated using the Linear Model where solid phase (Cs) is directly proportional to the solution solute concentration (Ce): Cs = Kp x Ce; 0.177 (Freundlich Model)
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported
Partition Coefficient Phase and Partition Coefficient Results	Not reported; Not reported
Mass Balance	Not Reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
Metric 2:	Test Substance Purity	High	The test substance source and purity were reported.
Domain 2: Test Design			
Metric 3:	Study Controls	High	Blank controls to measured volatilization were run concurrently.
Metric 4:	Test Substance Stability	High	Steps were taken to account for non-absorption loss, such as volatilization and biodegradation.

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Study Citation:	Lam, T. T. (1994). Adsorption and diffusive transport of chlorinated aliphatic solvents in unsaturated soil.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5443592

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	Test method was suitable for measurement of absorption.
	Metric 6:	Testing Conditions	High	Test conditions were clearly delineated.
	Metric 7:	Testing Consistency	High	6 samples were used for each test and blanks were run in duplicate.
	Metric 8:	System Type and Design	High	Design was reasonable for measurement of absorption.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	Multiple models were used to calculate adsorption, but a Koc was not calculated.
	Metric 12:	Test Substance Purity	Low	Sampling details were not provided.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Steps were taken to account for non-absorption loss, such as volatilization and biodegradation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Data reporting was reasonable, but some details were omitted.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Multiple models were used to calculate adsorption, but a Koc was not calculated.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — High

Study Citation:	Lu, C., Bjerg, P. L., Zhang, F., Broholm, M. M. (2011). Sorption of chlorinated solvents and degradation products on natural clayey tills. Chemosphere 83(11):1467-1474.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	733896

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, Type, Guideline	None; Experimental; OECD Guideline 106 (Adsorption - Desorption Using a Batch Equilibrium Method)
Solvent, Reactivity, Storage, Stability	Distilled water; NR; NR; NR
Radiolabel, Source, State, Purity	NA; NR; NR; Analytical grade Notes: Test substance characteristics reported in the supplementary material
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Not reported; Not reported
pH, Test Temperature, Buffer, and Test Details	Not reported; Not reported; Not reported; Guideline study
Matrix, Clay Silts and Organic Carbon, and CEC	clay; 7 samples of Danish clayey till from three sites at depths of 2.4 to 9.5 m below the surface (4 contaminated; 3 uncontaminated); Not reported
Bulk Density and Matrix Details	Not reported; foc 0.02-0.08%; clay content 23.0-27.0%; 4 samples reduced clayey till, 3 samples oxidized clayey till
Media, Recovery, and Statistics	aqueous solution; Not reported; Not reported
Transformation Products, Equilibrium	Not reported; Test substance concentration: 1 mg/L; Not Reported
Adsorption Details, and Equilibrium Desorption Details	
Reference Substance, Reference Substance Results, and Percent Adsorption	Analytical controls; Variation 10-30%, most GC/MS runs were 10-15%; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Linear fit over entire concentration range; linear isotherm Kd = Cs/Cw; 1.16±0.01 (oxidized clay); 0.22±0.01, 0.24±0.01 (reduced clay); Not Reported; 1.05±0.70 (oxidized clay); 3.95±1.56, 2.41±2.28 (reduced clay)
Partition Coefficient Type and Partition Coefficient Results	Regression model using Kow: log Kd = 0.590 log Kow-1.561 (R-squared = 0.66); 2.90 (oxidized clay); 2.64, 2.54 (reduced clay)
Partition Coefficient Phase and Partition Coefficient Results	sediment-water; Not Reported
Mass Balance	Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name.
	Metric 2:	Test Substance Purity	Medium	The test substance source was not reported; although, it may be available in the supplemental information.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Control group details were not included; however, it may be found in the Supp Info.
	Metric 4:	Test Substance Stability	High	The test substance preparation was reported.

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Study Citation:	Lu, C., Bjerg, P. L., Zhang, F., Broholm, M. M. (2011). Sorption of chlorinated solvents and degradation products on natural clayey tills. Chemosphere 83(11):1467-1474.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	733896

		EVALUATION		
Domain	Metric		Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.
	Metric 8:	System Type and Design	High	The system type and design were capable of appropriately maintaining substance concentrations.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to the study type.
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment was appropriate for this study.
	Metric 12:	Test Substance Purity	Medium	Limited details regarding this metric were reported; however, the omissions were unlikely to have hindered interpretation of the results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the study were considered and accounted for in data evaluation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Some details were in the supporting document, which was not readily available.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	No statistical methods or kinetic calculations (due to rapid equilibration) were reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to the study type.

Overall Quality Determination — High

Study Citation:	Mokrauer, J. E., Kosson, D. S. (1989). Electrophysical sorption of two carbon halogenated solvents onto soil. Environmental Progress 8(4):279-283.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5440801

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Experimental; other: non-guideline sorption to soil
Solvent, Reactivity, Storage, Stability	Methanol; NR; NR; NR
Radiolabel, Source, State, Purity	No; NR; NR; NR Notes: NR
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; 6 extractions/sample in pentane at 4C; each concentration run in duplicate with controls
pH, Test Temperature, Buffer, and Test Details	Not reported; 25C; Not reported; Test concentrations of 2, 5, 10, 50, 100, and 200 ppm (test solutions had less than 0.1% methanol) were shaken for 24h, centrifuged 4h, extracted in pentane, 6 extractions/ sample.
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; soil composition on a mass basis: 72% sand, 16% silt, 12% clay, 1.8% organic matter; Not reported
Bulk Density and Matrix Details	Not reported; bottles were filled with sifted, air-dried soil and water and then sealed with Teflon/silicone septa
Media, Recovery, and Statistics	water; recovery in pentane phase was greater than 97%; r-squared = 0.9865
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; equilibrium time was calculated in previous study; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not reported; Not reported; Not reported; Not reported
Partition Coefficient Type and Partition Coefficient Results	isotherm based on linear partitioning model; 0.5177
Partition Coefficient Phase and Partition Coefficient Results	soil-water; Not Reported
Mass Balance	Not reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified clearly
Metric 2:	Test Substance Purity	Medium	Source and purity were not reported.
Domain 2: Test Design			
Metric 3:	Study Controls	Medium	Controls were included; result details were not reported.
Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.

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Study Citation:	Mokrauer, J. E., Kosson, D. S. (1989). Electrophysical sorption of two carbon halogenated solvents onto soil. Environmental Progress 8(4):279-283.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5440801

		EVALUATION		
Domain		Metric	Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable.
	Metric 6:	Testing Conditions	Medium	pH was not reported
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples.
	Metric 8:	System Type and Design	High	The system type and design were appropriate.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this type of study.
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	Limited detail regarding sampling methods.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Confounding variable such as other loss processes (biotic/abiotic) were not discussed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this type of study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Data reporting was appropriate; however, control groups were not discussed.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	95%CI were reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this type of study.
Overall Quality Determination			**High**	

Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	6629204

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, Type, Guideline	None; Experimental; other: Not specified
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Not reported; Not reported
pH, Test Temperature, Buffer, and Test Details	Not reported; Not reported; Not reported; Not reported
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Not reported; Not reported
Bulk Density and Matrix Details	Not reported; Sea sediment from Belgian Continental Shelf of the North Sea (collected October 1993)
Media, Recovery, and Statistics	Not reported; Not reported; Not reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Koc; 9.2; Not reported; Not reported
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; Not reported
Mass Balance	Not reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified by name.
Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 2: Test Design			
Metric 3:	Study Controls	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 3: Test Conditions			
Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the primary source likely contains more detail.

