PUBLIC RELEASE DRAFT
January 2025

Use Report for Vinyl Chloride (CAS RN 75-01-4)

January 2025

Contains no TSCA CBI

Economic and Policy Analysis Branch
Existing Chemical Risk Management Division
Office of Pollution, Prevention, and Toxics
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue
Washington, DC 20460

PUBLIC RELEASE DRAFT
January 2025

Acknowledgment and Disclaimer

This document provides publicly available information as of the date of this document on the manufacturing (including importing), processing, distribution in commerce, use, and disposal of vinyl chloride and is used to inform decisions regarding conditions of use. The document does not reflect information received directly from other sources such as manufacturers, processors, etc., which has further informed the conditions of use in the draft Scope Document. As such, the uses described in this document may differ from the conditions of use in the draft Scope Document.

Table of Contents

List of Tables

1. Introduction

This document presents information on volumes, uses, products, and types of users and is used to support decisions regarding conditions of use for vinyl chloride (CAS RN 75-01-4). In performing risk evaluations for existing chemicals, EPA is directed to "determine whether a chemical substance presents an unreasonable risk of injury to health or the environment, without consideration of costs or other non-risk factors, including an unreasonable risk to a potentially exposed or susceptible subpopulation identified as relevant to the risk evaluation by the Administrator under the conditions of use." Condition of use is legally defined under TSCA § 3(4) as "the circumstances, as determined by the Administrator, under which a chemical substance is intended, known, or reasonably foreseen to be manufactured, processed, distributed in commerce, used, or disposed of."

EPA consulted a variety of sources to identify uses of vinyl chloride. This included EPA's review of published literature and online databases including the most recent data available from EPA's Chemical Data Reporting program (CDR) and Safety Data Sheets (SDSs). EPA also conducted online research by reviewing company websites of potential manufacturers, importers, distributors, retailers, or other users of vinyl chloride and queried government and commercial trade databases. Sources included information reported to EPA (including National Emissions Inventory and the Toxics Release Inventory when appropriate), literature searches, proprietary reports, trade publications, and reports developed for prior EPA and international sources. To identify formulated products containing vinyl chloride, EPA searched for (material) safety data sheets (M)SDS using internet searches, EPA Chemical and Product Categories (CPCat) data, the National Institute for Health's (NIH) Household Product Database, and other resources in which (M)SDS could be found. Each (M)SDS was then cross-checked with company websites to gather more information about its use to make sure that each product (M)SDS was current. When available, EPA also makes use of communications with companies, industry groups, environmental organizations, and public comments to supplement the information.

Vinyl chloride is a colorless and toxic flammable gas primarily used to produce polyvinyl chloride (PVC). PVC is widely known for its use in piping, but is also used for other construction pieces, wire and cable coatings, automotive parts, home furnishing and consumer products, as well as safety and medical equipment. PVC is also used to produce other chemicals, such as polyvinyl chloride acetate, which is used in adhesives, inks, flooring, and molded plastics. PVC is popular for its durability, longevity, cut resistance, and cheap cost to produce. Other than PVC, vinyl chloride is used in the laboratory and in the synthesis of other chemicals including vinylidene chloride copolymer, 1,1,1-trichloroethane, and ethylene diamine for the manufacture of resins. Table 1-1 includes basic information about vinyl chloride.

Table 1-1: Chemical Name, Synonyms, and CASRN for Vinyl Chloride

Chemical Name	Vinyl Chloride
CASRN	75-01-4
Chemical Formula	C_2H_3Cl
Synonyms	Chloroethylene, 1-Chloroethylene, Ethylene monochloride, Vinyl chloride monomer, Chloroethene, VCM, VC
Trade Name(s)	Trovidur, Kanevinyl, Vinnol, Laroflex, Norvic, Fomolon

Source(s): Agency for Toxic Substances and Disease Registry (ATSDR) 2023; ChemBK 2015; European Chemicals Agency (ECHA) 2023; Kim et al. 2016; SpecialChem 2023

2. Use and Production Volume

The data sources primarily utilized to assess use and production in this report are EPA's Chemical Reporting Database (CDR), EPA's Toxic Release Inventory (TRI), EPA's National Emissions Inventory (NEI), EPA's Resource Conservation and Recovery Act Data (RCRA), and EPA's National Pollutant Discharge Elimination System (NPDES). Note that Appendix A presents a complete list of the sources searched and utilized for the composition of this report.

2.1 Domestic Manufacture and Import (CDR)

2.1.1 Chemical Data Reporting

The CDR rule under TSCA requires manufacturers (including importers) to provide information to EPA every four years on the chemicals they manufacture or import into the United States. Table 2-1 presents the various conditions under which a facility subject to TSCA must report to CDR based on the requirements for the 2020 reporting cycle. For chemicals such as vinyl chloride which are not subject to specific TSCA actions, a manufacturer is required to report any volume above 25,000 pounds, while small manufacturers are only required to report any volume above 100,000 pounds. Data collected for each chemical include the company name, volume of each chemical manufactured/imported, the number of workers at each site, and information on whether the chemical is used in the industrial, commercial, and/or consumer sector. Exemptions apply to small manufacturers. The definition of a small manufacturer varies depending on the sector in which it operates, but generally, CDR requires manufacturers (including importers) to report information on the chemicals they produce domestically or import into the U.S. generally above 25,000 lb. per site per year.

Table 2-1: Conditions Under Which a Company Must Report to CDR (shaded area applies to Vinyl Chloride (CAS RN 75-01-4))

TSCA Action	Obligation to Report to CDR Information When Subject to Certain TSCA Actions			
	Subject to 25,000 lb. reporting threshold	Subject to 2,500 lb. reporting threshold	Not eligible for certain full or partial exemptions from reporting	Not eligible for small manufacturer exemption
Not subject to TSCA action	✓			
TSCA section 4 rules (proposed or promulgated)	✓		✓	✓
TSCA section 4 orders		✓	✓	✓
Enforceable Consent Agreements (ECAs)	✓		✓	
TSCA section 5(a)(2) SNURs (proposed or promulgated)		✓	✓	
TSCA section 5(b)(4) rules (proposed or promulgated)		✓	✓	✓
TSCA section 6 rules (proposed or promulgated)		✓	✓	✓
TSCA sections 5(e) orders		✓	✓	✓
TSCA section 5(f) orders		✓	✓	

Table 2-1: Conditions Under Which a Company Must Report to CDR (shaded area applies to Vinyl Chloride (CAS RN 75-01-4))				
TSCA Action	Obligation to Report to CDR Information When Subject to Certain TSCA Actions			
	Subject to 25,000 lb. reporting threshold	Subject to 2,500 lb. reporting threshold	Not eligible for certain full or partial exemptions from reporting	Not eligible for small manufacturer exemption
TSCA section 5 civil actions		✓	✓	✓
TSCA section 7 civil actions		✓	✓	✓

[1] Over time, the requirements for reporting frequency, production volume thresholds, and chemicals under the Chemical Data Reporting (CDR) rule have changed. CDR was formerly known as the Inventory Update Rule (IUR). The first IUR collection occurred in 1986 and continued every four years through 2006. As part of two rulemakings in 2003 and 2005, EPA made a variety of changes to the IUR, including to change the reporting frequency to every five years to address burden associated with new reporting requirements.

Additional changes to reporting requirements were made in 2011, including to suspend and replace the 2011 submission period with a 2012 submission period, return to reporting every four years, and require the reporting of all years beginning with 2011 production volumes. The reporting of production volumes for all years was added because of the mounting evidence that many chemical substances, even larger production volume chemical substances, often experience wide fluctuations in production volume from year to year. In addition, also as part of the 2011 IUR Modifications final rule (76 FR 50816, Aug 16, 2011), EPA changed the name of the regulation from IUR to CDR to better reflect the distinction between this data collection (which includes exposure-related data) and the TSCA Inventory itself (which only involves chemical identification information).

Note: The reporting thresholds provided in this table apply to the 2020 reporting cycle and are determined based on the chemical substance's status as of June 1, 2020.

2.1.2 National Production Volume Trends

Table 2-2 presents the historic production volume of vinyl chloride from CDR (previously known as the Inventory Update Rule, or IUR) from 1986 to 2019. In 1986 reporting year, aggregate production volume for vinyl chloride was over 1 billion pounds. In 2011, over 16 billion pounds was reported and since 2012 production has been reported between 10 billion and 20 billion pounds. Due to changes in reporting categories, no true trends can be concluded although the production category for vinyl chloride has remained steady pre- and post-2011.

Table 2-2: 1986-2019 National Productions Volume Data for Vinyl Chloride (CAS RN 75-01-4) (Non-Confidential Volume in Pounds)	
Year	Production Volume (lbs.)
1986	> 1B
1990	> 1B
1994	> 1B
1998	> 1B
2002	> 1B
2006	> 1B
2011	16,713,648,476
2012	10B - <20B
2013	10B - <20B
2014	10B - <20B
2015	10B - <20B

Table 2-2: 1986-2019 National Productions Volume Data for Vinyl Chloride (CAS RN 75-01-4) (Non-Confidential Volume in Pounds)	
Year	**Production Volume (lbs.)**
2016	10B - <20B
2017	10B - <20B
2018	10B - <20B
2019	10B - <20B
Sources: U.S. Environmental Protection Agency (EPA) 2002; U.S. Environmental Protection Agency (EPA) 2006; U.S. Environmental Protection Agency (EPA) 2014; U.S. Environmental Protection Agency (EPA) 2017; U.S. Environmental Protection Agency (EPA) 2020b **Notes:** B = Billion	

2.1.3 Manufacturers and Importers

CDR requires manufacturers (including importers) to report information on the chemicals they produce domestically or import into the U.S. generally above 25,000 lbs. per site per year. Table 2-3 presents the company information and manufacture and import information reported to CDR and may not represent all of the facilities potentially manufacturing or using vinyl chloride. According to the 2020 Chemical Data Reporting (CDR) database, eight companies manufactured or imported vinyl chloride at 15 sites. One company and some production volumes were claimed as CBI.

Since 2016, only seven companies reported manufacturing/importing vinyl chloride at 13 sites. The two new sites are Troy Chemical Corp. Phoenix and WEYLCHEM US INC. There was not sufficient non-CBI data to quantify production volume change over time.

Table 2-3: 2020 CDR U.S. Manufacturers and Importers of Vinyl Chloride (CAS RN 75-01-4)							
U.S. Parent Company	**Site**	**Site Address**	**Manufacture or Import**	**Manufactured Volume (lbs./yr.)**	**Imported Volume (lbs./yr.)**	**Production Volume (2019) (lbs./yr.)**	**Production Volume (2018) (lbs./yr.)**
CBI	CBI	CBI	Import	0	34,686	34,686	26,705
FORMOSA PLASTICS CORPORATION	FORMOSA PLASTICS CORP TEXAS	201 FORMOSA DRIVE, POINT COMFORT, CALHOUN, TX, 77978	Manufacture	1,409,560,000	0	1,409,560,000	1,518,300,000
Formosa Plastics Corporation, U.S.A.	FORMOSA PLASTICS CORP LOUISIANA	GULF STATES ROAD, BATON ROUGE, EAST BATON ROUGE, LA, 70805	Manufacture	1,396,738,000	0	1,396,738,000	1,360,118,000
Occidental Petroleum Corp	OXY VINYLS LP	5900 HIGHWAY 225, DEER PARK, HARRIS COUNTY, TX, 77536	Manufacture	CBI	CBI	CBI	CBI
Occidental Petroleum Corp	OXYCHEM INGLESIDE PLANT	4133 HWY 361, GREGORY, SAN PATRICIO, TX, 78359	Manufacture	CBI	CBI	CBI	CBI
Occidental Petroleum Corporation	GEON OXY VINYL LAPORTE PLANT	2400 MILLER CUTOFF ROAD, LAPORTE, HARRIS, TX, 77571-9759	Manufacture	CBI	CBI	CBI	CBI
Olin Corporation	OLIN BLUE CUBE, FREEPORT, TX	2301 N. BRAZOSPORT BLVD., FREEPORT, BRAZORIA, TX, 77541	Manufacture	CBI	0	CBI	CBI
SHINTECH LOUISIANA LLC	SHINTECH PLAQUEMINE PLANT	26270 HIGHWAY 405, RIVER ROAD SOUTH, PLAQUEMINE, IBERVILLE, LA, 70764	Manufacture	3,812,083,444	0	3,812,083,444	3,607,462,065

Table 2-3: 2020 CDR U.S. Manufacturers and Importers of Vinyl Chloride (CAS RN 75-01-4)

U.S. Parent Company	Site	Site Address	Manufacture or Import	Manufactured Volume (lbs./yr.)	Imported Volume (lbs./yr.)	Production Volume (2019) (lbs./yr.)	Production Volume (2018) (lbs./yr.)
Troy Corporation	Troy Chemical Corp. Phoenix	113 S 47th Ave., Phoenix, , AZ, 85043	Manufacture	1,382,427	0	1,382,427	1,876,952
WESTLAKE CHEMICAL CORPORATION	AXIALL, LLC	1600 VCM PLANT RD, WESTLAKE, CALCASIEU PARISH, LA, 70669	Manufacture	CBI	CBI	CBI	CBI
WESTLAKE CHEMICAL CORPORATION	AXIALL, LLC	26100 HIGHWAY 405, PLAQUEMINE, IBERVILLE PARISH, LA, 70764	Manufacture	CBI	CBI	CBI	CBI
WESTLAKE CHEMICAL CORPORATION	EAGLE US 2 LLC	1300 PPG DRIVE, WESTLAKE, CALCASIEU PARISH, LA, 70669	Manufacture	CBI	CBI	CBI	CBI
WESTLAKE CHEMICAL CORPORATION	WESTLAKE VINYLS COMPANY, LP	36045 HIGHWAY 30, GEISMAR, ASCENSION PARISH, LA, 70734	Manufacture	CBI	CBI	CBI	CBI
WEYLCHEM US INC	WEYLCHEM US INC	2114 LARRY JEFFERS RD, ELGIN, KERSHAW COUNTY, SC, 29045	-	0	0	0	4,320
Westlake Chemical Corporation	59015 - WESTLAKE VINYLS INC	2468 INDUSTRIAL PARKWAY, CALVERT CITY, , KY, 42029	Manufacture	1,579,383,380	0	1,579,383,380	1,575,652,123

Source: U.S. Environmental Protection Agency (EPA) 2020b

Notes: CBI denotes data claimed as Confidential Business Information

2.1.4 Industrial Use Data

Table 2-4 presents site-specific industrial use information provided by each company reporting to 2020 CDR for vinyl chloride. As shown in this table, three industrial use sectors, three industrial processes and four function categories were reported by 14 sites.