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Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	6629204

Domain		Metric	EVALUATION Rating	Comments
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 8:	System Type and Design	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Rating of this factor is not applicable to this kind of information.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The results are reasonable based on the data's inclusion in a peer- reviewed/recognized database or other secondary source.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Medium

* Related References: Dewulf J et al; Water Research 30: 3130-3138 (1996); HSDB

Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	6629204

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, Type, Guideline	None; Experimental; other: Not specified
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Not reported; Not reported
pH, Test Temperature, Buffer, and Test Details	Not reported; Not reported; Not reported; Not reported
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; Not reported; Not reported
Bulk Density and Matrix Details	Not reported; Not reported
Media, Recovery, and Statistics	Not reported; Not reported; Not reported
Transformation Products, Equilibrium	Not reported; Not reported; Not reported
Adsorption Details, and Equilibrium Desorption Details	
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption	Koc; 30; Not reported; Not reported
Desorption Type	
Partition Coefficient Type and Partition Coefficient Results	Not reported; Not reported
Partition Coefficient Phase and Partition Coefficient Results	Not Reported; Not reported
Mass Balance	Not reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified by name.
Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 2: Test Design			
Metric 3:	Study Controls	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 3: Test Conditions			
Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the primary source likely contains more detail.

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Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	6629204

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 8:	System Type and Design	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this type of study.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	Rating of this factor is not applicable to this kind of information.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The results are reasonable based on the data's inclusion in a peer- reviewed/recognized database or other secondary source.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Medium

* Related References: Schuurmann G et al; Environ Sci Technol 40: 7005-7011 (2006); HSDB

Study Citation:	Poole, S. K., Poole, C. F. (1999). Chromatographic models for the sorption of neutral organic compounds by soil from water and air. Journal of Chromatography A 845(1-2):381-400.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	645740

EXTRACTION

Parameter	Data
CASRN and Test Material	Not Reported; Not Reported
Confidentiality, Type, Guideline	None; Calculation; other: model for sorption and partitioning
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	None; NR; NR; NR
Sampling Frequency, Sampling Details, and Number of Replicates	Not applicable; Not applicable; Not applicable
pH, Test Temperature, Buffer, and Test Details	Not applicable; Not applicable; Not applicable; 138 compounds were used in soil-water model; 69 compounds were used in soil-air model; using up to 6 descriptors; characteristic volume (0.635 cm3/mol/100), excess molar refraction (0.322 cm3/10), solute's dipolarity/polarizability (0.49), solute's hydrogen-bond acidity (0.10), solute's hydrogen-bond basicity (0.10), distribution constant between gas and n-hexadecane @ 298 K (2.316)
Matrix, Clay Silts and Organic Carbon, and CEC	other; Not applicable; Not applicable
Bulk Density and Matrix Details	Not applicable; Not applicable
Media, Recovery, and Statistics	Not applicable; Not applicable; Summary of statistics for 138 compounds for soil-water: p=0.940, SE=0.391, F=202; for 69 compounds soil-air: p=0.991, SE=0.238, F=667
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not applicable; Not applicable; Not applicable
Reference Substance, Reference Substance Results, and Percent Adsorption	Not applicable; Not applicable; Not applicable
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not applicable; Not applicable; Not applicable; Not applicable
Partition Coefficient Type and Partition Coefficient Results	Log Koc; Log Kow; Log Koca; 1.48; 1.79; 2.10
Partition Coefficient Phase and Partition Coefficient Results	soil-water (Koc); octanol-water (Kow); soil-air (Koca); Not Reported
Mass Balance	Not applicable

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to this study type.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.

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Study Citation:	Poole, S. K., Poole, C. F. (1999). Chromatographic models for the sorption of neutral organic compounds by soil from water and air. Journal of Chromatography A 845(1-2):381-400.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	645740

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	N/A	The metric is not applicable to this study type.
	Metric 6:	Testing Conditions	N/A	The metric is not applicable to this study type.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	N/A	The metric is not applicable to this study type.
	Metric 12:	Test Substance Purity	N/A	The metric is not applicable to this study type.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	This metric met the criteria for high confidence as expected for this type of study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	This metric met the criteria for high confidence as expected for this type of study.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — High

Study Citation:	RIVM, (2007). Ecotoxicologically based environmental risk limits for several volatile aliphatic hydrocarbons. :217.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5159900

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Experimental; other
Solvent, Reactivity, Storage, Stability	Not reported; Not reported; Not reported; Not reported
Radiolabel, Source, State, Purity	Not reported; Not reported; Not reported; Not reported Notes: Not reported
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Not reported; Not reported
pH, Test Temperature, Buffer, and Test Details	Not reported; 2.3, 3.8, 6.2, 8, 13.5, 18.6, 25°C; Not reported; River Leie sediment
Matrix, Clay Silts and Organic Carbon, and CEC	other; Not reported; Not reported
Bulk Density and Matrix Details	Not reported; Not reported
Media, Recovery, and Statistics	Not reported; Not reported; Not reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not reported; Not Reported; Not Reported; Not reported
Partition Coefficient Type and Partition Coefficient Results	Log Koc; 1.43 at 2.3°C, 1.46 at 3.8°C,1.43 at 6.2°C, 1.48 at 8°C, 1.50 at 13.5°C, 1.49 at 18.6°C, 1.55 at 25°C
Partition Coefficient Phase and Partition Coefficient Results	Not reported; Soil/sediment water sorption coefficient (Log Koc)
Mass Balance	Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by common name.
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported by the secondary source; however, the omission is unlikely to have a substantial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Study controls were not reported in the secondary source; however, the omissions are unlikely to have a substantial impact on the study results.

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Study Citation:	RIVM, (2007). Ecotoxicologically based environmental risk limits for several volatile aliphatic hydrocarbons. :217.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5159900

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	Medium	Details regarding the test substance preparation, homogeneity, and storage conditions were not reported by the secondary source; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Low	Details regarding the test method were not reported in the secondary report.
	Metric 6:	Testing Conditions	Medium	Some details regarding the testing conditions were not reported in the secondary report; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 7:	Testing Consistency	Medium	Some details regarding the testing conditions across study groups were not reported in the secondary report; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 8:	System Type and Design	Low	The system type was not clearly reported in the secondary report and the omissions may have an impact on the study results.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The outcome assessment was not reported in the secondary report which may have an impact on the study results.
	Metric 12:	Test Substance Purity	Medium	The sampling methods were not described in the secondary report; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty in the measurements were not reported in the secondary report.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Details regarding the sampling type were not reported in the secondary report.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical methods were not reported in the secondary reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	A reference substance was not reported; however, the study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

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Study Citation:	RIVM, (2007). Ecotoxicologically based environmental risk limits for several volatile aliphatic hydrocarbons. :217.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5159900

		EVALUATION	
Domain	Metric	Rating	Comments
Overall Quality Determination		**Medium**	

* Related References: Dewulf, J., Van Langenhove, H. and Grare, S. 1999. Sediment/water and octanol water equilibrium partitioning of volatile organic compounds: temperature dependence in the 2-25°C range. Wat Res. 33, 2424-2436.

Study Citation:	RIVM, (2007). Ecotoxicologically based environmental risk limits for several volatile aliphatic hydrocarbons. :217.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5159900

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Experimental; other
Solvent, Reactivity, Storage, Stability	Not reported; Not reported; Not reported; Not reported
Radiolabel, Source, State, Purity	Not reported; Not reported; Not reported; Not reported Notes: Not reported
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Not reported; Not reported
pH, Test Temperature, Buffer, and Test Details	Not reported; Not reported; Not reported; Not reported
Matrix, Clay Silts and Organic Carbon, and CEC	other; Not reported; Not reported
Bulk Density and Matrix Details	Not reported; Not reported
Media, Recovery, and Statistics	Not reported; Not reported; Not reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not reported; Not Reported; Not Reported; Not reported
Partition Coefficient Type and Partition Coefficient Results	Log Koc; 1.48
Partition Coefficient Phase and Partition Coefficient Results	Not reported; Soil/sediment water sorption coefficient (Log Koc)
Mass Balance	Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by common name.
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported by the secondary source; however, the omission is unlikely to have a substantial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Study controls were not reported in the secondary source; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 4:	Test Substance Stability	Medium	Details regarding the test substance preparation, homogeneity, and storage conditions were not reported by the secondary source; however, the omissions are unlikely to have a substantial impact on the study results.

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Study Citation:	RIVM, (2007). Ecotoxicologically based environmental risk limits for several volatile aliphatic hydrocarbons. :217.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5159900

Domain	Metric	Metric	EVALUATION Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Low	Details regarding the test method were not reported in the secondary report.
	Metric 6:	Testing Conditions	Medium	Some details regarding the testing conditions were not reported in the secondary report; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 7:	Testing Consistency	Medium	Some details regarding the testing conditions across study groups were not reported in the secondary report; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 8:	System Type and Design	Low	The system type was not clearly reported in the secondary report and the omissions may have an impact on the study results.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The outcome assessment was not reported in the secondary report which may have an impact on the study results.
	Metric 12:	Test Substance Purity	Medium	The sampling methods were not described in the secondary report; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty in the measurements were not reported in the secondary report.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Details regarding the sampling type were not reported in the secondary report.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical methods were not reported in the secondary reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	A reference substance was not reported; however, the study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination — Medium

* Related References: Tao, S., Piao, H., Dawson, R., Lu, X. and Hu, H. 1999. Estimation of organic carbon normalized sorption coefficient (Koc) for soils using the fragment constant method. Environ. Sci. Technol. 33, 2719-2725.

Study Citation:	RIVM, (2007). Ecotoxicologically based environmental risk limits for several volatile aliphatic hydrocarbons. :217.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5159900

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Experimental; other
Solvent, Reactivity, Storage, Stability	Not reported; Not reported; Not reported; Not reported
Radiolabel, Source, State, Purity	Not reported; Not reported; Not reported; Not reported Notes: Not reported
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Not reported; Not reported
pH, Test Temperature, Buffer, and Test Details	Not reported; Not reported; Not reported; North Sea sediment
Matrix, Clay Silts and Organic Carbon, and CEC	other; Not reported; Not reported
Bulk Density and Matrix Details	Not reported; Not reported
Media, Recovery, and Statistics	Not reported; Not reported; Not reported
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Not reported; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Not reported; Not reported; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Not reported; Not Reported; Not Reported; Not reported
Partition Coefficient Type and Partition Coefficient Results	Log Koc; 1.06
Partition Coefficient Phase and Partition Coefficient Results	Not reported; Soil/sediment water sorption coefficient (Log Koc)
Mass Balance	Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by common name.
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported by the secondary source; however, the omission is unlikely to have a substantial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Study controls were not reported in the secondary source; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 4:	Test Substance Stability	Medium	Details regarding the test substance preparation, homogeneity, and storage conditions were not reported by the secondary source; however, the omissions are unlikely to have a substantial impact on the study results.

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Study Citation:	RIVM, (2007). Ecotoxicologically based environmental risk limits for several volatile aliphatic hydrocarbons. :217.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5159900

Domain	Metric	Metric	EVALUATION Rating	Comments
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Low	Details regarding the test method were not reported in the secondary report.
	Metric 6:	Testing Conditions	Medium	Some details regarding the testing conditions were not reported in the secondary report; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 7:	Testing Consistency	Medium	Some details regarding the testing conditions across study groups were not reported in the secondary report; however, the omissions are unlikely to have a substantial impact on the study results.
	Metric 8:	System Type and Design	Low	The system type was not clearly reported in the secondary report and the omissions may have an impact on the study results.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The outcome assessment was not reported in the secondary report which may have an impact on the study results.
	Metric 12:	Test Substance Purity	Medium	The sampling methods were not described in the secondary report; however, the omissions are unlikely to have a substantial impact on the study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Sources of variability and uncertainty in the measurements were not reported in the secondary report.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	Details regarding the sampling type were not reported in the secondary report.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Statistical methods were not reported in the secondary reported.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	A reference substance was not reported; however, the study results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination — Medium

* Related References: Dewulf, J., Dewettinck, T., De Visscher, A. and Van Langenhove, H. 1996. Sorption of chlorinated C1- and C2-hydrocarbons and monocyclic aromatic hydrocarbons on sea sediment. Wat. Res. 30, 3130-3138.

Study Citation:	Siegrist, H., Mccarty, P. L. (1987). Column methodologies for determining sorption and biotransformation potential for chlorinated aliphatic compounds in aquifers. Journal of Contaminant Hydrology 2(1):31-50.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5444774

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, Type, Guideline	None; Experimental; other: Non-guideline column study
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Supelco Inc. Bellafonte, PA; NR; NR Notes: NR
Sampling Frequency, Sampling Details, and Number of Replicates	Not reported; Not reported; Not reported
pH, Test Temperature, Buffer, and Test Details	7.2 +/- 0.2; Not reported; Aerobic and anaerobic nutrient media; limited details reported; 40 cm glass columns (130 ml volume) were filled with aquifer material
Matrix, Clay Silts and Organic Carbon, and CEC	Not Reported; discussed but not quantified; Not reported
Bulk Density and Matrix Details	Not reported; aquifer solid from 3 locations in the San Francisco Bay area
Media, Recovery, and Statistics	Aerobic groundwater and nutrient solutions, and primary substrate (2 mg/L methanol or 3 mg/L glucose, equivalent to 3 mg/L COD).; NA; standard deviations reported and estimated error calculated using Gauss Method
Transformation Products, Equilibrium Adsorption Details, and Equilibrium Desorption Details	Biotransformation not observed in aerobic columns with aquifer materials.; Not reported; Not reported
Reference Substance, Reference Substance Results, and Percent Adsorption	Bromochloropropane as internal standard; NA; Not reported
Adsorption Coefficient Type, Adsorption Coefficient Results, Adsorption Coefficient Results Comments, and Adsorption Desorption Type	Kd (distribution coefficient); 1.1E-6 m3/g (+/-0.5); Average of 7 columns; Not reported
Partition Coefficient Type and Partition Coefficient Results	ratio of sorbed mass to solution mass (Rp); 4.5
Partition Coefficient Phase and Partition Coefficient Results	soil-water; test substance concentrations of 50-150 ug/L
Mass Balance	Calculated for sorption studies

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by chemical name and CASRN.
	Metric 2:	Test Substance Purity	High	The test substance source was reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	An internal standard was used and transformation products were monitored.