Since 2016, the number of sites has increased and use in "Monomers" and "Binders" has been added, , while use in "Laboratory chemicals" – previously reported in 2016 – are no longer reported in 2020 (see "Industrial Function Category") There is also no longer reported use in the "Industrial gas manufacturing", "adhesive manufacturing", and "All other chemical product and preparation manufacturing" sectors. "Processing – repackaging" was previously a reported "Type of Process or Use Operation", which is not reported in 2020 CDR.

Table 2-4: Industrial Use Data for Vinyl Chloride (CAS RN 75-01-4) from the 2020 CDR

Site	Industrial Sector	Type of Process or Use Operation	Industrial Function Category	Percent Production Volume
CBI	Primary Metal Manufacturing	Processing-incorporation into article	Wire and cable manufacturing.	100
FORMOSA PLASTICS CORP TEXAS	Plastics Material and Resin Manufacturing	Processing as a reactant	Intermediates	100
FORMOSA PLASTICS CORP LOUISIANA	Plastics Material and Resin Manufacturing	Processing as a reactant	Monomers	100
OXY VINYLS LP	Plastics Material and Resin Manufacturing	Processing as a reactant	Intermediates	CBI
OXYCHEM INGLESIDE PLANT	Petrochemical Manufacturing	Processing as a reactant	Intermediate	CBI
	Plastics Material and Resin Manufacturing	Processing as a reactant	Monomers	CBI
GEON OXY VINYL LAPORTE PLANT	Plastics Material and Resin Manufacturing	Processing as a reactant	Monomers	CBI
OLIN BLUE CUBE, FREEPORT, TX	Plastics Material and Resin Manufacturing	Processing as a reactant	Intermediate	100
SHINTECH PLAQUEMINE PLANT	Petrochemical Manufacturing	Processing-incorporation into formulation, mixture, or reaction product	Intermediate	100
Troy Chemical Corp. Phoenix	Plastics Material and Resin Manufacturing	Processing-incorporation into formulation, mixture, or reaction product	Binder	100
AXIALL, LLC	Plastics Material and Resin Manufacturing	Processing as a reactant	Monomers	CBI
AXIALL, LLC	Plastics Material and Resin Manufacturing	Processing as a reactant	Intermediate	CBI
EAGLE US 2 LLC	Plastics Material and Resin Manufacturing	Processing as a reactant	Monomers	CBI
WESTLAKE VINYLS COMPANY, LP	Plastics Material and Resin Manufacturing	Processing as a reactant	Monomers	CBI
59015 - WESTLAKE VINYLS INC	Plastics Material and Resin Manufacturing	Processing as a reactant	Intermediates	100

Source: U.S. Environmental Protection Agency (EPA) 2020b

Notes: CBI denotes data claimed as Confidential Business Information

2.1.5 Consumer/Commercial Use Data

Table 2-5 presents site-specific consumer/commercial use information provided by each company reporting to 2020 CDR for vinyl chloride. As shown in this table, four sites reported three functional use categories for vinyl chloride in three product categories. All four are used commercially but are not used in children's products.

Compared to the data from 2016, there are no longer reports of consumer users of vinyl chloride. Additionally, these reported sites all confirmed that vinyl chloride was not used in children's products.

Table 2-5: Consumer/Commercial Use Data for Vinyl Chloride (CAS RN 75-01-4) from the 2020 CDR

Site	Consumer/Commercial Use Function Category	Consumer/Commercial Use Product Category	Consumer or Commercial Use	Used in Children's Products	Percent of Production Volume
CBI	Cable and wire manufacturing.	Building/Construction Materials not covered elsewhere	Commercial	No	100
FORMOSA PLASTICS CORP TEXAS	Intermediates	Plastic and Rubber Products not covered elsewhere	Commercial	No	100
SHINTECH PLAQUEMINE PLANT	Intermediate	Petrochemical manufacturing	Commercial	No	67
Troy Chemical Corp. Phoenix	Binder	Plastic and Rubber Products not covered elsewhere	Commercial	No	75

Source: U.S. Environmental Protection Agency (EPA) 2020b

Notes: CBI denotes data claimed as Confidential Business Information

2.2 Toxics Release Inventory Data

This section provides manufacturing, processing, use, and waste management data from the 2022 Toxics Release Inventory (TRI).[1] TRI is used by EPA to learn about toxic chemical releases above certain reporting thresholds (generally 25,000 pounds for manufacturing/processing and 10,000 pounds for otherwise use), and pollution prevention activities from industrial and federal facilities. Annual reporting is required by facilities that are in specific industry sectors, employ 10 or more full-time equivalent employees, and manufacture, process, or otherwise use a TRI-listed chemical in quantities above a threshold level in a given year (U.S. Environmental Protection Agency (EPA) 2023b). The approximately 800 individually listed chemicals and more than 30 chemical categories listed by the TRI program cause cancer or other chronic human health effects, significant adverse acute human health effects, or significant adverse environmental effects. The TRI chemical list does not include all toxic chemicals used in the United States.

1 Reporting year 2022 is the most recent TRI data available. Data presented in this report were based on data published by EPA in October 2023.

These tables summarize industry and facility information, manufacturing, processing, and otherwise use (MPOU) categorical data, and production-related waste trends for the chemical as reported to the Toxics Release Inventory (TRI) for calendar year 2022, also referred to as reporting year.

2.2.1 TRI Facilities

Table 2-6 shows that 33 facilities reported information related to vinyl chloride to TRI for the 2022 reporting year. Based on this data, most TRI reporting facilities were in the Plastics Material and Resin Manufacturing (325211) industry.

Table 2-6: Facilities Reporting to TRI for Vinyl Chloride (CAS RN 75-01-4) for 2022

Industry Type (NAICS)	Number of Facilities
325110 Petrochemical Manufacturing	1
325120 Industrial Gas Manufacturing	1
325180 Other Basic Inorganic Chemical Manufacturing	1
325199 All Other Basic Organic Chemical Manufacturing	8
325211 Plastics Material and Resin Manufacturing	16
325320 Pesticide and Other Agricultural Chemical Manufacturing	1
326113 Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	2
562211 Hazardous Waste Treatment and Disposal	2
562213 Solid Waste Combustors and Incinerators	1
TOTAL	**33**

Source: U.S. Environmental Protection Agency (EPA) 2023b

Notes: For this table, if a multi-establishment facility submitted multiple forms for the chemical with different primary NAICS, they are counted separately and both are included in the total.

2.2.2 Manufacturing Facilities

Table 2-7 shows the number of facilities, by NAICS code, that reported manufacturing vinyl chloride in 2022. The data in this table were pulled from Part II, Section 3 of the TRI Form R. Since facilities can select both "Produce" and "Import," the "Total" column may not be the sum of the "Produced" and "Imported" columns. Vinyl chloride was mostly produced (16) with only one facility reporting importing the chemical.

Table 2-7: Manufacturing Uses Reported to TRI for Vinyl Chloride (CAS RN 75-01-4) for 2022

Industry Type (NAICS)	Manufacturing - Number of Uses		
	Produced	Imported	Number of Facilities
325110 Petrochemical Manufacturing	1	0	1
325180 Other Basic Inorganic Chemical Manufacturing	1	0	1
325199 All Other Basic Organic Chemical Manufacturing	7	0	7
325211 Plastics Material and Resin Manufacturing	5	0	5
325320 Pesticide and Other Agricultural Chemical Manufacturing	1	0	1
562211 Hazardous Waste Treatment and Disposal	1	1	1
TOTAL	**16**	**1**	**16**

Source: U.S. Environmental Protection Agency (EPA) 2023b
Notes: Data taken from Part II, Section 3 of the Form R.
TRI facilities can report more than one NAICS code on each chemical-specific form they submit. For this table, only the NAICS code designated as primary is used. For this table, if a multi-establishment facility submitted multiple forms for the chemical with different primary NAICS, they are counted separately and both are included in the total.

2.2.3 Sub-Categories of Manufacturing Facilities

Table 2-8 provides the manufacturing subcategory uses of vinyl chloride at the facilities reporting to TRI. It was mostly produced for sale/distribution in the "Other Basic Organic Chemical Manufacturing" and "Plastics and Resin Manufacturing". Vinyl chloride was also produced for on-site use/processing, as a byproduct and as an impurity.

Table 2-8: Sub-categories of Manufacturing Uses Reported to TRI for Vinyl Chloride (CAS RN 75-01-4) for 2022

Industry Type (NAICS)	Sub-Categories of Manufacturing - Number of Uses				
	For On-site Use/Processing	For Sale/Distribution	As a Byproduct	As an Impurity	Number of Facilities
325110 Petrochemical Manufacturing	0	1	0	0	1
325180 Other Basic Inorganic Chemical Manufacturing	0	1	1	0	1
325199 All Other Basic Organic Chemical Manufacturing	1	5	2	1	7
325211 Plastics Material and Resin Manufacturing	5	5	1	1	5
325320 Pesticide and Other Agricultural Chemical Manufacturing	0	0	1	0	1
562211 Hazardous Waste Treatment and Disposal	1	0	1	0	1
TOTAL	**7**	**12**	**6**	**2**	**16**

Source: U.S. Environmental Protection Agency (EPA) 2023b
Notes: Data taken from the first column of Part II, Section 3 of the Form R.
For this table, if a multi-establishment facility submitted multiple forms for the chemical with different primary NAICS, they are counted separately and both are included in the total.

2.2.4 Processing Facilities

Table 2-9 shows the number of facilities, by NAICS code, that reported each type of processing for vinyl chloride under the 2022 TRI. The chemical was most often processed as a reactant in Plastics Material and Resin Manufacturing.

Table 2-9: Categories of Processing Reported to TRI for Vinyl Chloride (CAS RN 75-01-4) for 2022

Industry Type (NAICS)	Categories of Processing - Number of Uses						
	As a Reactant	As a Formulation Component	As an Article Component	Re-packaging	As an Impurity	Recycling	Number of Facilities
325120 Industrial Gas Manufacturing	1	0	0	0	0	0	1
325180 Other Basic Inorganic Chemical Manufacturing	1	0	0	0	0	0	1
325199 All Other Basic Organic Chemical Manufacturing	2	0	0	2	1	0	5
325211 Plastics Material and Resin Manufacturing	16	0	0	0	1	1	16
325320 Pesticide and Other Agricultural Chemical Manufacturing	0	0	0	0	1	0	1
326113 Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	1	1	1	0	0	0	1
562211 Hazardous Waste Treatment and Disposal	0	0	0	2	0	0	2
TOTAL	**21**	**1**	**1**	**4**	**3**	**1**	**27**

Source: U.S. Environmental Protection Agency (EPA) 2023b
Notes: Data taken from the second column of Part II, Section 3 of the Form R.
For this table, if a multi-establishment facility submitted multiple forms for the chemical with different primary NAICS, they are counted separately and both are included in the total.

2.2.5 Other Uses

Table 2-10 shows the number of TRI facilities, by NAICS code, that reported otherwise using vinyl chloride in 2022, along with the three categories of otherwise use. According to the TRI data, the chemical is used mostly for ancillary or other uses.

Table 2-10: Categories of Other Uses Reported to TRI for Vinyl Chloride (CAS RN 75-01-4) for 2022

Industry Type (NAICS)	Categories of Otherwise Use - Number of Uses			
	As a Chemical Processing Aid	As a Manufacturing Aid	Ancillary or Other Use	Number of Facilities
325199 All Other Basic Organic Chemical Manufacturing	0	0	1	1
325211 Plastics Material and Resin Manufacturing	0	0	2	2
326113 Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	0	1	0	1
562211 Hazardous Waste Treatment and Disposal	0	0	2	2
562213 Solid Waste Combustors and Incinerators	0	0	1	1
TOTAL	**0**	**1**	**6**	**7**

Source: U.S. Environmental Protection Agency (EPA) 2023b
Notes: Data taken from the third column of Part II, Section 3 of the Form R.
For this table, if a multi-establishment facility submitted multiple forms for the chemical with different primary NAICS, they are counted separately and both are included in the total.

2.2.6 Maximum Quantity of Chemicals on Site

Table 2-11 shows that 32 of 33 reporting facilities provided maximum quantities of vinyl chloride on site at any time during the 2022 calendar year. According to TRI, the highest volume stored is 100,000,000 to 499,999,999 pounds, reported at two sites.

Table 2-11: Maximum Quantity of Vinyl Chloride (CAS RN 75-01-4) On-site at Any Time During 2022

Industry Type (NAICS)	Number of Facilities	Weight Range (lbs.)							
		0 - 99	100 - 999	1,000 - 9,999	10,000 - 99,999	100,000 - 999,999	1,000,000 - 9,999,999	10,000,000 - 49,999,999	100,000,000 - 499,999,999
325110 Petrochemical Manufacturing	1	0	0	0	0	0	0	1	0
325120 Industrial Gas Manufacturing	1	0	1	0	0	0	0	0	0
325180 Other Basic Inorganic Chemical Manufacturing	1	0	0	0	0	0	0	1	0
325199 All Other Basic Organic Chemical Manufacturing	8	0	0	1	0	1	1	4	1
325211 Plastics Material and Resin Manufacturing	16	0	0	0	0	1	9	6	0
325320 Pesticide and Other Agricultural Chemical Manufacturing	1	0	0	1	0	0	0	0	0
326113 Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	1	1	0	0	0	0	0	0	0
562211 Hazardous Waste Treatment and Disposal	2	0	0	2	0	0	0	0	0
562213 Solid Waste Combustors and Incinerators	1	0	0	1	0	0	0	0	0
TOTAL	**32**	**1**	**1**	**5**	**0**	**2**	**10**	**12**	**1**

Source: U.S. Environmental Protection Agency (EPA) 2023b

2.2.7 TRI Waste Managed

Table 2-12 provides the amount of vinyl chloride waste managed both on-site and off-site in 2022. According to TRI data, most production-related waste is recycled with large amounts undergoing treatment and being used in energy recovery.