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Study Citation:	Siegrist, H., Mccarty, P. L. (1987). Column methodologies for determining sorption and biotransformation potential for chlorinated aliphatic compounds in aquifers. Journal of Contaminant Hydrology 2(1):31-50.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5444774

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	Medium	There were omissions in testing conditions (e.g., temperature was not reported); however, sufficient data were reported to determine that the deviations and omissions were not likely to have a substantial impact on study results.
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these discrepancies were not likely to have a substantial impact on study results.
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design were capable of appropriately maintaining substance concentrations.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.
	Metric 12:	Test Substance Purity	Low	Details regarding sampling methods were not fully reported, and the omissions may have a substantial impact on study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The target chemical and transformation product(s) concentrations, extraction efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	The study results were reasonable.

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Study Citation:	Siegrist, H., Mccarty, P. L. (1987). Column methodologies for determining sorption and biotransformation potential for chlorinated aliphatic compounds in aquifers. Journal of Contaminant Hydrology 2(1):31-50.
OECD Harmonized Template:	Adsorption and Desorption
HERO ID:	5444774

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination High

Study Citation:	Buszka, P. M., Yeskis, D. J., Kolpin, D. W., Furlong, E. T., Zaugg, S. D., Meyer, M. T. (2009). Waste-indicator and pharmaceutical compounds in landfill-leachate-affected ground water near Elkhart, Indiana, 2000-2002. Bulletin of Environmental Contamination and Toxicology 82(6):653-659.
OECD Harmonized Template:	Miscellaneous
HERO ID:	4912133

EXTRACTION

Parameter	**Data**
CASRN and Test Material	Not Reported; 1,1-dichloroethane
Confidentiality, Type, Guideline	no; monitoring; monitoring
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	test chemical concentration measured at an observation well downgradient from a landfill near Elkhart, Indiana and at a domestic well in a neighborhood east of thelandfill; The domestic well water had concentrations of acetaminophen and caffeine larger than the concentrations detected in the observation well water; the authors suggest this indicates domestic well water may be contaminated by nearby septic systems. However, leachate contamination of the domestic well water was also indicated by the presence of benzene, chloroform, 1,2-dichloroethane, vinyl chloride, 1,1-dichloroethane, arsenic, sodium, and calcium.; duplicate samples were obtained and analyzed
System Type Design	Not Reported
Sampling Frequency and Sampling Details	twice for wells downgradient from the landfill, once for domestic well samples; sample dates were 11/16/2000 and 10/31/2002
Test Temperature	NR
Results Details	average concentrations were 7.5 (7, 8) and 11.5 (11, 12) ug/L for samples in 2000 and 2002, respectively and 3 ug/L from the domestic well on 11/15/2000
Analytical Method and Analytical Details	GC/MS; Not Reported
Transformation Products, Statistics, and Kinetics	Not Reported; Not Reported; Not Reported
Reference Substance and Reference Substance Results	Not Reported; Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	The analytical substance source or purity were not reported; however, the omissions were not likely to have a substantial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Some concurrent control details were not reported; however, the lack of data was not likely to have a substantial impact on study results.
	Metric 4:	Test Substance Stability	N/A	This metric is not applicable to this study type.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	N/A	This metric is not applicable to this study type.
	Metric 6:	Testing Conditions	Medium	Testing conditions were monitored, reported, and appropriate for the method.
	Metric 7:	Testing Consistency	Medium	Some test conditions across samples or study groups were not reported, but these discrepancies were not likely to have a substantial impact on study results.

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Study Citation:	Buszka, P. M., Yeskis, D. J., Kolpin, D. W., Furlong, E. T., Zaugg, S. D., Meyer, M. T. (2009). Waste-indicator and pharmaceutical compounds in landfill-leachate-affected ground water near Elkhart, Indiana, 2000-2002. Bulletin of Environmental Contamination and Toxicology 82(6):653-659.
OECD Harmonized Template:	Miscellaneous
HERO ID:	4912133

		EVALUATION		
Domain	Metric		Rating	Comments
	Metric 8:	System Type and Design	High	Equilibrium is assumed under field conditions.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	The assessment methodology reported the presence of the target chemical in groundwater; however, the environmental transport and/or persistence of the compound were unable to be quantified.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	No confounding variables were noted.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	There was insufficient evidence presented to confirm that parent compound disappearance was not likely due to some other process.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Kinetic calculations were not clearly described.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Medium

Study Citation:	Dewulf, J. P., Van Langenhove, H. R., Van der Auwera, L. F. (1998). Air/water exchange dynamics of 13 volatile chlorinated C1- and C2-hydrocarbons and monocyclic aromatic hydrocarbons in the southern North Sea and the Scheldt estuary. Environmental Science and Technology 32(7):903-911.
OECD Harmonized Template:	Miscellaneous
HERO ID:	644857

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Calculation; Calculation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	Non diffusive water/air exchange based upon water-air concentrations; Field study with monitoring samples; Matrix spikes, field blanks, method detection limits applied
System Type Design	Water samples taken via Niskin sampling bottles at 3 - 5 m depth; air samples taken at the top of the wheel house vessel against the wind at a rate of 200 mL/min
Sampling Frequency and Sampling Details	Not reported six campaigns, 38 total simultaneous air and water samples taken; HCl added to water samples to prevent microbial degradation
Test Temperature	Not applicable
Results Details	Air to water fugacity ratio mean: 0.05. Water to air exchange mean flux: 1.2 µg m^-2 d^-1.
Analytical Method and Analytical Details	Diffusive water to air exchange rate calculation based on developed fugacity model, relation between mass transfer of test substance and oxygen, and relationship between wind speed and mass transfer of oxygen, based on the measured phase concentration; Thermal desorption - gas chromatograph - mass spectrometer system. Water sample detection limits = 0.5 - 1.25 ng/L; Air sample detection limits = 2.2 - 5.7 ng/m3
Transformation Products, Statistics, and Kinetics	Not applicable; Concentration in the water phase: 2.28 ng/L; Concentration in air: 2.3 pptv; Not reported
Reference Substance and Reference Substance Results	Not reported; Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively by chemical name.
	Metric 2:	Test Substance Purity	Medium	The test substance purity was not reported; however, the omissions or identified impurities were not likely to have a substantial impact on the study results.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	A concurrent negative control results from controls were within the ranges specified for test validity.
	Metric 4:	Test Substance Stability	High	The test substance stability, homogeneity, preparation, and storage conditions were reported.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.
	Metric 7:	Testing Consistency	High	Test conditions were consistent across samples or study groups.

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Study Citation:	Dewulf, J. P., Van Langenhove, H. R., Van der Auwera, L. F. (1998). Air/water exchange dynamics of 13 volatile chlorinated C1- and C2-hydrocarbons and monocyclic aromatic hydrocarbons in the southern North Sea and the Scheldt estuary. Environmental Science and Technology 32(7):903-911.
OECD Harmonized Template:	Miscellaneous
HERO ID:	644857

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 8:	System Type and Design	High	Equilibrium was established. The system type and design (i.e., static, semi-static, and flow-through; sealed, open) were capable of appropriately maintaining substance concentrations.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome(s) of interest, and used widely accepted methods/approaches for the chemical and media being analyzed (e.g., sampling equipment, sample storage conditions) and no notable uncertainties or limitations were expected to influence results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups (if applicable) were considered and accounted for in data evaluation and all reported variability or uncertainty was not likely to influence the outcome assessment.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	Analytical methods used were suitable for detection and quantification of the target chemical.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset(s).
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Reported values were consistent with related physical chemical properties (e.g., considering KOW, pKa, vapor pressure, etc.).
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination High

Study Citation:	Dewulf, J., Van Langenhove, H., Everaert, M., Vanthournout, H. (1998). Volatile organic compounds in the Scheldt estuary along the trajectory Antwerp-Vlissingen: Concentration profiles, modelling and estimation of emissions into the atmosphere. Water Research 32(10):2941-2950.
OECD Harmonized Template:	Miscellaneous
HERO ID:	644856

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Calculation; Calculation
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; Nr; NR
Test Method Details, Test Condition Details, and Test Consistency Details	A fugacity model was used to calculate the air/water flux. Water concentrations at 10 sites were newly reported. Air data was taken from a previous study.; Not reported; Not reported
System Type Design	Not reported
Sampling Frequency and Sampling Details	72 water samples.; Water samples collected in 5 - 10 L Naskin bottles at 3-5 m depth. Stored in dark bottles without headspace at 4°C, with addition of 1/1 HCl to prevent microbial degradation.
Test Temperature	Not applicable
Results Details	Average water to air flux: 2.7 g/(km^2 d^1)
Analytical Method and Analytical Details	TD-GC-MS was used to measure 1,1-DCE concentrations in water.; Off-line purge and trap preconcentration. Limit of detection: 0.5 - 1.25 ng/L
Transformation Products, Statistics, and Kinetics	Not reported; St. Dev. = < 11%; Not reported
Reference Substance and Reference Substance Results	Not reported; Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by common nomenclature.
	Metric 2:	Test Substance Purity	High	The subject chemical was identified using GC-MS.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	Control groups were not necessary for this study.
	Metric 4:	Test Substance Stability	High	Samples were stored in dark bottles at 4°C and pH 2 to prevent microbial degradation and photolysis.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable.
	Metric 6:	Testing Conditions	High	Testing conditions (sampling and storage of samples) were reported.
	Metric 7:	Testing Consistency	High	There were no reported differences between the sample groups.
	Metric 8:	System Type and Design	N/A	This metric is not applicable for this type of study.
Domain 4: Test Organisms				

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Study Citation:	Dewulf, J., Van Langenhove, H., Everaert, M., Vanthournout, H. (1998). Volatile organic compounds in the Scheldt estuary along the trajectory Antwerp-Vlissingen: Concentration profiles, modelling and estimation of emissions into the atmosphere. Water Research 32(10):2941-2950.
OECD Harmonized Template:	Miscellaneous
HERO ID:	644856

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable for this endpoint.
	Metric 10:	Sampling Methods	High	Samples were collected without headspace to prevent volatilization during storage.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcome of interest.
	Metric 12:	Test Substance Purity	Medium	The concentrations of the test substance in air were reported from another study, therefore some details are missing. However, the omissions are not likely to have a substantial impact on the study results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	There were no observed confounding variables or differences between study groups.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this endpoint.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The analytical method was suitable for detecting the test substance.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	The statistical methods and fugacity model were clearly explained.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Compared to other literature values reported by the study, the results are reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination High

Study Citation:	Dow Chemical, (1983). Nonenymatic reductive dechlorination of chlorinated methanes and ethanes in aqueous solution with cover letter.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1973123

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	No; Aldrich Chemical Co., Milwaukee, WI; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	reductive dehalogenation in aqueous solution in the presence of an excess of reducing agent; pH 7.0 (sulfide redox buffer [0.1M] prepared with aqueous Na2S in 0.1 M K2HPO4), 1 mg/L test concentration, anaerobic conditions, duration 4 days; Not reported
System Type Design	Amber-colored serum bottles
Sampling Frequency and Sampling Details	day 0, 14, 28, and 42; Degradation monitored by disappearance of test material and formation of chloroethane and ethane.
Test Temperature	25C
Results Details	No apparent reduction observed in this system. 1,1-dichloroethaIn redox buffer: concentration at day 0, 14, 28, and 42 reported as 0.86, 0.83, 0.84, and 0.82, respectively. In redox buffer + hematin: concentration at day 0, 14, 28, and 42 reported as 0.86, 0.83, 0.85, and 0.80, respectively. No evidence of microbial contamination was detected.
Analytical Method and Analytical Details	GC/FID; Not reported
Transformation Products, Statistics, and Kinetics	1,1-dichloroethane rapidly formed from 1,1,1-trichloroethane in test conditions; Not reported; Not reported
Reference Substance and Reference Substance Results	Non-reducing controls were prepared in deoxygenated phosphate buffer; Concentration at day 0, 14, 28, and 42 reported as 0.85, 0.83, 0.83, and 0.82, respectively

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	The test substance source was reported but purity was not reported.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Controls for hydrolysis were not included in the study.
	Metric 4:	Test Substance Stability	Medium	Test substance preparation and storage was not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were reported.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.
	Metric 8:	System Type and Design	High	The system was appropriate.

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Study Citation:	Dow Chemical, (1983). Nonenymatic reductive dechlorination of chlorinated methanes and ethanes in aqueous solution with cover letter.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1973123

		EVALUATION		
Domain		Metric	Rating	Comments
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed the intended outcomes of interest.
	Metric 12:	Test Substance Purity	High	Sampling methods were reported and appropriate, samples were collected at an appropriate frequency.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Medium	Uncertainty and variability were not explicitly addressed.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Medium	The analytical method was appropriate; extraction efficiency and limits of detection were not reported, but detector response was linear over concentration range.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	The metric is not applicable to this study type.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The results were reasonable based on the method.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.
Overall Quality Determination			**High**	

Study Citation:	Monsanto, (1987). Monsanto Pensacola plant ground water assessment feasibility study with 19 chemicals with attachments and cover letter dated 121887.
OECD Harmonized Template:	Miscellaneous
HERO ID:	4214180

EXTRACTION

Parameter	**Data**
CASRN and Test Material	Not Reported; 1,1-dichloroethane
Confidentiality, Type, Guideline	None; Monitoring data and modeling; Monitoring data and modeling
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; Contaminated site; NR; NA Notes: NR
Test Method Details, Test Condition Details, and Test Consistency Details	Monitoring sample from Monsanto Pensacola Plant groundwater; NA; NR
System Type Design	NR
Sampling Frequency and Sampling Details	NR; NR
Test Temperature	NR
Results Details	Detected at concentrations of 0.00006-10 mg/L at or near area E; 0.007-0.0067 mg/L at Area 3; modeling results 0.0450 to 1.1E-6 mg/L
Analytical Method and Analytical Details	Assumed the Florida Groundwater and Surface Quality Criteria in appendix was used.; NR
Transformation Products, Statistics, and Kinetics	NR; NR; NR
Reference Substance and Reference Substance Results	NR; NR

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
Metric 2:	Test Substance Purity	N/A	This metric does not apply to this type of study.
Domain 2: Test Design			
Metric 3:	Study Controls	N/A	This metric does not apply to this type of study.
Metric 4:	Test Substance Stability	N/A	This metric does not apply to this type of study.
Domain 3: Test Conditions			
Metric 5:	Test Method Suitability	Uninformative	Lack of information resulted in serious flaws that make the study unusable.
Metric 6:	Testing Conditions	Uninformative	Lack of information resulted in serious flaws that make the study unusable.
Metric 7:	Testing Consistency	N/A	This metric does not apply to this type of study.
Metric 8:	System Type and Design	N/A	This metric does not apply to this type of study.
Domain 4: Test Organisms			
Metric 9:	Outcome Assessment Methodology	N/A	This metric does not apply to this type of study.
Metric 10:	Sampling Methods	N/A	This metric does not apply to this type of study.