Table 2-12: Summary of Vinyl Chloride (CAS RN 75-01-4) TRI Production-Related Waste Managed in 2022 (lbs.)

Industry Type (NAICS)	Recycling	Energy Recovery	Treatment	Releases	Total Production-Related Waste
325110 Petrochemical Manufacturing	-	2,570,846	103	6,666	2,577,615
325120 Industrial Gas Manufacturing	-	-	19	1,275	1,295
325180 Other Basic Inorganic Chemical Manufacturing	23	1,400,000	2,900,004	17,000	4,317,027
325199 All Other Basic Organic Chemical Manufacturing	2,180,206	5,825,236	13,699,485	48,729	21,753,656
325211 Plastics Material and Resin Manufacturing	55,429,176	5,115,710	8,152,426	304,076	69,001,388
325320 Pesticide and Other Agricultural Chemical Manufacturing	-	-	19,334	278	19,612
326113 Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	-	-	-	14	14
562211 Hazardous Waste Treatment and Disposal	90	-	81,914	32	82,036
562213 Solid Waste Combustors and Incinerators	-	-	24,944	0	24,944
TOTAL	**57,609,495**	**14,911,792**	**24,878,230**	**378,070**	**97,777,587**

Source: U.S. Environmental Protection Agency (EPA) 2023b
Notes: These data are from Part II, Section 8, and include on-site and off-site activities. "Recycling" is the sum of sections 8.4 and 8.5; "Energy Recovery" is the sum of sections 8.2 and 8.3; "Treatment" is the sum of sections 8.6 and 8.7; and "Releases" is the sum of sections 8.1a through 8.1d. "Total Production Related Waste" is the sum of sections 8.1 through 8.7, or the other columns presented in the table. Note that this section includes all of the pounds reported in Part II, Sections 5 and 6, and also includes additional waste management activities. For more information see the TRI Guide Me page for Section 8.
a "Releases" is the sum of 8.1a through 8.1d on Form R. These categories are:
- Total on-site disposal to Class I Underground Injection Wells, RCRA Subtitle C Landfills, and other Landfills
- Total other on-site disposal or other releases
- Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills
- Total other off-site disposal of other releases.

This table does not include waste due to non-production related or one-time events such as remedial actions or natural disasters

2.2.8 TRI Releases to the Environment

Table 2-13 provides the amount of vinyl chloride that is released to the environment, by release category, at the facilities reporting to TRI. According to TRI, most of the chemical released to the environment was via air releases in 2022, and fairly split between stack air releases and fugitive air releases.

Table 2-13: Summary of Vinyl Chloride (CAS RN 75-01-4) TRI Releases to the Environment in 2022 (lbs.)							
Industry Type (NAICS)	Air Releases		Water Releases	Land Releases			Total On-site Releases
	Stack Air Releases	Fugitive Air Releases		Class I Underground Injection	RCRA Subtitle C Landfills	All Other Land Releases	
325110 Petrochemical Manufacturing	368	6,668	-	-	-	-	7,036
325120 Industrial Gas Manufacturing	2	1,273	-	-	-	-	1,275
325180 Other Basic Inorganic Chemical Manufacturing	97	19,000	-	-	-	-	19,097
325199 All Other Basic Organic Chemical Manufacturing	6,902	41,855	9	0	-	-	48,767
325211 Plastics Material and Resin Manufacturing	209,577	183,010	14	-	-	-	392,600
325320 Pesticide and Other Agricultural Chemical Manufacturing	5	273	-	-	-	-	278
326113 Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing	13	1	-	-	-	-	14
562211 Hazardous Waste Treatment and Disposal	0	30	-	-	-	-	30
562213 Solid Waste Combustors and Incinerators	0	0	0	-	-	-	0
TOTAL	**216,964**	**252,110**	**23**	**0**	**0**	**0**	**469,098**

Source: U.S. Environmental Protection Agency (EPA) 2023b
Notes: These data are from Part II, Section 5 of the Form R, and include only on-site releases (at the site of the TRI-reporting facility, rather than an off-site facility where waste is transferred from the reporting facility). Note that zero can indicate 0.5 pounds or less, including zero.
Terminology used in these columns may not match the more detailed data element names used in the TRI public data and analysis access points.
These release quantities may include releases due to non-production related or one-time events such as remedial actions or natural disasters.

2.2.9 TRI Waste Management by Waste Type

Table 2-14 summarizes waste management for vinyl chloride as reported to TRI for 2022.

Table 2-14: Summary of 2022 TRI Waste for Vinyl Chloride (CAS RN 75-01-4)

Type	Category	TRI Category	Waste Location	Pounds
Releases	Air Emissions	Fugitive Air	On site	252,110
		Stack Air	On site	216,964
	Land Releases	RCRA C Landfills	On and Off site	3
		Other Landfills	On and Off site	12
		Land Treatment/Application	On and Off site	0
		RCRA C Surface Impoundments	On and Off site	0
		Other Surface Impoundments	On and Off site	0
		Class I Underground Injection	On and Off site	0
		Class II-V Underground Injection	On and Off site	0
		All Other Land Disposal	On and Off site	21
	Water Discharges	On-site Water Releases	On site	23
	Off-site Releases	Storage Only	Off site	76
		Other Off-site Releases [a]	Off site	3
Off-site Transfers	Transfers to Water Treatment	Transfers to POTW	Off site	32
		Off-site Transfers to Treatment Non-POTW	Off site	608
Production-Related Waste	Recycling	Recycling	On and Off site	57,609,495
	Energy Recovery	Energy Recovery	On and Off site	14,911,792
	Treatment	On-site Treatment	On site	19,113,323
		Off-site Incineration	Off site	5,763,916
		Other Off-site Treatment	Off site	992
	Other On-site Production-Related Waste Management	On-site Production-Related Releases	On site	377,953
Totals	**Total Production-Related Waste**	**Total Production-Related Waste**	**On and Off site**	97,777,587
	Non-Production-Related Waste	**Non-Production-Related Waste**	**On and Off site**	91,149
	Total Waste Managed	**Total Waste Managed**	**On and Off site**	**97,868,736**

Source: U.S. Environmental Protection Agency (EPA) 2023b
Notes: This table includes data from Part II, Sections 5, 6, and 8 of the Form R. Non-production-related (one-time) waste is shown as a separate item in this table, but it is included in the other categories in the table that are taken from Sections 5 and 6; for example, for example, non-production related releases are included both in the "Releases" category and in the "Non-production related waste" category. , although in some cases the values may differ slightly (suggested calculated values in TRI reporting software ensure that sums match, but reporting facilities can override those values).
a: Includes transfer codes M41, M90, M99, and M94

2.3 Use Information

2.3.1 Summary of Uses

This section summarizes the uses of vinyl chloride. See Appendix A for a description of sources used in this report in addition to CDR.

PVC Uses

Vinyl chloride is almost exclusively used to manufacture poly(vinyl chloride) (PVC) and its copolymers (Agency for Toxic Substances and Disease Registry (ATSDR) 2023; Cowfer et al. 2006; International Agency for Research on Cancer 2012; Washington State Dept. of Ecology 2018). This use has grown, mostly in Asia, replacing other traditional materials like metals, wood, glass, and concrete used for the applications described below (Cowfer et al. 2006). It is estimated that approximately 95% of vinyl chloride was used for PVC production at the end other the 20th century (International Agency for Research on Cancer 2012), whereas today the estimated vinyl chloride use for PVC is up to 99% (Agency for Toxic Substances and Disease Registry (ATSDR) 2023; Pampell 2021). Vinyl chloride is processed into PVC by way of incorporation into formulation, mixture, or reaction product and as a reactant (U.S. Environmental Protection Agency (EPA) 2020b).

PVC is used across many sectors, though the largest and most well-known is for piping and fittings. PVC is popular for piping, tubing, pipe fittings in construction, agricultural irrigation, and in plumbing for its cheap costs, durability against the elements, and long lifespan (International Agency for Research on Cancer 2012; National Cancer Institute 2022; OECD 2001; Pampell 2021; Summers and Staff 2006). In 2003, almost half of all PVC was used for piping (Summers and Staff 2006), with over 70% of end uses tied to building and construction in 2021 (Pampell 2021). PVC has many other uses in construction, and as an excellent weathering material is used for exterior vinyl siding, roofing, window and door sealants, along with other water-proof membranes frequently exposed to the elements (Fischer et al. 2014; OECD 2001; Pampell 2021; Summers and Staff 2006; U.S. Environmental Protection Agency (EPA) 2023c). PVC is also used inside for flooring and floor coatings, ceiling tiles, and for electrical housings, fittings and enclosures (Fischer et al. 2014; International Agency for Research on Cancer 2012; National Cancer Institute 2022; OECD 2001; Pampell 2021; Summers and Staff 2006; Tonning et al. 2009). PVC material is also popular as wire and cables coatings (Pampell 2021). Flexible at low temperatures, resistant against the elements and weathering, and fairly cut resistant, PVC is ideal for protecting and insulating cabling and wires (International Agency for Research on Cancer 2012; Klinke et al. 2023; National Cancer Institute 2022; OECD 2001; Pampell 2021; Summers and Staff 2006).

Commercially, PVC is used for packaging, automotive manufacturing, medical products, and to manufacture safety equipment. PVC and PVC resins are popular for packaging materials for bottles, blister packs, transparent packs, cling film, punnets, and is found in packaging for children's bath products (Fischer et al. 2014; Hansen et al. 2014; OECD 2001; Pampell 2021; Summers and Staff 2006; Tonning et al. 2009; U.S. Environmental Protection Agency (EPA) 2023c). PVC is also used in transportation and automotive manufacturing for exterior roof lining and window seals, and for car seat backing, leather upholstery, wire coating, and decorative interior trim (Fischer et al. 2014; International Agency for Research on Cancer 2012; Kjolholt et al. 2015; Summers and Staff 2006). Medical products like the bags and tubing used for blood and dialysis also contain PVC (Fischer et al. 2014; Pampell 2021). Similarly, safety products like work boots and shoes, aprons, lifejackets, and other waterproof materials contain PVC (Fischer et al. 2014).

PVC is also found in many consumer products found around the home. PVC can be found in shower curtains and curtain railing, wall coverings, drawers and cabinetry, laminates, leather cloth and furniture, and other home furnishings (Fischer et al. 2014; International Agency for Research on Cancer 2012; OECD 2001; Summers and Staff 2006). PVC is also found in plastic consumer goods including audio and

video tape casing, vinyl records, credit cards, ear plugs, mattress covers, bibs, inflatable pools and play structures, children's toys, bike helmets, play mats, dog toys, waterproof clothing, and in sporting goods (Fischer et al. 2014; Hansen et al. 2014; Hansen et al. 2004; Karbaek et al. 2003; Nielsen et al. 2005; Poulsen 2019; Poulsen et al. 2018; Schmidt et al. 2008; Tonning et al. 2009; Washington State Dept. of Ecology 2018).

PVC itself is also used to produce other chemicals. An estimated 1% of PVC is used to produce vinyl chloride-vinyl acetate copolymer, also known as polyvinyl chloride acetate (PVCA). PVCA is used as a base resin or an additive homopolymer for processing into flooring, adhesives, inks, and paints (ChemBK 2015; Kaneka 2023). This includes adhesives for binding leather, PVC, wood, glass, fiber plate, metal coating, and paper (Kaneka 2023). PVCA also used for paving materials, PVC plastisol, toys, high-durability molded plastics, and heat seals for aluminum foils (ChemBK 2015).

Other Uses

Vinyl chloride is also used to produce other chemicals and is used in the laboratory for analytical chemistry (European Chemicals Agency (ECHA) 2023). These include vinylidene chloride copolymer (OECD 2001; Pampell 2021), and chlorinated solvents, primarily 1,1,1-trichloroethane (International Agency for Research on Cancer 2012; Pampell 2021). Vinyl chloride was also reported to be used in producing ethylene diamine for the production of resins (International Agency for Research on Cancer 2012). Other chemical products containing vinyl chloride can be seen in Table 2-16.

Historical Uses

Vinyl chloride also has several historical uses that ended in or before the 1970s. Vinyl chloride was historically used as an aerosol propellent in some pesticide and aerosol hair-spray products. In 1974, the EPA banned new production of products using vinyl chloride as a propellant. This impacted an estimated 28 products used in homes, food-handling establishments, and hospitals (Hardie 1964; International Agency for Research on Cancer 1974; International Agency for Research on Cancer 2008; International Agency for Research on Cancer 2012). Following this ruling, manufacturers recalled consumer aerosol hairspray products containing vinyl chloride and the Consumer Products Safety Commission proposed a ban on the sale of all pressurized products containing vinyl chloride (Hardie 1964; International Agency for Research on Cancer 1974; International Agency for Research on Cancer 2008). Additionally, vinyl chloride was used as an extraction solvent for heat sensitive materials and as a refrigerant, but this use is no longer active (International Agency for Research on Cancer 2008; International Agency for Research on Cancer 2012; Jira et al. 2007; Kim et al. 2016).

Recycling, Disposal, and Emissions Uses (NEI, RCRA, TRI)

Vinyl chloride is recycled in large quantities in the plastic materials and resins manufacturing industry and in lesser quantities in the manufacturing of basic organic and inorganic chemicals and in hazardous waste treatment and disposal.

There are fugitive and stack air releases of vinyl chloride across a multitude of industries but primarily from plastic materials and resin manufacturing. There is also a small amount of water releases from plastic materials and resin manufacturing, and inorganic and organic chemical manufacturing.

Non-TSCA Uses

Vinyl chloride was historically used in drugs, but this use ceased in 1974 after it was banned by the EPA (International Agency for Research on Cancer 2012).

Vinyl chloride was historically used in the production of chloroacetaldehyde which is an intermediate in the synthesis of sulfa- drugs. This use has not been reported as active since 1964.