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Study Citation:	Monsanto, (1987). Monsanto Pensacola plant ground water assessment feasibility study with 19 chemicals with attachments and cover letter dated 121887.
OECD Harmonized Template:	Miscellaneous
HERO ID:	4214180

Domain	Metric	EVALUATION Rating	Comments
Domain 5: Outcome Assessment			
Metric 11:	Test Substance Identity	Medium	There was incomplete reporting of outcome assessment methods; however, such differences or absence of details were not likely to be severe or have a substantial impact on the study results.
Metric 12:	Test Substance Purity	Low	Details regarding sampling methods of the outcome(s) were not fully reported, and the omissions were likely to have a substantial impact on study results.
Domain 6: Confounding/Variable Control			
Metric 13:	Confounding Variables	N/A	This metric does not apply to this type of study.
Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric does not apply to this type of study.
Domain 7: Data Presentation and Analysis			
Metric 15:	Data Reporting	Low	Concentrations of the target chemical or transformation product(s), extraction efficiency, percent recovery, or mass balance were not measured or reported, preventing meaningful interpretation of study results.
Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Limited statistical and/or kinetic details reported; however, these differences were not likely to have a substantial impact on study results.
Domain 8: Other			
Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
Metric 18:	QSAR Models	N/A	This metric does not apply to this type of study.

Overall Quality Determination — Uninformative

Study Citation:	(1982). Fate of Priority Pollutants in Publicly Owned Treatment Works, Volume I.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1265686

EXTRACTION

Parameter	**Data**
CASRN and Test Material	Not Reported; 1,1-dichloroethane
Confidentiality, Type, Guideline	None; experimental; experimental
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	No; NR; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	influent, effluent and sludge samples from 50 treatment plants (plant descriptions are available); duplicate and field blanks were included; plant treatments: primary (P); secondary activated sludge (AS); secondary trickling filter (TF); secondary oxygen activated sludge (OAS); secondary rotating biological contactor (RBC); secondary aerated lagoon (AL); secondary parallel activated sludge and trickling filter (AS/TF); tertiary (T); not reported
System Type Design	not reported
Sampling Frequency and Sampling Details	influent, effluent, sludge; in general: six consecutive days; 24 hour samples; more detail are available.
Test Temperature	not applicable
Results Details	not reported
Analytical Method and Analytical Details	EPA volatile protocol; mean recovery 57-100% and 100±17%
Transformation Products, Statistics, and Kinetics	not applicable; % detection @ influent concentration: 31% @ 1-24 ug/L (POTW 1-40); 15% @ 1-87 ug/L (POTW 51-60); effluent concentrations: 8% @ 1-6 ug/L (POTW 1-40); not detected (POTW 51-60); sludge concentrations: 34% @ 1-2885 ug/L (POTW 1-40); 34% @ 5-777 ug/L (POTW 51-60); not reported
Reference Substance and Reference Substance Results	not applicable; Not Reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by common name.
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to the study type.
Domain 2: Test Design				
	Metric 3:	Study Controls	High	Concurrent blanks and controls were analyzed.
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to the study type.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
	Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.
	Metric 7:	Testing Consistency	High	The conditions were documented.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to the study type.
Domain 4: Test Organisms				

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Study Citation:	(1982). Fate of Priority Pollutants in Publicly Owned Treatment Works, Volume I.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1265686

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to the study type.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to the study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	High	The outcome assessment methodology addressed or reported the intended outcome of interest.
	Metric 12:	Test Substance Purity	High	The study reported the use of sampling methods that address the outcome of interest, and used widely accepted methods/approaches for the chemical and media being analyzed.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	High	Sources of variability and uncertainty in the measurements, and statistical techniques and between study groups were considered and accounted for in data evaluation.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to the study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	High	The target chemical concentrations, extraction efficiency, percent recovery, or mass balance were reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	High	Reported values were expected.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to the study type.

Overall Quality Determination High

Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Miscellaneous
HERO ID:	6629204

EXTRACTION

Parameter	**Data**
CASRN and Test Material	75-34-3; 1,1-DCA
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	Pilot plant at landfill to treat contaminated groundwater, operated in 1986.; 70:1 air to water ratio; liquid flow rate 4 L/min, 1.3 ug/L saddles; Not reported
System Type Design	System consisted of packed air stripping columns and two sequential granular activated carbon absorbers to treat off gases.
Sampling Frequency and Sampling Details	Not reported; Not reported
Test Temperature	Not reported
Results Details	Below detection limit (2 µg/L) in final effluent; removal efficiency 99.9%
Analytical Method and Analytical Details	Not reported; Not reported
Transformation Products, Statistics, and Kinetics	Not reported; Not reported; Not reported
Reference Substance and Reference Substance Results	Not reported; Not reported

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name.
	Metric 2:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 2: Test Design				
	Metric 3:	Study Controls	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 4:	Test Substance Stability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 6:	Testing Conditions	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 7:	Testing Consistency	Medium	Not reported in this secondary source; the primary source likely contains more detail.
	Metric 8:	System Type and Design	Medium	Rating of this factor is not applicable to this kind of information.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	This metric does not apply to this type of study.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.

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Study Citation:	NLM, (2020). PubChem database: compound summary: 1,1-dichloroethane.
OECD Harmonized Template:	Miscellaneous
HERO ID:	6629204

		EVALUATION	
Domain	Metric	Rating	Comments
Domain 5: Outcome Assessment			
Metric 11:	Test Substance Identity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Metric 12:	Test Substance Purity	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 6: Confounding/Variable Control			
Metric 13:	Confounding Variables	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis			
Metric 15:	Data Reporting	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Metric 16:	Statistical Methods and Kinetic Calculations	Medium	Not reported in this secondary source; the primary source likely contains more detail.
Domain 8: Other			
Metric 17:	Verification or Plausibility of Results	High	The results are reasonable based on the data's inclusion in a peer- reviewed/recognized database or other secondary source.
Metric 18:	QSAR Models	N/A	This metric does not apply to this type of study.