2.3.2 Tier 1 Uses

Uses are divided into Tier 1 and Tier 2 uses. Those in Tier 1 generally have more information to support the accuracy of the use. For instance, these uses may be identified from sources where manufacturers and producers self- report the information or have been confirmed by identification of the chemical on a product SDS. They are found in Table 2-15. Tier 2 uses are other uses that may be historic, non-TSCA use, or more anecdotal are found in the table in Appendix B.

Table 2-15: Tier 1 Uses of Vinyl Chloride			
Activity or Chemical Function	**Sector or Product Type**	**Expected Users**	**Comments and References**
Manufacturing Uses			
Manufacturing	CBI	Industrial	U.S. Environmental Protection Agency (EPA) 2020b Production volume was last reported to be between 10 billion and 20 billion pounds of vinyl chloride in 2019.
Import	CBI	Industrial	U.S. Environmental Protection Agency (EPA) 2020b
Processing Uses			
Processing as a reactant	Plastics Material and Resin Manufacturing	Industrial	Agency for Toxic Substances and Disease Registry (ATSDR) 2023; Cowfer et al. 2006; International Agency for Research on Cancer 2012; Pampell 2021; U.S. Environmental Protection Agency (EPA) 2020b; U.S. Environmental Protection Agency (EPA) 2023c; Washington State Dept. of Ecology 2018 Vinyl chloride is almost exclusively used to produce poly(vinyl chloride) and its copolymers. Approximately 95% of vinyl chloride was used to manufacture PVC at the end of the 20th century, with closer to 99% being used today. The 2020 CDR lists vinyl chloride in "plastics material and resin manufacturing" as both a monomer and an intermediate in processing (as a reactant). Vinyl chloride was also reported to be used for PVC manufacturing by Shintech 2016 which is listed in Table 2-16. Expected users are industrial based on the CDR's user classification.
	Petrochemical Manufacturing	Industrial	International Agency for Research on Cancer 2012; OECD 2001; Pampell 2021; U.S. Environmental Protection Agency (EPA) 2020b Vinyl chloride is used to manufacture copolymers of poly(vinyl chloride) and other chemicals such as vinyl chloride-vinyl acetate copolymer, vinyl chloride-

Table 2-15: Tier 1 Uses of Vinyl Chloride			
Activity or Chemical Function	**Sector or Product Type**	**Expected Users**	**Comments and References**
			vinylidene chloride copolymer, 1,1,1-trichloroethane, and ethylene diamine. The 2020 CDR lists vinyl chloride in "petrochemical manufacturing" as an intermediate in processing (as a reactant). Expected users are industrial based on the CDR's user classification.
Processing-incorporation into formulation, mixture, or reaction product	Plastics Material and Resin Manufacturing	Industrial	Agency for Toxic Substances and Disease Registry (ATSDR) 2023; Cowfer et al. 2006; International Agency for Research on Cancer 2012; Pampell 2021; U.S. Environmental Protection Agency (EPA) 2020b; Washington State Dept. of Ecology 2018 Vinyl chloride is almost exclusively used to produce poly(vinyl chloride) and its copolymers. Approximately 95% of vinyl chloride was used to manufacture PVC at the end of the 20th century, with closer to 99% being used today. The 2020 CDR lists vinyl chloride in "plastics material and resin manufacturing" as a binder in processing (via incorporation into formulation, mixture, or reaction product). Vinyl chloride was also reported to be used for PVC manufacturing by Shintech 2016 which is listed in Table 2-16. Expected users are industrial based on the CDR's user classification.
	Petrochemical Manufacturing	Industrial	International Agency for Research on Cancer 2012; OECD 2001; U.S. Environmental Protection Agency (EPA) 2020b Vinyl chloride is used to manufacture copolymers of poly(vinyl chloride) and other chemicals such as vinyl chloride-vinyl acetate copolymer, vinyl chloride-

Table 2-15: Tier 1 Uses of Vinyl Chloride			
Activity or Chemical Function	**Sector or Product Type**	**Expected Users**	**Comments and References**
			vinylidene chloride copolymer, 1,1,1-trichloroethane, and ethylene diamine. The 2020 CDR lists vinyl chloride in "petrochemical manufacturing" as an intermediate in processing (via incorporation into formulation, mixture, or reaction product). Expected users are industrial based on the CDR's user classification.
Processing-incorporation into article	Primary Metal Manufacturing	Industrial	International Agency for Research on Cancer 2012; National Cancer Institute 2022; OECD 2001; Summers and Staff 2006; U.S. Environmental Protection Agency (EPA) 2020b PVC, a derivative of vinyl chloride, is used in construction for wire and cable coatings. PVC is a popular coating given its flexibility at low temperatures, weatherability, and cut resistance. The 2020 CDR lists vinyl chloride in "primary metal manufacturing", specifically to manufacture wire and cable, via processing through incorporation into an article. Expected users are industrial based on the CDR's user classification.
Processing as a reagent	Synthetic/Analytical Chemistry and Laboratory Chemical	Industrial	Airgas USA LLC 2018; European Chemicals Agency (ECHA) 2023; LGC Limited 2019b; Linde Inc. 2022; Restek Corporation 2023; Sigma-Aldrich Inc. 2023a ECHA lists the use of vinyl chloride in laboratory chemistry, processed as a laboratory reagent. 29 products were found confirming use as laboratory chemicals and 2 found listing the use of vinyl chloride as a laboratory chemical. These products are listed in Table 2-16.

Table 2-15: Tier 1 Uses of Vinyl Chloride			
Activity or Chemical Function	**Sector or Product Type**	**Expected Users**	**Comments and References**
			These products are likely used in the synthesis of PVC, PVCA, and other noted chemicals manufactured from vinyl chloride. Expected users are industrial based on the ECHA classification.
Consumer/Commercial/Industrial Uses			
Intermediates	PVC Pipes and Fittings	Commercial	International Agency for Research on Cancer 2012; National Cancer Institute 2022; OECD 2001; Pampell 2021; Poulsen 2019; Summers and Staff 2006 The vast majority of vinyl chloride is used in manufacturing PVC. The primary use of PVC is to manufacture pipes and fittings used in construction, plumbing, and other trades. In 2003, almost half of all PVC produced went towards piping and pipe fitting. PVC is popular for piping due to the low cost compared to other material options, its durability, and the long lifespan of PVC. Expected users are industrial and commercial.
	Construction	Commercial	Fischer et al. 2014; International Agency for Research on Cancer 2012; National Cancer Institute 2022; OECD 2001; Pampell 2021; Summers and Staff 2006 PVC has many other construction uses past piping and fittings. As an excellent weathering material, PVC is popular for exterior siding, roofing, window and door materials and sealants, and other water-proof membranes frequently exposed to the elements. PVC is also used in interior construction. PVC can be found in flooring and floor coatings, housings, and in electrical fittings and enclosures. Expected users are commercial.

Table 2-15: Tier 1 Uses of Vinyl Chloride			
Activity or Chemical Function	**Sector or Product Type**	**Expected Users**	**Comments and References**
	Cable and Wire Coatings	Industrial, Commercial	European Chemicals Agency (ECHA) 2023; International Agency for Research on Cancer 2012; Klinke et al. 2023; National Cancer Institute 2022; OECD 2001; Pampell 2021; Summers and Staff 2006 PVC material is popular for coatings for wires and cables. PVC is flexible at low temperatures, resistant against the elements and weathering, and is fairly cut resistant, all important for protecting cabling and wires. PVC also used in plastic wire insulation. Expected users are assumed to be industrial and commercial.
	Home Furnishing Products	Commercial, Consumer	Fischer et al. 2014; International Agency for Research on Cancer 2012; OECD 2001; Summers and Staff 2006; Tonning et al. 2009; U.S. Environmental Protection Agency (EPA) 2023c PVC is common throughout home and office furnishing, being utilized in a variety of plastic products. PVC can be found in shower curtains and curtain railing, bathmats, wall coverings, drawers and cabinetry, laminates, leather cloth, and furniture. Expected users are commercial and consumer.
	Consumer Goods	Consumer	Fischer et al. 2014; Hansen et al. 2014; Hansen et al. 2004; Karbaek et al. 2003; Nielsen et al. 2005; Poulsen 2019; Poulsen et al. 2018; Schmidt et al. 2008; Tonning et al. 2009; Washington State Dept. of Ecology 2018 PVC is also found in consumer goods like audio and video tape casing, vinyl records, credit cards, mattress covers, earplugs, and in waterproofing materials for rainwear and other clothing. PVC is found in many children's products including bibs, inflatable pools and play structures, in coatings and parts for children's tents, children's toys, dog toys, play mats, bike helmets, and sporting goods.

Table 2-15: Tier 1 Uses of Vinyl Chloride			
Activity or Chemical Function	**Sector or Product Type**	**Expected Users**	**Comments and References**
			Expected users are consumer.
	Transportation	Commercial, Consumer	Fischer et al. 2014; International Agency for Research on Cancer 2012; Kjolholt et al. 2015; Summers and Staff 2006 PVC is used in transportation and automotive production. PVC can be found in interior automotive parts including car seat backing, leather upholstery, wiring coating, and decorative trim. PVC is also used in exterior automotive parts, like roof lining and window seals, for its ability to withstand weathering. Expected users are commercial and consumer.
	Packaging	Commercial	Fischer et al. 2014; Hansen et al. 2014; International Agency for Research on Cancer 2012; Pampell 2021; Summers and Staff 2006; Tonning et al. 2009 PVC is used in some packaging products including for bottles, blister packs, transparent packs, cling film, and punnets. PVC also used in packaging for children's bath products. Expected users are commercial.
	PVCA Production	Industrial	ChemBK 2015; Database 2022; International Agency for Research on Cancer 2012; Kaneka 2023; SPIN 2023; U.S. Environmental Protection Agency (EPA) 2023d An estimated 1% of PVC is used to produce vinyl chloride-vinyl acetate copolymer, also known as polyvinyl chloride acetate (PVCA). PVCA is used as a base resin or an additive homopolymer for processing flooring, adhesives, inks, and paints. This includes adhesives for binding leather, PVC, wood, glass, fiber plate, metal coating, and paper. PVCA also used for paving materials, toys, high-durability molded plastics, and heat seals for aluminum foils. Expected users are industrial and commercial.

Table 2-15: Tier 1 Uses of Vinyl Chloride			
Activity or Chemical Function	**Sector or Product Type**	**Expected Users**	**Comments and References**
Binder	Plastic and Rubber Products not covered elsewhere	Commercial	U.S. Environmental Protection Agency (EPA) 2020b
Recycling/Disposal/Emissions			
Recycling	Plastics Material and Resin Manufacturing; All Other Basic Organic Chemical Manufacturing; Other Basic Inorganic Chemical Manufacturing; Hazardous Waste Treatment and Disposal	Disposal	U.S. Environmental Protection Agency (EPA) 2023a
Stack Air Releases	Plastics Material and Resin Manufacturing; Basic Chemical Manufacturing; Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing; Waste Collection and Treatment; Pesticide and Other Agricultural Chemical Manufacturing; Ground or Treated Mineral and Earth Manufacturing	Industrial	U.S. Environmental Protection Agency (EPA) 2023a
Fugitive Air Releases	Basic Chemical Manufacturing; Plastics Material and Resin Manufacturing; Pesticide and Other Agricultural Chemical Manufacturing; Waste Collection and Treatment; Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing; Ground or Treated Mineral and Earth Manufacturing	Industrial	U.S. Environmental Protection Agency (EPA) 2023a
Water Releases	Basic Chemical Manufacturing; Plastics Material and Resin Manufacturing	Industrial	U.S. Environmental Protection Agency (EPA) 2023a
Emissions – Chemical Manufacturing	Industrial Inorganic Chemical Manufacturing	Industrial	U.S. Environmental Protection Agency (EPA) 2020a
Emissions – Inorganic Chemical Storage	Commercial/Industrial: Breathing Loss	Commercial, Industrial	U.S. Environmental Protection Agency (EPA) 2020a
Emissions – Landfills	Municipal	Disposal	U.S. Environmental Protection Agency (EPA) 2020a
Emissions – Oil and Gas Exploration and Production	Coal Bed Methane Natural Gas; Natural Gas; On-Shore Gas Production; On-Shore Oil Production	Commercial	U.S. Environmental Protection Agency (EPA) 2020a
Emissions – Wastewater Treatment	Public Owned	Commercial	U.S. Environmental Protection Agency (EPA) 2020a

2.4 Products Containing Vinyl Chloride

This section includes a sample of products containing vinyl chloride. When EPA identified a product through its search for market and use information, the product was added to the following table. This is not a comprehensive list of products containing vinyl chloride. In addition, some manufacturers may appear overrepresented in this table. This may mean that they are more likely to disclose product ingredients online than other manufacturers but does not imply anything about use of the chemical compared to other manufacturers in this sector.

Table 2-16: Sample of Products Containing Vinyl Chloride

Use	Expected Users	Product	Manufacturer	Percent in Product	Volume of Use and Frequency of Use	Source
Adhesive	Commercial	bostik 4585	Emhart Industries Inc.	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Adhesive	Commercial	liquid lectric tape (mdr-740)	Marine Development & Research Corp	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Adhesive	Commercial	star brite liquid electrical tape (black)	Star Srite Distributing Inc	22 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Adhesive	Commercial	star brite liquid electrical tape (white)	Star Brite	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Adhesive	Commercial	coating electrical	Star Brite	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Adhesive	Commercial	dolflex cc-1022	John C. Dolph Company	<2.5 percent	unknown	Dolphs 2011; U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial	33_ amercoat vinyl copolymer	Ameron Protective Coatings	<15 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial	791 strippable spray-booth coating	Chemco Manufacturing Company	0.07 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial	791 strippable spray-booth coating	Chemco Manufacturing Company	0.07 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	mil-p-15930c formula 120 green	Kop-Coat Inc	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	qurox_ 1596	Certified Labs Div Nch Corp	<0 1 percent	unknown	ProDepot 2024; U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Coating	Commercial/ Industrial	tufcote marine barrier_ mb-100	Cabot Safety Corp	16 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	tufcote marine barrier_ mb-150	Cabot Safety Corp	16 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	tufcote marine barrier_ mb-75	Cabot Safety Corp	16 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	uralox white_ 4-1w-2	Advanced Coatings & Chemicals(Olin/Hunt Spec Prod)	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	rust inhibitive w.d. black 94 9218	Kalcor Coatings Co	<0.005 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	wb1003 black	Flexabar Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	wcp-1600 series_ cover-all exterior latex (supdat)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	white 821 rf3058fs	Flexabar Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002 clear plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002 plastisol dark gray_ #16081	Qcm Company	<1.0 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002 plastisol various colors	Qcm Company	<1.0 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002 plastisol various colors	Qcm Company	<1.0 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Coating	Commercial/ Industrial	p7002 plastisol various colors	Qcm Company	<1.0 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002 plastisol various colors	Qcm Company	<1.0 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002 plastisol various colors	Qcm Company	<1.0 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002 plastisol various colors	Qcm Company	<1.0 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002 plastisol_ vinyl	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002-10324 tan plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002-10324 tan plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002-1037 buff plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002-12215 orange plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002-12246 orange plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002-13538 yellow plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002-13655 yellow plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride

Use	Expected Users	Product	Manufacturer	Percent in Product	Volume of Use and Frequency of Use	Source
Coating	Commercial/ Industrial	p7002-14062 dk green plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002-15044 dk blue plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002-17043 gold plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Coating	Commercial/ Industrial	p7002-17142 purple plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Colorant	Commercial/ Industrial	oncolor 10010360 black	Polyone Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Colorant	Commercial/ Industrial	oncolor w775 warm gray	Polyone Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	STO COATINGS SYSTEM STO BTS PLUS BASE COAT EMBEDDED IN STOMESH WITH STOLIT FINISH.	Sto Corp	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	STO COATINGS SYSTEM STO BTS PLUS BASE COAT EMBEDDED IN STOMESH WITH STOLIT FINISH.	unknown	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	wcp-700 series_ federal traffic paint_ (supdat)	Western Colloid Products	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	130 surface mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	130 surface mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1300 wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Construction and building materials	Commercial	130bn and 150bn corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	130bn and 150bn corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	130f flush mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	130f flush mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1400 wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1400i wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1455 wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1455i wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	150 surface mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	150 surface mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1500 wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1500i wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Construction and building materials	Commercial	150f flush mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	160 surface mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1600 wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1600i wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	160bn and 170bn corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	160bn and 170bn corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	160f flush mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1655 wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1655i wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	170 surface mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	170f flush mount corner guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	1800 wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Construction and building materials	Commercial	1800i wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	2000 handrail	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	2600 chair rail	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	2700 chair rail	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	3000vv handrail	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	5000 wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	5000i wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	5055 wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	5055i wall guard	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	800 handrail	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	855 handrail	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	900 handrail	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Construction and building materials	Commercial	Crystal-Moderco inc-	Moderco Inc.	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	Crystal-Moderco inc-	unknown	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	Crystal-Moderco inc-	unknown	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	door frame guard 400	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	fantastaseal-flexible roofing material	Sterling-Brock Industrial Prod Inc	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	kickplates: k4, k41, k42	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	kickplates: k6, k61, k62	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	kickplates: k8	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	rubrail: r4, r6, r8	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	sheet material: 304, 305, 306	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	sheet material: 404, 405, 406, 410	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	Signature Series-Moderco inc-	Moderco Inc.	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Construction and building materials	Commercial	Signature Series-Moderco inc-	unknown	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	Signature Series-Moderco inc-	unknown	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	parabond p-18	Para-Chem Southern Inc	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	geon 161j-1-3v/2188gc-3v	Polyone Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	geon 8700x natural 0220	Polyone Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	geon b7500 natural 0000	Polyone Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	geon e6751 natural 0000	Polyone Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	geon l6181 natural 0000	Polyone Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	geon w780l	Polyone Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	green 580 pvc	Breen Color Concentrates	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	parabond p-28	Para-Chem Southern Inc	10 percent ppm	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	polyvinyl chloride resin_ pvc resin_ (supp	Georgia Gulf Corp	<0.001 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride

Use	Expected Users	Product	Manufacturer	Percent in Product	Volume of Use and Frequency of Use	Source
Construction and building materials	Commercial	pvc compound_ rigid 7053	Georgia Gulf Corporation	0.001 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	pvc graphite tile	Burke Industries Inc.	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	pvc graphite tile	Burke Industries Inc.	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	pvc graphite tiles	Burke Industries Inc.	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	pvc graphite tiles	Burke Industries Inc.	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	pvc graphite tiles	Burke Industries Inc.	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	pvc graphite tiles	Burke Industries Inc.	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	pvc homopolymer (vc440)	Borden Chemicals & Plastics,Operating (Sup Data)	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	pvc pipe and fittings	Charlotte Pipe & Foundry Co	<5 percent ppm	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	pvc pipe fittings and valves	U-Brand Corp	<5 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	roscom natural pvc compounds	Roscom Inc.	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	weatherall flexible roofing material	Chemseal Weatherall Inc	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Construction and building materials	Commercial	white 369 pvc	Breen Color Concentrates	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	superior essex 4-pair plenum copper cables: nextgain category	Superior Essex	unknown	unknown	Essex 2007; U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	Solid Aluminum-MOZ Designs Inc	Moz Designs, Inc	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	tape on corner guards 1 1/2 x 48" 135 degree	unknown	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	tape on corner guards 1 1/2" x 48" wing 90 degree	unknown	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	tape on corner guards 3/4" x 48" 90 degree	unknown	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	tape on corner guards 3/4" x 96" 90 degree	unknown	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	wall base	Inpro Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	(vxa 3306) 8054	Burke Industries	0.0049 percent	unknown	Industries 2023; U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	81969-71 pvc cement-gray	Permatex Industrial	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	blue 115 pvc	Breen Color Concentrates	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride

Use	Expected Users	Product	Manufacturer	Percent in Product	Volume of Use and Frequency of Use	Source
Construction and building materials	Commercial	blue 5152 pvc	Breen Color Concentrates	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Construction and building materials	Commercial	c2204 navy damp 2 tile/isodamp cn damping tile	Cabot Safety Corp,E-A-R Specialy Composites Div	30 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Furniture and furnishings	Commercial	700 Series-Moderco inc-	Moderco Inc.	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Furniture and furnishings	Commercial	700 Series-Moderco inc-	Moderco Inc.	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Furniture and furnishings	Commercial	700 Series-Moderco inc-	Moderco Inc.	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Furniture and furnishings	Commercial	Signature Series - STC 43-Moderco inc-	Moderco Inc.	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Furniture and furnishings	Commercial	Signature Series - STC 43-Moderco inc-	unknown	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Furniture and furnishings	Commercial	Signature Series - STC 43-Moderco inc-	unknown	impurity/ residual percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	03-700_ weathershield house paint-chestnut	Duron Inc American Div	<10 percent ppm	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	22-001_ plastic kote semi-gloss bright whit	Duron Inc American Div	< 10 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	22-004 plastic kote semi-gloss white base	Duron Inc	<10 percent ppm	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	2400 latex eggshell interior enamel	Dunne Quality Paints	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride

Use	Expected Users	Product	Manufacturer	Percent in Product	Volume of Use and Frequency of Use	Source
Home maintenance	Comsumer	delx latex semi-gloss_ white_ id: 35-003	Duron, Inc.	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	brown vinyl primer p-487	Koppers Co Inc	15.4 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	06-600 dura kote latex house paint - black	Duron Inc	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	06-904_ dura kote latex house paint-white b	Duron Inc American Div	<10 percent ppm	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	601s3977 devflex 601 595a27778 white_ dv601s30005	Ameron International Protective Coatings Group	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	amercoat 277e antifouling black_ 175900	Ameron Protective Coatings Group	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	chem calk 900 linestn 24/10.3_ a11410	Bostik Inc	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	chem calk 900 white 24/10.3_ 0043231	Bostik Inc	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	chem calk 900 white 24/10.3_ a12612	Bostik Inc	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Comsumer	devflex_ dv601	Ameron Protective Coatings Group	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	masterpiece latex sg enamel_ 1700	Dunne Quality Paints	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Home maintenance	Consumer	wcp-1700 series_ house & trim semigloss (supdat)	Western Quality Paints	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride

Use	Expected Users	Product	Manufacturer	Percent in Product	Volume of Use and Frequency of Use	Source
Industrial products	Industrial	geon 8815	B F Goodrich Co, Chem Group	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Industrial products	Industrial	geon vinyls	B F Goodrich Co, Chem Group	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Industrial products	Industrial	geon w1349l nat 1005frd	Polyone Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Industrial products	Industrial	geon wjac308l yellow 6241	Polyone Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory chemicals	Commercial/ Industrial	VOC-Mix 2 2000 ng/µL in Methanol	LGC Limited	<0.25%	unknown	LGC Limited 2019b
Laboratory chemicals	Commercial/ Industrial	Colorado Residual Solvent Mixture 1000 µg/ml in Dimethyl Sulfoxide	LGC Limited	<0.25%	unknown	LGC Limited 2020a
Laboratory chemicals	Commercial/ Industrial	DZ/T 0064.91-2021 VOC Mixture 692 1000 µg/mL Methanol	LGC Limited	.1-1%	unknown	LGC Limited 2022a
Laboratory chemicals	Commercial/ Industrial	EPA Method 524.3 0053 Gases Mixture 2000 µg/mL in Methanol	LGC Limited	.1-1%	unknown	LGC Limited 2021a
Laboratory chemicals	Commercial/ Industrial	EPA Method 524.3 0054 Gases Mixture 2000 µg/mL in Methanol	LGC Limited	.1-1%	unknown	LGC Limited 2023a
Laboratory chemicals	Commercial/ Industrial	EPA Method 601 VOC Performance Check Mixture 390 200 µg/mL in Methanol	LGC Limited	<0.1%	unknown	LGC Limited 2021b
Laboratory chemicals	Commercial/ Industrial	GB 3838-2002 VOC Mixture 100 µg/mL in Methanol	LGC Limited	<0.1%	unknown	LGC Limited 2022b
Laboratory chemicals	Commercial/ Industrial	Haloalkanes Mixture 896 200 µg/mL in Methanol	LGC Limited	<0.1%	unknown	LGC Limited 2021c
Laboratory chemicals	Commercial/ Industrial	HJ 36600-2018 VOC Mixture 268 1000 µg/mL in Methanol	LGC Limited	<0.25%	unknown	LGC Limited 2020b
Laboratory chemicals	Commercial/ Industrial	HJ 639-2012, HJ 810-2016 VOC Mixture 107 2000 µg/mL in Methanol	LGC Limited	.1-1%	unknown	LGC Limited 2022c
Laboratory chemicals	Commercial/ Industrial	HJ 642-2013 VOC Mixture 136 1000 µg/mL in Methanol	LGC Limited	.1-1%	unknown	LGC Limited 2021d
Laboratory chemicals	Commercial/ Industrial	Method DM 471 Standard Mixture 891 100 µg/mL in Methanol	LGC Limited	<0.1%	unknown	LGC Limited 2021e