Overall Quality Determination Medium

* Related References: Semovic L et al; Second International Conference on New Frontiers for Hazardous Waste Management p.409-18 (1987)

Study Citation:	Pilko & Assoc. Inc., (1995). Initial submission: preliminary findings of soil and groundwater sampling, phase 2 investigation - BP chemicals (hitco) inc, Gardena Calif, with cover letter dated 07/03/95.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1745857

EXTRACTION

Parameter	**Data**
CASRN and Test Material	not reported; 1,1-dichloroethane
Confidentiality, Type, Guideline	None; Monitoring study; Monitoring study
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	NR; NR; NR; NR Notes: NR
Test Method Details, Test Condition Details, and Test Consistency Details	Soil and groundwater samples collected from BP chemicals facility in Gardena, CA; NR; NR
System Type Design	NR
Sampling Frequency and Sampling Details	NR; Groundwater collected as grab samples
Test Temperature	NR
Results Details	1,1-DCA detected, but not quantified, in groundwater at three sampling location
Analytical Method and Analytical Details	Soil: EPA method 8240; groundwater: EPA method 8015 (modified); NR
Transformation Products, Statistics, and Kinetics	NR; NR; NR
Reference Substance and Reference Substance Results	NR; NR

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified.
Metric 2:	Test Substance Purity	N/A	This metric is not applicable to this study.
Domain 2: Test Design			
Metric 3:	Study Controls	N/A	This metric is not applicable to this study.
Metric 4:	Test Substance Stability	N/A	This metric is not applicable to this study.
Domain 3: Test Conditions			
Metric 5:	Test Method Suitability	N/A	This metric is not applicable to this study.
Metric 6:	Testing Conditions	Low	Field conditions not reported.
Metric 7:	Testing Consistency	N/A	This metric is not applicable to this study.
Metric 8:	System Type and Design	N/A	This metric is not applicable to this study.
Domain 4: Test Organisms			
Metric 9:	Outcome Assessment Methodology	N/A	This metric is not applicable to this study.

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Study Citation:	Pilko & Assoc. Inc., (1995). Initial submission: preliminary findings of soil and groundwater sampling, phase 2 investigation - BP chemicals (hitco) inc, Gardena Calif, with cover letter dated 07/03/95.
OECD Harmonized Template:	Miscellaneous
HERO ID:	1745857

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 10:	Sampling Methods	N/A	This metric is not applicable to this study.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Uninformative	No quantitative results reported.
	Metric 12:	Test Substance Purity	High	EPA Sampling methods reported.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	This metric is not applicable to this study.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	This metric is not applicable to this study.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Uninformative	Quantitative results for target chemical not reported.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	This metric is not applicable to this study.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Uninformative	Quantitative results for target chemical not reported.
	Metric 18:	QSAR Models	N/A	This metric is not applicable to this study.

Overall Quality Determination — Uninformative

Study Citation:	Piwoni, M. D., Wilson, J. T., Walters, D. M., Wilson, B. H., Enfield, C. G. (1986). Behavior of organic pollutants during rapid-infiltration of wastewater into soil: I. Processes, definition, and characterization using a microcosm. Hazardous Waste and Hazardous Materials 3(1):43-55.
OECD Harmonized Template:	Miscellaneous
HERO ID:	5441706

EXTRACTION

Parameter	**Data**
CASRN and Test Material	Not Reported; 1,1-dichloroethane
Confidentiality, Type, Guideline	None; experimental; experimental
Solvent, Reactivity, Storage, Stability	NR; NR; NR; NR
Radiolabel, Source, State, Purity	None; NR; NR; NR
Test Method Details, Test Condition Details, and Test Consistency Details	wastewater application to soil columns to determine fate; designed to simulate a rapid-infiltration land-treatment system; Soil columns: 92% sand, 5.9% silt, 2.1% clay, 0.087% organic carbon; pH 7.7; CEC 3.5 mmolg/l00 g; 12 hour illumination; 4.4±0.17 cm of wastewater applied/day. Expected concentration 21.0 umol/L; test done in triplicate
System Type Design	Soil columns planted with grass; illuminated with fluorescent lamps; enclosed in a greenhouse flushed with room air; foil covered columns to prevent algae growth.
Sampling Frequency and Sampling Details	not reported; suction samplers were mid soil level.
Test Temperature	20±2 °C
Results Details	volatilized: 54±15%; effluent: 27±9%; not accounted for: 19±12%
Analytical Method and Analytical Details	GC; not reported
Transformation Products, Statistics, and Kinetics	not reported; Not Reported; Not Reported
Reference Substance and Reference Substance Results	system run with spring water; effluent: 30%

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified by name.
Metric 2:	Test Substance Purity	Medium	The test substance source and purity were not reported; however, the omissions or identified impurities were not likely to have a substantial impact on the study results.
Domain 2: Test Design			
Metric 3:	Study Controls	High	Concurrent controls were run.
Metric 4:	Test Substance Stability	Medium	The test substance stability, homogeneity, preparation or storage conditions were not reported; however, these factors were not likely to influence the test substance or were not likely to have a substantial impact on study results.
Domain 3: Test Conditions			
Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
Metric 6:	Testing Conditions	High	Testing conditions were monitored, reported, and appropriate for the method.
Metric 7:	Testing Consistency	High	Test conditions were consistent.
Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.

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Study Citation:	Piwoni, M. D., Wilson, J. T., Walters, D. M., Wilson, B. H., Enfield, C. G. (1986). Behavior of organic pollutants during rapid-infiltration of wastewater into soil: I. Processes, definition, and characterization using a microcosm. Hazardous Waste and Hazardous Materials 3(1):43-55.
OECD Harmonized Template:	Miscellaneous
HERO ID:	5441706

			EVALUATION	
Domain		Metric	Rating	Comments
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	High	The inoculum source was reported and is routinely used for similar study types and appropriate for the study method or route.
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Uninformative	The assessment methodology did not address or report the outcome(s) of interest. This is a serious flaw that makes the study unusable.
	Metric 12:	Test Substance Purity	Medium	Minor limitations were identified in sampling methods of the outcome(s) of interest were reported; however, the limitations were not likely to have a substantial impact on results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	Sources of uncertainty in the measurements were not accounted for in data evaluation resulting in some uncertainty and there is concern that uncertainty was likely to have a substantial impact on the results.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Low	There was insufficient evidence presented to confirm that parent compound disappearance was not likely due to some other process and these omissions were likely to have a substantial impact on study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	N/A	The metric is not applicable to this study type.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Low	Due to limited information, evaluation of the reasonableness of the study results was not possible.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination NEED TO FIX

Study Citation:	Washington, J. W. (1996). Gas partitioning of dissolved volatile organic compounds in the vadose zone: Principles, temperature effects and literature review. Ground Water 34(4):709-718.
OECD Harmonized Template:	Miscellaneous
HERO ID:	647200

EXTRACTION

Parameter	**Data**
CASRN and Test Material	Not Reported; 1,1-Dichloroethane
Confidentiality, Type, Guideline	None; Experimental; Experimental
Solvent, Reactivity, Storage, Stability	NA; NA; NA; NA
Radiolabel, Source, State, Purity	NA; NA; NA; NA Notes: NA
Test Method Details, Test Condition Details, and Test Consistency Details	Calculation of enthalpy and entropy of volatilization; NR; NA
System Type Design	NA
Sampling Frequency and Sampling Details	NA; NA
Test Temperature	NA
Results Details	Enthalpy of volatilization = 33.18 kJ/M and entropy of volatilization = 68.2 J/MK
Analytical Method and Analytical Details	NA; NA
Transformation Products, Statistics, and Kinetics	NA; NA; NA
Reference Substance and Reference Substance Results	NA; NA

EVALUATION

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Purity	N/A	The metric is not applicable to this study type.
Domain 2: Test Design				
	Metric 3:	Study Controls	N/A	The metric is not applicable to this study type.
	Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.
Domain 3: Test Conditions				
	Metric 5:	Test Method Suitability	N/A	The metric is not applicable to this study type.
	Metric 6:	Testing Conditions	N/A	The metric is not applicable to this study type.
	Metric 7:	Testing Consistency	N/A	The metric is not applicable to this study type.
	Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.
Domain 4: Test Organisms				
	Metric 9:	Outcome Assessment Methodology	N/A	The metric is not applicable to this study type.