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Laboratory chemicals	Commercial/ Industrial	Purgeable Halocarbon Mixture 913 100 µg/mL in Methanol	LGC Limited	<0.1%	unknown	LGC Limited 2021f
Laboratory chemicals	Commercial/ Industrial	TCLP Volatiles Mixture 396 1000 µg/mL in Methanol	LGC Limited	.1-1%	unknown	LGC Limited 2021g
Laboratory chemicals	Commercial/ Industrial	VOA Solvent Mixture 461 1000 µg/mL in Methanol	LGC Limited	<0.25%	unknown	LGC Limited 2019a
Laboratory chemicals	Commercial/ Industrial	VOA Solvent Mixture 462 1000 µg/mL in Methanol	LGC Limited	.1-1%	unknown	LGC Limited 2022d
Laboratory chemicals	Commercial/ Industrial	VOC Mixture 18 100 µg/mL in Methanol	LGC Limited	<0.1%	unknown	LGC Limited 2022e
Laboratory chemicals	Commercial/ Industrial	VOC Mixture 230 5-10 µg/mL in Methanol	LGC Limited	<0.1%	unknown	LGC Limited 2021h
Laboratory chemicals	Commercial/ Industrial	VOC Mixture 659 2000 µg/mL in Methanol	LGC Limited	.1-1%	unknown	LGC Limited 2022f
Laboratory chemicals	Commercial/ Industrial	VOC Mixture 686 5-10 µg/mL in Methanol	LGC Limited	<0.1%	unknown	LGC Limited 2022g
Laboratory chemicals	Commercial/ Industrial	VOC Mixture 897 2000 µg/mL in Methanol	LGC Limited	.1-1%	unknown	LGC Limited 2021i
Laboratory chemicals	Commercial/ Industrial	VOC Mixture 900 200 µg/mL in Methanol	LGC Limited	<0.1%	unknown	LGC Limited 2023b
Laboratory chemicals	Commercial/ Industrial	VOC Mixture 902 200 µg/mL in Methanol	LGC Limited	<0.1%	unknown	LGC Limited 2021j
Laboratory chemicals	Commercial/ Industrial	VOC Mixture 903 2000 µg/mL in Methanol	LGC Limited	.1-1%	unknown	LGC Limited 2022h
Laboratory chemicals	Commercial/ Industrial	28 COMP VOC MIX NITROGEN BAL	Linde Inc.	<0.1%	unknown	Linde Inc. 2022
Laboratory chemicals	Commercial/ Industrial	30042.SEC / 502.2 Calibration Mix #1	Restek	0.20%	unknown	Restek Corporation 2023
Laboratory chemicals	Commercial/ Industrial	EPA HC Purgeable C	Sigma Aldrich	.1-1%	unknown	Sigma-Aldrich Inc. 2023a
Laboratory chemicals	Commercial/ Industrial	EPA VOC Mix 6	Sigma Aldrich	.1-1%	unknown	Sigma-Aldrich Inc. 2023b
Laboratory chemicals	Commercial/ Industrial	VOLATILE ORGANIC COMPOUNDS MIX 6,1X1.5ML,2000UG/ML METHANOL	Sigma Aldrich	.1-1%	unknown	Sigma-Aldrich Inc. 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Laboratory supplies	Industrial	dwn-580	Ultra Scientific	0.02 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	purgeable halocarbon mixture at 100 ug/ml i	Ultra Scientific	0.01 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	purgeable mixture at 100 ug/ml in methanol_	Ultra Scientific	0.013 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	1x1ml_ 47385-u_ epa 8240b/8260a (supdat)	Supelco Inc	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	30010_30010-5xx & 30110 voa calibration mix #5	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	30020_ 624 calibration mix #1	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	30020_30020-5xx & 30120 624 calibration mix 1	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	30042 502.2 calibration mix 1	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	30042-5xx 502.2 calibration mix #1	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	30142 502.2 calibration mix #1	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	48799 volatile organic compounds mix 6_1x1ml_200oug/ml e	Supelco Inc	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	502.2 calibration mix #1 30042 30042-5xx 30142	Restek Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Laboratory supplies	Industrial	502.2 calibration mix 1_ 30042	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	502.2 calibration mix 1_ 30042-500	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	502.2 calibration mix 1_ 30142	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	624 calibration mix 1_ 30020-5xx	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	624 calibration mix 1_ 30120	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	81388 poly (vinyl chloride) low molecular weight	Fluka Chemical Corp	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	dwm-544 volatile organic compounds gas mixture in methanol	Ultra Scientific	0.25 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	dwm-580	Ultra Scientific	0.025 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	dwm-580 voc mixture @200ug/ml in methanol (supplemental)	Ultra Scientific	0.025 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	dwm-580 volatile organic compounds mixture at 200 ug/ml	Ultra Scientific	0.025 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	dwm-584 voc gas mixture	Ultra Scientific	0.0253 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	epa 8240b/8260a calibration check compounds 47385	Supelco Inc	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Laboratory supplies	Industrial	epa tclp volatiles mix_ 48143	Supelco Inc	0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	f88s vinyl chloride 0.1 mg/ml in methanol	Chem Service Inc	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	method 601 purgeable halocarbons-gases_ epm60009	Em Science	0.02 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	organic potablewatr pw 32_component a: reg volatiles 703	Environmental Resources Associates	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	organic potablewatr_ pw-32 part a	Environmental Resources Associates	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	purgeable c 1ml	Supelco Inc	0.02 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	purgeable halocarbon kit 601-s_ vinyl chlor	Supelco Inc	0.02 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	purgeable halocarbons kit 601-s_ 48769 (sup	Supelco Inc	0.02 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	rustame 4x1 ql cs_ 5683	Atco Mfg Co	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	tclp voa mix_ 30024	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	tclp voa mix_ 30024-5xx	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	tclp voa mix_ 30124	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Laboratory supplies	Industrial	tclp-502 tclp volatiles mixture in methanol	Ultra Scientific	0.0002 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	voa calibration mix # 5_ 30010_ 30010-5xx_ 30110	Restek Corp	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	voa calibration mix 5_ 30010	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	voa calibration mix 5_ 30010-500	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	voa calibration mix 5_ 30110	Restek Corp	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	voc kit (6 x 1ml)_ 48804_ voc mix kit	Supelco Inc	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	voc kit voc mix 6_ 48804	Supelco Inc	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	voc mix-7 1ml_ 48802	Supelco Inc	0.2 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	volatile organic compounds-gases_ m-502b	Accustandard Inc	0.02 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	volatile spiking mix (tclp)_ tclp-voc	Accustandard Inc	0.5 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	volitile organic compounds - mix d - ingredients continued	Accustandard Inc	0.02 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Laboratory supplies	Industrial	water standard kit-a purgeable c_ 48807	Supelco Inc	0.02 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride

Use	Expected Users	Product	Manufacturer	Percent in Product	Volume of Use and Frequency of Use	Source
Laboratory supplies	Industrial	water standards kit in ampuls purgeable c_	Sigma-Aldrich Inc.	0.02 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Printing/Ink	Commercial/ Industrial	fibercote sx380 various colors_ sx380	One Stroke Inks	<.001 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Printing/Ink	Commercial	multi-purpose 700 series nylon ss ink designated as lf(supp)	International Coatings Co Inc	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Printing/Ink	Commercial	multi-purpose 900 series nylon ss ink designated as lf(supp)	International Coatings Co Inc	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Printing/Ink	Commercial	multi-purpose_700 & 900 series nylon ss ink designated as lf	International Coatings Co Inc	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	Vinyl Chloride Monomer	Shintech Louisiana, LLC	>99.9%	unknown	Shintech 2016
Raw materials	Industrial	metalast (924 white)	Woolsey Marine Industries Div Of Kop-Coat Inc	<0.03 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	2222-88 clear 0001	Alphagary Corporation	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Commercial	mil-p-15930c (formula 120 green) primer	Kop-Coat Inc	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002 plastisol	Qcm Company	<.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002 plastisol_ vinyl	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-10080 brown plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Raw materials	Industrial	p7002-10080 brown plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-11105 red plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-11105 red plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-14062 green plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-14325 green plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-14449 lt green plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-15044 blue plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-15200 blue plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-15200 blue plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-16082 grey plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-16307 gray plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-16376 lt grey plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Raw materials	Industrial	p7002-17886 white plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-27038 black plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-27038 black plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-27038 black plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-27038 black plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-27038 black plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-27038 black plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	p7002-27038 black plastisol	Qcm Company	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	plastisol_ vinyl chloride	International Coatings Co	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	plastisol_ vinyl chloride	International Coatings Co	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	plastisol_ vinyl chloride dark blue #15044	International Coatings Co	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	plastisol_ vinyl chloride_ black	International Coatings Co	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Raw materials	Industrial	plastisol_ vinyl chloride_ black	International Coatings Co	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	plastisol_ vinyl chloride_ black	International Coatings Co	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	plastisol_ vinyl chloride_ dark gray #16081	International Coatings Co	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	plastisol_ vinyl chloride_ purple. #17142	International Coatings Co	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	plastisol_ vinyl chloride_ red. #11105	International Coatings Co	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	poly(vinyl chloride) medium molecular weight_34677-2	Aldrich Chemical Co Inc	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	vinyl chloride	Matheson Tri-Gas, Inc.	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	vinyl plastisol	Chemical Commodities Agency, Inc	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	vinyl plastisol 41d-56b	International Coatings Co	<0.003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	z spar vinyl cop p32 red_ 602701001032100	Kop-Coat Inc	<0.006 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	polyvinyl chloride	Hummel Croton Inc	< .1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Raw materials	Industrial	vinyl chloride	Matheson Gas Products	>99.9 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride

Use	Expected Users	Product	Manufacturer	Percent in Product	Volume of Use and Frequency of Use	Source
Resin	Commercial	fiberglass pinhole filler	Midland Division Dexter Corp	0.00003 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Sealant	Commercial	lear whip-end dip_ mdr-180 clear	Marine Development & Research Corp	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Sealant	Commercial/ Industrial	monco rust coat	Indco Inc	see ing unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Sealant	Commercial/ Industrial	monco rust coat	Montgomery Chemical Co Inc	0.0005 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Sealant	Commercial/ Industrial	monco rust coat	Montgomery Chemical Co Inc	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Sealant	Commercial/ Industrial	superseal 333_444_777_1614_1614a_4000	Superior Products Company, Inc	unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Consumer	traffic paint_ black_ water borne_ wcp-708 series	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Consumer	traffic paint_ red_ water borne_ wcp-706 series	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Consumer	traffic paint_ yellow_ waterborne_ wcp-702 series	Western Colloid Products	<0.1 percent	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Commercial	wcp-700 series_ federal traffic paint_ (supdat)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Commercial	wcp-700 series_ federal traffic paint_ (supdat)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Commercial	wcp-700 series_ federal traffic paint_ (supdat)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c

Table 2-16: Sample of Products Containing Vinyl Chloride						
Use	**Expected Users**	**Product**	**Manufacturer**	**Percent in Product**	**Volume of Use and Frequency of Use**	**Source**
Specialty occupational products	Commercial	wcp-700 series_ federal traffic paint_ (supdat)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Commercial	wcp-700 series_ federal traffic paint_ (supdat)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Commercial	wcp-700 series_ federal traffic paint_ black_(supdat)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Commercial	wcp-700 series_ federal traffic paint_ blue_ (supdat)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Commercial	wcp-700 series_ federal traffic paint_ green_(supdat)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Commercial	wcp-700 series_ federal traffic paint_ red_ (supdat)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Specialty occupational products	Commercial	wcp-700 series_ yellow_ federal traffic (supp data)	Western Colloid Products	trace unknown	unknown	U.S. Environmental Protection Agency (EPA) 2023c
Synthetic/Analytical chemistry.	Commercial/ Industrial	Nonflammable Gas Mixture: 66 Component Certified Hydrocarbon Blend	Airgas USA	.0001-.0005%	unknown	Airgas USA LLC 2018
Synthetic/Analytical chemistry.	Commercial/ Industrial	Nonflammable Gas Mixture: Dichlorodifluoromethane (R12) / Helium / Vinyl Chloride	Airgas USA	0.0001 - 0.05	unknown	Airgas USA LLC 2022

3. Waste, Disposal, and Recycling

This section covers information on waste, disposal, and recycling found in the Resource Conservation and Recovery (RCRA) dataset, the National Emissions Inventory (NEI), and the NPDES Discharge Monitoring.

3.1 Resource Conservation and Recovery Act Data

The EPA, in partnership with the States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act (RCRA). RCRA hazardous waste generation information is obtained from data reported by RCRA Large Quantity Generators (LQGs). The term "RCRA hazardous waste" refers to solid waste assigned a Federal Hazardous Waste Code and regulated by RCRA. A generator is defined as a Federal Large Quantity Generator if:

- the generator generated, in any single month, 1,000 kg (2,200 pounds or 1.1 tons) or more of RCRA hazardous waste; or
- the generator generated, in any single month or accumulated at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or
- the generator generated or accumulated at any time, more than 100 kg (220 pounds) of spill cleanup material contaminated with RCRA acute hazardous waste.

All sites that were LQGs in the reporting year are required to provide EPA with waste generation and management information. It is important to note that the generators have been included based on the most current information made available to EPA by the States. However, the generator counts may include some generators that, when determining whether they were LQGs, used a lower State-defined threshold for LQGs, counted wastes regulated only by their States, or counted wastes exempt from Federal regulation. Hazardous waste received from off-site for storage/bulking and subsequently transferred off-site for treatment or disposal is excluded from generation quantities.

RCRA hazardous waste management information is obtained from the data reported by sites that treated, stored, or disposed of RCRA hazardous wastes on-site during the reporting year. Hazardous wastes that are stored, bulked, and/or transferred off-site with no prior treatment or recovery, fuel blending, or disposal at the site, are excluded from the management quantities.

RCRA hazardous waste shipment information is obtained from data reported by both RCRA LQGs and sites that treated, stored, or disposed of RCRA hazardous wastes on-site during the reporting year. RCRA hazardous waste receipt information is obtained from data reported by sites that treated, stored, or disposed of RCRA hazardous wastes on-site during the reporting year. All reported shipments identified by the State, or implementing EPA office, for inclusion in the National Biennial Report are included in the waste shipment quantities, even if the waste was shipped to a transfer facility. In some instances, waste is transferred within a physical location that has more than one EPA Identification Number. These waste transfers are treated as shipments (U.S. Environmental Protection Agency (EPA) 2018).

Table 3-1 shows data provided to EPA under RCRA, as reported in the 2021 Biennial Report. The table lists for each handler the quantity of waste (in tons) generated, managed, received, and shipped along with the management location (on or offsite) and the management method. The management method codes reported, and their explanations (U.S. Environmental Protection Agency (EPA) 2018) are as follows:

- **H039:** Other recovery or reclamation for reuse including acid regeneration, organics recovery, etc. (specify in comments)

- **H040:** Incineration - thermal destruction other than use as a fuel
- **H061:** Fuel blending prior to energy recovery at another site
- **H141:** The site receiving this waste stored/bulked and transferred the waste with no reclamation, recovery, destruction, treatment or disposal at that site.

Table 3-1 shows data for one waste code. Waste codes K020, K174, K175, and U043 were also queried.

- D043: Vinyl Chloride

Table 3-1: RCRA 2021 Data by Handler

Handler Name	Primary NAICS	Management Location	Waste Code	Generated	Treated	Shipped	Received	Management Code
U.S. ARMY REDSTONE ARSENAL	92811	OFFSITE	D043	0.24	0	0.24	0	H141
U.S. ARMY REDSTONE ARSENAL	92811	OFFSITE	D043	0.24	0	0.24	0	H141
CLEAN EARTH OF ALABAMA, INC.	562211	ONSITE	D043	0	0.0575	0	0.0575	H141
US ECOLOGY SULLIGENT, INC.	562211	ONSITE	D043	0	0.4775	0	0.4775	H141
DAIKIN AMERICA, INC	325211	OFFSITE	D043	195	0	195	0	H040
DAIKIN AMERICA, INC	325211	OFFSITE	D043	88.875	0	88.875	0	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.15	0	0.15	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	5	0	5	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.35	0	0.35	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	8.025	0	8.025	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.025	0	0.025	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.0375	0	0.0375	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.1375	0	0.1375	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	2.705	0	2.705	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.6	0	0.6	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.025	0	0.025	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.9	0	0.9	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.5	0	0.5	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.15	0	0.15	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.15	0	0.15	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.314	0	0.314	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	U043	0	0.8	0	0.8	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	4.43	0	4.43	H040
RINECO CHEMICAL INDUSTRIES, LLC	562211	ONSITE	D043	0	0.193	0	0.193	H061
UPS - GOODYEAR HUB - AZGDR	484110	OFFSITE	U043	0.0735	0	0.0735	0	H141
RHO-CHEM LLC	562211	ONSITE	D043	0	0.2225	0	0.2225	H141
CLEAN HARBORS OF WILMINGTON	562211	ONSITE	D043	0	0.1085	0	0.1085	H141

Table 3-1: RCRA 2021 Data by Handler

Handler Name	Primary NAICS	Management Location	Waste Code	Generated	Treated	Shipped	Received	Management Code
FORMER INTEL MOUNTAIN VIEW FACILITY	334413	OFFSITE	D043	2.2	0	2.2	0	H141
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.6872484	0	0.6872484	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.6247712	0	0.6247712	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.1874314	0	0.1874314	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.2915599	0	0.2915599	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.5453685	0	0.5453685	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.14578	0	0.14578	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.0125854	0	0.0125854	H039
VEOLIA ES TECHNICAL SOLUTIONS LLC RICHMOND	562211	ONSITE	D043	0	2.2	0	2.2	H141
VEOLIA ES TECHNICAL SOLUTIONS LLC RICHMOND	562211	OFFSITE	D043	0	0	2.2	0	H040
PUEBLO CHEMICAL DEPOT	92811	OFFSITE	D043	28.2	0	15.532	0	H040
U.S. ARMY REDSTONE ARSENAL	92811	OFFSITE	D043	0.24	0	0.24	0	H141
U.S. ARMY REDSTONE ARSENAL	92811	OFFSITE	D043	0.24	0	0.24	0	H141
CLEAN EARTH OF ALABAMA, INC.	562211	ONSITE	D043	0	0.0575	0	0.0575	H141
US ECOLOGY SULLIGENT, INC.	562211	ONSITE	D043	0	0.4775	0	0.4775	H141
DAIKIN AMERICA, INC	325211	OFFSITE	D043	195	0	195	0	H040
DAIKIN AMERICA, INC	325211	OFFSITE	D043	88.875	0	88.875	0	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.15	0	0.15	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	5	0	5	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.35	0	0.35	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	8.025	0	8.025	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.025	0	0.025	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.0375	0	0.0375	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.1375	0	0.1375	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	2.705	0	2.705	H040

Table 3-1: RCRA 2021 Data by Handler

Handler Name	Primary NAICS	Management Location	Waste Code	Generated	Treated	Shipped	Received	Management Code
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.6	0	0.6	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.025	0	0.025	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.9	0	0.9	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.5	0	0.5	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.15	0	0.15	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.15	0	0.15	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	0.314	0	0.314	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	U043	0	0.8	0	0.8	H040
CLEAN HARBORS EL DORADO, LLC	562211	ONSITE	D043	0	4.43	0	4.43	H040
RINECO CHEMICAL INDUSTRIES, LLC	562211	ONSITE	D043	0	0.193	0	0.193	H061
UPS - GOODYEAR HUB - AZGDR	484110	OFFSITE	U043	0.0735	0	0.0735	0	H141
RHO-CHEM LLC	562211	ONSITE	D043	0	0.2225	0	0.2225	H141
CLEAN HARBORS OF WILMINGTON	562211	ONSITE	D043	0	0.1085	0	0.1085	H141
FORMER INTEL MOUNTAIN VIEW FACILITY	334413	OFFSITE	D043	2.2	0	2.2	0	H141
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.6872484	0	0.6872484	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.6247712	0	0.6247712	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.1874314	0	0.1874314	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.2915599	0	0.2915599	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.5453685	0	0.5453685	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.14578	0	0.14578	H039
WORLD OIL RECYCLING	324191	ONSITE	D043	0	0.0125854	0	0.0125854	H039
VEOLIA ES TECHNICAL SOLUTIONS LLC RICHMOND	562211	ONSITE	D043	0	2.2	0	2.2	H141
VEOLIA ES TECHNICAL SOLUTIONS LLC RICHMOND	562211	OFFSITE	D043	0	0	2.2	0	H040
PUEBLO CHEMICAL DEPOT	92811	OFFSITE	D043	28.2	0	15.532	0	H040

3.2 National Emissions Inventory (NEI)

The National Emissions Inventory (NEI) is a comprehensive and detailed estimate of air emissions of criteria pollutants, criteria precursors, and hazardous air pollutants from air emissions sources. The NEI is released every three years based primarily upon data provided by State, Local, and Tribal air agencies for sources in their jurisdictions and supplemented by data developed by the EPA (U.S. Environmental Protection Agency (EPA) 2020a).

The following tables present total emissions according to 2020 NEI. Table 3-2 presents emissions by sector and Table 3-3 presents emissions according to Source Classification Code Levels 2 and 3. Appendix D contains a full summary of NEI emissions according to all four Source Classification Code Levels. In addition, the Disposal/Recycling/Emissions section in Table 2-15 includes information derived from NEI.

As shown in Table 3-2, the leading source of emissions is from chemical manufacturing industrial processes followed by waste disposal. The remaining emissions are from various other industrial processes and fuel combustion. Table 3-3 reveals landfills and oil and gas exploration and production to be the largest sources of air emissions.

Table 3-2: NEI Emissions by Sector for Vinyl Chloride (CAS RN 75-01-4)

Sector	Total Emissions (lbs.)
Industrial Processes - Chemical Manufacturing	395,667
Waste Disposal	261,177
Industrial Processes - NEC	59,754
Industrial Processes - Oil & Gas Production	14,645
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	10,200
Fuel Comb - Industrial Boilers, ICEs - Biomass	7,230
Solvent - Industrial Surface Coating & Solvent Use	7,126
Industrial Processes - Storage and Transfer	4,883
Industrial Processes - Non-ferrous Metals	4,329
Industrial Processes - Pulp & Paper	3,768
Industrial Processes - Cement Manufacturing	2,725
Fuel Comb - Electric Generation - Other	1,816
Fuel Comb - Electric Generation - Biomass	1,057
Solvent - Degreasing	558
Fuel Comb - Comm/Institutional - Other	423
Fuel Comb - Electric Generation - Coal	393
Fuel Comb - Comm/Institutional - Biomass	359
Fuel Comb - Electric Generation - Natural Gas	194
Fuel Comb - Industrial Boilers, ICEs - Coal	149
Industrial Processes - Petroleum Refineries	118
Fuel Comb - Comm/Institutional - Natural Gas	67
Fuel Comb - Industrial Boilers, ICEs - Oil	50
Fuel Comb - Industrial Boilers, ICEs - Other	46
Industrial Processes - Ferrous Metals	28
Bulk Gasoline Terminals	8
Fuel Comb - Electric Generation - Oil	1
Gas Stations	0

Table 3-2: NEI Emissions by Sector for Vinyl Chloride (CAS RN 75-01-4)	
Sector	**Total Emissions (lbs.)**
Solvent - Graphic Arts	0
Fuel Comb - Comm/Institutional - Oil	0
Dust - Construction Dust	0
Source: U.S. Environmental Protection Agency (EPA) 2020a	

Table 3-3: NEI Emissions by Source Classification Code for Vinyl Chloride (CAS RN 75-01-4)		
Source Classification Code Level 2	**Source Classification Code Level 3**	**Total Emissions (lbs.)**
Chemical Manufacturing: SIC 28	Industrial Inorganic Chemical Manufacturing	0.002
	Total	**0.002**
Inorganic Chemical Storage	Commercial/Industrial: Breathing Loss	0.0003
	Total	**0.0003**
Landfills	Municipal	24.66
	Total	**24.66**
Oil and Gas Exploration and Production	Coal Bed Methane Natural Gas	0.08
	Natural Gas	0.11
	On-Shore Gas Production	2.79
	On-Shore Oil Production	4.09
	Total	**7.08**
Wastewater Treatment	Public Owned	0.01
	Total	**0.01**
Source: U.S. Environmental Protection Agency (EPA) 2020a		

3.3 CWA NPDES Discharge Monitoring

Under the Clean Water Act, National Pollutant Discharge Elimination System (NPDES) permits are required for wastewater discharges to navigable waters of the U.S. Facilities with NPDES permits are commonly required to prepare and submit Discharge Monitoring Reports (DMRs) on an established schedule, usually monthly. They may also be subject to limits on the concentration of selected biological and chemical pollutants, flow, temperature, and pH. Which pollutants facilities are required to monitor or control are determined through a combination of national and state requirements, and the conditions of the receiving waters. Generally, there is no standard set of pollutants for which monitoring is required. Individual permit writers require monitoring for several reasons: monitoring or permit limits may be required because the industry is subject to a CWA effluent limitation guidelines rule; limitations and monitoring is required to meet the water quality standards of the receiving waters, or there is an indication, such as downstream monitoring or literature, that indicates a facility or an industry has the potential to be handling or discharge a particular chemical of concern. Monitoring could be required frequently (e.g., monthly) or episodic (e.g., once or twice a year or following an event such as a storm or upset in facility operations).

DMR information reported by permit holders is entered into the Integrated Compliance Information System for NPDES (ICIS-NPDES). The DMR Loadings Tool retrieves DMR information from ICIS-NPDES and derives estimates of annual pollutant loads based on DMR flow and concentrations reported in a given calendar year. Annual loadings calculations are only performed when all data needed for the calculations are available. For example, an annual pollutant load would not be calculated if there were DMR flow data but no available concentration data.

Facilities in the sectors presented in Table 3-4 were required to report because of one of the reasons noted above - that is, the permitting authority believed they are a possible or probably discharger of vinyl chloride. Those with non-zero loadings have non-zero flows and concentrations of vinyl chloride above detection limits. Based on DMR information, Miscellaneous Plastic Products and Rolling, Drawing, and Extruding of Nonferrous are the largest dischargers of vinyl chloride. Sanitary services and industrial inorganic chemicals also discharge significant amounts of vinyl chloride.

Table 3-4: 2023 Wastewater Discharges of Vinyl Chloride (CAS RN 75-01-4)

Industry Sector (3-digit SIC)	Facilities with Monitoring Requirements	Annual Loadings Calculation	
		Facilities	Discharged Amount in 2023 (kg)
104 - Gold and Silver Ores	3	0	0
131 - Crude Petroleum And Natural Gas	18	1	0
142 - Crushed And Broken Stone, Including Riprap	7	0	0
144 - Sand And Gravel	1	0	0
152 - General Building Contractors-residential	2	0	0
153 - Operative Builders	1	0	0
154 - General Building Contractors-nonresidential	1	1	0
162 - Heavy Construction, Except Highway And Street	8	0	0
179 - Miscellaneous Special Trade Contractors	58	4	0
203 - Canned, Frozen, And Preserved Fruits, Vegetables, and Food Specialties	2	1	0
204 - Grain Mill Products	2	0	0
206 - Sugar And Confectionery Products	2	0	0
208 - Beverages	2	0	0
209 - Miscellaneous Food Preparations And Kindred	2	0	0
226 - Dyeing And Finishing Textiles, Except Wool Fabrics	1	1	0
242 - Sawmills And Planing Mills	3	0	0
249 - Miscellaneous Wood Products	1	0	0
259 - Miscellaneous Furniture And Fixtures	1	1	0
273 - Books	4	0	0
279 - Service Industries For The Printing Trade	1	0	0
281 - Industrial Inorganic Chemicals	19	9	24.69
282 - Plastics Materials And Synthetic Resins, Synthetic	68	22	7.48
283 - Drugs	3	1	0
284 - Soap, Detergents, And Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations	1	1	0
286 - Industrial Organic Chemicals	107	27	0.82
287 - Agricultural Chemicals	3	0	0
289 - Miscellaneous Chemical Products	13	3	0
291 - Petroleum Refining	19	2	0
299 - Miscellaneous Products Of Petroleum And Coal	3	1	0
301 - Tires And Inner Tubes	1	0	0
305 - Gaskets, Packing, And Sealing Devices And Rubber	1	1	0

Table 3-4: 2023 Wastewater Discharges of Vinyl Chloride (CAS RN 75-01-4)			
Industry Sector (3-digit SIC)	Facilities with Monitoring Requirements	Annual Loadings Calculation	
		Facilities	Discharged Amount in 2023 (kg)
306 - Fabricated Rubber Products, Not Elsewhere	1	1	0
308 - Miscellaneous Plastics Products	5	2	270.72
324 - Cement, Hydraulic	3	0	0
327 - Concrete, Gypsum, And Plaster Products	1	0	0
331 - Steel Works, Blast Furnaces, And Rolling And Finishing Mills	9	3	0
332 - Iron And Steel Foundries	1	1	0
335 - Rolling, Drawing, And Extruding Of Nonferrous	3	3	245.31
336 - Nonferrous Foundries (castings)	1	0	0
342 - Cutlery, Handtools, And General Hardware	2	1	0
345 - Screw Machine Products, And Bolts, Nuts, Screws, Rivets, And Washers	1	0	0
347 - Coating, Engraving, And Allied Services	1	0	0
348 - Ordnance And Accessories, Except Vehicles And Guided Missiles	4	0	0
349 - Miscellaneous Fabricated Metal Products	4	3	0.22
354 - Metalworking Machinery And Equipment	2	1	3.19
355 - Special Industry Machinery, Except Metalworking	2	2	0
356 - General Industrial Machinery And Equipment	3	1	0
358 - Refrigeration And Service Industry Machinery	6	1	0
362 - Electrical Industrial Apparatus	1	0	0
363 - Household Appliances	2	2	0
364 - Electric Lighting And Wiring Equipment	1	1	0
367 - Electronic Components And Accessories	5	1	0
371 - Motor Vehicles And Motor Vehicle Equipment	7	2	0
372 - Aircraft And Parts	3	3	0
373 - Ship And Boat Building And Repairing	17	0	0
375 - Motorcycles, Bicycles, And Parts	1	1	0
376 - Guided Missiles And Space Vehicles And Parts	9	0	0
379 - Miscellaneous Transportation Equipment	1	0	0
387 - Watches, Clocks, Clockwork Operated Devices, and Parts	2	1	0
391 - Jewelry, Silverware, And Plated Ware	1	0	0
395 - Pens, Pencils, And Other Artists Materials	1	1	0
399 - Miscellaneous Manufacturing Industries	2	1	0
401 - Railroads	1	1	0
411 - Local And Suburban Passenger Transportation	10	0	0
421 - Trucking And Courier Services, Except Air	1	1	0
422 - Public Warehousing And Storage	43	2	0.04
449 - Services Incidental To Water Transportation	2	1	0.0002