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Study Citation:	Washington, J. W. (1996). Gas partitioning of dissolved volatile organic compounds in the vadose zone: Principles, temperature effects and literature review. Ground Water 34(4):709-718.
OECD Harmonized Template:	Miscellaneous
HERO ID:	647200

		EVALUATION		
Domain		Metric	Rating	Comments
	Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment				
	Metric 11:	Test Substance Identity	Low	Enthalpy and entropy data presented in support of volatilization estimates.
	Metric 12:	Test Substance Purity	N/A	The metric is not applicable to this study type.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	N/A	The metric is not applicable to this study type.
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	N/A	The metric is not applicable to this study type.
	Metric 16:	Statistical Methods and Kinetic Calculations	High	Statistical methods or kinetic calculations were clearly described and address the dataset.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	No serious study deficiencies were identified, and the value was plausible.
	Metric 18:	QSAR Models	N/A	A QSAR model was not reported.

Overall Quality Determination — Low

Study Citation:	ENSR, (1990). Subsurface investigation chlorinated solvents in groundwater AT&T Information Systems Skokie Works with attachments, cover sheet and letter dated 020690.
OECD Harmonized Template:	Other Properties
HERO ID:	1745629

EXTRACTION

Parameter	**Data**
CASRN and Test Material	NR; 1,1-dichloroethane
Confidentiality, Type, Guideline	None; experimental; None, monitoring study
Solvent, Reactivity, Storage, Stability	NA; NA; NA; NA
Radiolabel, Source, State, Purity	NA; Contaminated subsurface soil; NR; NA Notes: 1,1-dichloroethane, trans-1,2-DCE and vinyl chloride detected in groundwater downgradient from tanks however, the plant did not use these solvents (a tank with 1,1,1-trichloroethane and trichloroethene was nearby) 1,1,2-TCE not detected in any samples
Results Value	Subsurface transport and likely degradation
Results Details	Aerobic and anaerobic biodegradation studies using the soils suggest the chlorinated solvents are recalcitrant without nutrients.
Results Remarks	Not Reported

EVALUATION

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
Metric 2:	Test Substance Purity	High	The source of the test material was reported.
Domain 2: Test Design			
Metric 3:	Study Controls	N/A	The study did not require concurrent control groups.
Metric 4:	Test Substance Stability	N/A	The metric is not applicable to this study type.
Domain 3: Test Conditions			
Metric 5:	Test Method Suitability	High	The test method was suitable for the test substance.
Metric 6:	Testing Conditions	Low	The study used monitoring data and unknown deviations in test conditions may have a substantial impact on the results.
Metric 7:	Testing Consistency	Low	There were possible inconsistencies in test conditions across samples or study groups that are likely to have a substantial impact on results.
Metric 8:	System Type and Design	N/A	The metric is not applicable to this study type.
Domain 4: Test Organisms			
Metric 9:	Outcome Assessment Methodology	High	Inoculum sources (contaminated soil) were reported.
Metric 10:	Sampling Methods	N/A	The metric is not applicable to this study type.
Domain 5: Outcome Assessment			
Metric 11:	Test Substance Identity	Low	Deficiencies in the outcome assessment methodology of the assessment or reporting were likely to have a substantial impact on results.

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Study Citation:	ENSR, (1990). Subsurface investigation chlorinated solvents in groundwater AT&T Information Systems Skokie Works with attachments, cover sheet and letter dated 020690.
OECD Harmonized Template:	Other Properties
HERO ID:	1745629

			EVALUATION	
Domain		Metric	Rating	Comments
	Metric 12:	Test Substance Purity	High	No notable uncertainties or limitations in sampling methods were expected to influence results.
Domain 6: Confounding/Variable Control				
	Metric 13:	Confounding Variables	Low	There is concern that variability or uncertainty was likely to have a substantial impact on the results
	Metric 14:	Health Outcomes Unrelated to Exposure	N/A	The metric is not applicable to this study type.
Domain 7: Data Presentation and Analysis				
	Metric 15:	Data Reporting	Uninformative	Quantitative concentrations of the target chemical, transformation product(s), extraction efficiency, percent recovery, or mass balance were not measured or reported, preventing meaningful interpretation of study results.
	Metric 16:	Statistical Methods and Kinetic Calculations	Medium	No statistical analyses were conducted; however, sufficient data were provided to conduct an independent statistical analysis.
Domain 8: Other				
	Metric 17:	Verification or Plausibility of Results	Medium	The study results were reasonable.
	Metric 18:	QSAR Models	N/A	The metric is not applicable to this study type.

Overall Quality Determination — Uninformative

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

Term	Definition
BAF	Biaccumulation Factor
BCF	Bioconcentration Factor
BMF	Biomagnification Factor
BSAF	Biota-sediment Accumulation Factor
C	Concentration
CASRN	Chemical Abstract Service registry number
DOC	Dissolved Organic Carbon
dw	Dry weight
DW	Drinking Water
DWTP	Drinking Water Treatment Plant
EPA	Environmental Protection Agency
ESI	Electrospray Ionisation
FID	Flame Ionisation Detector
FPD	Flame Photometric Detector
GC	Gas Chromatography
g/L	Grams per Liter
HLC	Henry's Law Constant
HPLC	High-performance liquid chromatography
ISO	International Organization for Standardization
K_{oa}	Octanol-Air partition coefficient
K_{oc}	Organic carbon-water partition coefficient
K_{ow}	Octanol-Water partition coefficient
L/d	Liters per day
LOD	Limit of Detection
LOQ	Limit of Quantification
lw	Lipid weight
M	Molarity (mol/L = moles per Liter)
mL/min	Milliliters per minute
mM	Millimolar
MDL	Method Detection Limit
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
mg/m^3	Milligrams per cubic meter
MRL	Method Reporting Limit
MS	Mass Spectrometry
n	Sample Size
N/A	Not applicable
ND	Non-Detection
ng/L	Nanograms per Liter

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Term	Definition
nm	Nanometers
NR	Not Reported
OECD	Organisation for Economic Co-operation and Development
· OH	Hydroxyl radical
OPE	Organophosphate Ester
pg/L	Picograms per Liter
ppm	parts per million
QSAR	Quantatative Structure Activity Relationship
RSD	Relative Standard Deviation
SI	Supplemental Information
SIM	Selected Ion Monitoring
SPE	Solid Phase Extraction
STP	Sewage Treatment Plant
TMF	Trophic Magnification Factor
TOC	Total Organic Carbon
TOF	Time of Flight
μg/L or μg/mL	micrograms per liter or per milliliter
UPLC	Ultra-performance liquid chromatography
US or USA	United States of America
UV (UV-Vis)	Ultra Violet (Visible)
ww	Wet Weight
WWTP	Wastewater Treatment Plant