Table 3-4: 2023 Wastewater Discharges of Vinyl Chloride (CAS RN 75-01-4)			
Industry Sector (3-digit SIC)	Facilities with Monitoring Requirements	Annual Loadings Calculation	
		Facilities	Discharged Amount in 2023 (kg)
458 - Airports, Flying Fields, And Airport Terminal	2	2	0
461 - Pipelines, Except Natural Gas	1	0	0
478 - Miscellaneous Services Incidental To Transportation	2	0	0
491 - Electric Services	36	2	0
492 - Gas Production And Distribution	1	0	0
493 - Combination Electric And Gas, And Other Utility	1	0	0
494 - Water Supply	14	2	0
495 - Sanitary Services	393	29	28.85
497 - Irrigation Systems	1	0	0
501 - Motor Vehicles And Motor Vehicle Parts And Supplies	1	0	0
507 - Hardware, And Plumbing And Heating Equipment	1	1	0
509 - Miscellaneous Durable Goods	1	0	0
514 - Groceries And Related Products	1	0	0
516 - Chemicals And Allied Products	12	4	0
517 - Petroleum And Petroleum Products	13	0	0
531 - Department Stores	1	0	0
549 - Miscellaneous Food Stores	1	0	0
554 - Gasoline Service Stations	21	0	0
581 - Eating And Drinking Places	1	1	0
599 - Retail Stores, Not Elsewhere Classified	1	0	0
651 - Real Estate Operators (except Developers) And Lessors	8	2	0
655 - Land Subdividers And Developers	7	3	0
679 - Miscellaneous Investing	1	1	0.003
701 - Hotels And Motels	19	3	0
721 - Laundry, Cleaning, And Garment Services	6	0	0
738 - Miscellaneous Business Services	1	0	0
752 - Automobile Parking	1	0	0
769 - Miscellaneous Repair Shops And Related Services	5	4	0
794 - Commercial Sports	3	0	0
799 - Miscellaneous Amusement And Recreation	3	0	0
822 - Colleges, Universities, Professional Schools, And	6	0	0
873 - Research, Development, And Testing Services	1	0	0
874 - Management And Public Relations Services	1	0	0
899 - Miscellaneous Services	5	0	0
919 - General Government, Not Elsewhere Classified	1	0	0
921 - Courts	3	0	0
922 - Public Order And Safety	3	0	0

Table 3-4: 2023 Wastewater Discharges of Vinyl Chloride (CAS RN 75-01-4)			
Industry Sector (3-digit SIC)	Facilities with Monitoring Requirements	Annual Loadings Calculation	
		Facilities	Discharged Amount in 2023 (kg)
951 - Administration Of Environmental Quality	23	14	0.001
971 - National Security	7	1	0
999 - Nonclassifiable Establishments	31	9	0.58
No SIC Code Provided	142	22	1.53
Total	**1299**	**213**	**583.43**
Source: U.S. Environmental Protection Agency (EPA) 2023e			

4. References

Agency for Toxic Substances and Disease Registry (ATSDR) (2023). Toxicological Profile for Vinyl Chloride (Draft for Public Comment), U.S. Department of Health and Human Services.

Airgas USA LLC. (2018). "Nonflammable Gas Mixture: 66 Component Certified Hydrocarbon Blend Safety Data Sheet." from https://www.restek.com/api/documentaccess/get/sds/26359/26359_USENG.pdf.

Airgas USA LLC. (2022). "Nonflammable Gas Mixture: Dichlorodifluoromethane (R12) / Helium / Vinyl Chloride Safety Data Sheet." from https://apps.spheracloud.net/msds/viewfetch.aspx?materialID=3062751&facilityID=8133&msdsVersion=1&companyid=bUv387RyuroA&userid=%2f7uinXkWSN8A.

ChemBK. (2015). "ChemBK." from https://www.chembk.com/en/.

Cowfer, J. A., M. B. Gorensek, et al. (2006). Vinyl Chloride. Kirk-Othmer Encyclopedia of Chemical Technology.

Database, P. (2022). "Polyvinyl Chloride Acetate (PVCA)." from https://polymerdatabase.com/Polymer%20Brands/PVCA.html.

Dolphs. (2011). "Impregnating Varnishes & Resins Formulated Specifically for the Electrical and Electronics Industry." from https://www.electro-wind.com/web-files/Dolph%27s/Literature/varnish-resin-guide.pdf.

Essex, S. (2007). "Superior Essex 4-Pair Copper Data Cable." from https://superioressexcommunications.com/wp-content/uploads/2020/04/101.1_Superior-Essex_EPD_4-Pair-Copper-Data-Cable-Plenum-Rated1.pdf.

European Chemicals Agency (ECHA). (2023). "Chloroethylene Substance Infocard." from https://echa.europa.eu/substance-information/-/substanceinfo/100.000.756.

Fischer, I., W. F. Schmitt, et al. (2014). Poly(Vinyl Chloride). Ullmann's Encyclopedia of Industrial Chemistry**:** 1-30.

Government of Canada. (2023). "Chemicals at a glance." from https://www.canada.ca/en/health-canada/services/chemical-substances/fact-sheets/chemicals-glance.html.

Hansen, E., N. H. Nilsson, et al. (2014). Hazardous substances in plastics Survey of chemical substances in consumer products Ministry of Environment of Denmark Environmental Protection Agency. **132**.

Hansen, J., O. C. Hansen, et al. (2004). Release of chemical substances from tents and tunnels for children Mapping of Chemical Substances in Consumer Products, Ministry of the Environment Environmental Protection Agency **46**.

Hardie, D. W. F. (1964). Chlorocarbons and Chlorohydrocarbons. Kirk-Othmer Encyclopedia of Chemical Technology**:** 171-178.

Industries, B. (2023). "Welcome to Burke Industries." from https://www.burkeind.com/.

International Agency for Research on Cancer (1974). Some anti-thyroid and related substances, nitrofurans and industrial chemicals. IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man. Lyon, France, World Health Organization. **7:** 291-318.

International Agency for Research on Cancer (2008). 1,3-Butadiene, Ethylene Oxide and Vinyl Halides (Vinyl Fluoride, Vinyl Chloride and Vinyl Bromide) IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Lyon, France World Health Organization. **97:** 311-443.

International Agency for Research on Cancer (2012). Chemical Agents and Related Occupations: A Review of Human Carcinogens IARC Monographs on the Evolution of the Carcinogenic Risk of Chemicals to Humans. Lyon, France, World Health Organization. **100F:** 451-478.

Jira, R., E. Kopp, et al. (2007). Chloroacetaldehydes. Ullmann's Encyclopedia of Industrial Chemistry.

Kaneka. (2023). "Vinyl Chloride - Vinyl Acetate Copolymers." from https://www.pvc.kaneka.co.jp/en/products/chloride-

vinyl/index.html#:~:text=It%20can%20be%20used%20either,%2C%20adhesives%2C%20inks%20and%20paints.

Karbaek, K., Danish Technological Institute, et al. (2003). Survey of chemical substances in earplugs Phase 1: Collection of earplugs Survey of Chemical Agents in Consumer Products, Ministry of Environment of Denmark Environmental Protection Agency **27**.

Kim, S., P. A. Thiessen, et al. (2016). "PubChem Substance and Compound databases." Nucleic Acids Research **44**(Database issue): D1202-D1213.

Kjolholt, J., M. Warming, et al. (2015). Chemical substances in car safety seats and other textile products for children. Survey of chemical substances in consumer products Ministry of Environment of Denmark Environmental Protection Agency. **135**.

Klinke, H. B., M. Moller, et al. (2023). Survey and risk assessment of chemicals from gaming equipment. Survey of chemical substances in consumer products Ministry of Environment of Denmark Environmental Protection Agency. **191**.

LGC Limited. (2019a). "VOA Solvent Mixture 461 1000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh1d%2Fhc7%2F10142358929438%2FSDS_DRE-GA09000461ME_ST-WB-MSDS-2950989-1-1-1.PDF.

LGC Limited. (2019b). "VOC-Mix 2 2000 ng/µL in Methanol Safety Data Sheet ", from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh47%2Fh4e%2F10143665651742%2FSDS_DRE-YA05000002ME_ST-WB-MSDS-2998473-1-1-1.PDF.

LGC Limited. (2020a). "Colorado Residual Solvent Mixture 1000 µg/ml in Dimethyl Sulfoxide Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh1c%2Fh6f%2F10135464280094%2FSDS_DRE-S50000080DS_ST-WB-MSDS-3043910-1-1-1.PDF.

LGC Limited. (2020b). "HJ 36600-2018 VOC Mixture 268 1000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh43%2Fh0a%2F10291690012702%2FSDS_DRE-A50000268ME_ST-WB-MSDS-3278253-1-1-1.PDF.

LGC Limited. (2021a). "EPA Method 524.3 0053 Gases Mixture 2000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh14%2Fhf6%2F10408616034334%2FSDS_DRE-A50000053ME_ST-WB-MSDS-3632116-1-1-1.PDF.

LGC Limited. (2021b). " EPA Method 601 VOC Performance Check Mixture 390 200 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh27%2Fhcf%2F10416714711070%2FSDS_DRE-A50000390ME_ST-WB-MSDS-3708802-1-1-1.PDF.

LGC Limited. (2021c). "Haloalkanes Mixture 896 200 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fha1%2Fh7e%2F10420376141854%2FSDS_DRE-GA09000896ME_ST-WB-MSDS-3748190-1-1-1.PDF.

LGC Limited. (2021d). "HJ 642-2013 VOC Mixture 136 1000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fha0%2Fh39%2F10408622260254%2FSDS_DRE-A50000136ME_ST-WB-MSDS-3632180-1-1-1.PDF.

LGC Limited. (2021e). " Method DM 471 Standard Mixture 891 100 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh53%2Fh9a%2F10406433882142%2FSDS_DRE-GA09000891ME_ST-WB-MSDS-3612963-1-1-1.PDF.

LGC Limited. (2021f). " Purgeable Halocarbon Mixture 913 100 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fha8%2Fh49%2F10416831299614%2FSDS_DRE-GA09000913ME_ST-WB-MSDS-3711333-1-1-1.PDF.

LGC Limited. (2021g). "TCLP Volatiles Mixture 396 1000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh13%2Fhdd%2F10418125471774%2FSDS_DRE-A50000396ME_ST-WB-MSDS-3729714-1-1-1.PDF.

LGC Limited. (2021h). "VOC Mixture 230 5-10 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh77%2Fh80%2F10408560328734%2FSDS_DRE-A50000230ME_ST-WB-MSDS-3632245-1-1-1.PDF.

LGC Limited. (2021i). "VOC Mixture 897 2000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh04%2Fh0d%2F10411197759518%2FSDS_DRE-GA09000897ME_ST-WB-MSDS-3656080-1-1-1.PDF.

LGC Limited. (2021j). "VOC Mixture 902 200 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fhcd%2Fhfc%2F10422842032158%2FSDS_DRE-GA09000902ME_ST-WB-MSDS-3772118-1-1-1.PDF.

LGC Limited. (2022a). "DZ/T 0064.91-2021 VOC Mixture 692 1000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fhf3%2Fhb7%2F10460887941150%2FSDS_DRE-A50000692ME_ST-WB-MSDS-4298186-1-1-1.PDF.

LGC Limited. (2022b). "GB 3838-2002 VOC Mixture 100 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh41%2Fhd2%2F10431526010910%2FSDS_DRE-A50000626ME_ST-WB-MSDS-3852242-1-1-1.PDF.

LGC Limited. (2022c). "HJ 639-2012, HJ 810-2016 VOC Mixture 107 2000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh4c%2Fha9%2F10461771366430%2FSDS_DRE-A50000107ME_ST-WB-MSDS-4302605-1-1-1.PDF.

LGC Limited. (2022d). "VOA Solvent Mixture 462 1000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh35%2Fh71%2F10449640095774%2FSDS_DRE-GA09000462ME_ST-WB-MSDS-4162135-1-1-1.PDF.

LGC Limited. (2022e). "VOC Mixture 18 100 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh00%2Fh94%2F10438969950238%2FSDS_DRE-A30000018ME_ST-WB-MSDS-3952831-1-1-1.PDF.

LGC Limited. (2022f). "VOC Mixture 659 2000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fhb2%2Fh8f%2F10460204695582%2FSDS_DRE-A50000659ME_ST-WB-MSDS-4286892-1-1-1.PDF.

LGC Limited. (2022g). "VOC Mixture 686 5-10 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fhc0%2Fh8e%2F10442680041502%2FSDS_DRE-S50000686ME_ST-WB-MSDS-3989029-1-1-1.PDF.

LGC Limited. (2022h). "VOC Mixture 903 2000 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-

master%2Fpdfs%2Fh1d%2Fh07%2F10529060519966%2FSDS_DRE-GA09000903ME_ST-WB-MSDS-4773562-1-1-1.PDF.
LGC Limited. (2023a). "EPA Method 524.3 0054 Gases Mixture 2000 µg/mL in Methanol Safety Data Sheet ", from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fha1%2Fhdf%2F10536890204190%2FSDS_DRE-S50000054ME_ST-WB-MSDS-4843817-1-1-1.PDF.
LGC Limited. (2023b). " VOC Mixture 900 200 µg/mL in Methanol Safety Data Sheet." from https://assets.lgcstandards.com/sys-master%2Fpdfs%2Fh9e%2Fh93%2F10540574474270%2FSDS_DRE-GA09000900ME_ST-WB-MSDS-4877857-1-1-1.PDF.
Linde Inc. (2022). "28 COMP VOC MIX NITROGEN BAL Safety Data Sheet."
National Cancer Institute. (2022). "Vinyl Chloride." from https://www.cancer.gov/about-cancer/causes-prevention/risk/substances/vinyl-chloride.
Nielsen, T. B., E. Bjarnov, et al. (2005). Survey of chemical substances in toys for animals Danish Ministry of the Environment Environmental Protection Agency. **56**.
OECD (2001). Vinyl Chloride. OECD SIDS.
Pampell, M. (2021). Vinyl Chloride Monomer (VCM). Chemical Economics Handbook, IHS Markit
Poulsen, P. B. (2019). Survey and investigation of migration of monomers in toy materials Survey of chemical substances in consumer products Ministry of Environment and Food of Denmark Environmental Protection Agency. **175**.
Poulsen, P. B., C. Merlin, et al. (2018). Survey and risk assessment of chemical substances in bicycle helmets. Survey of chemical substances in consumer products, Ministry of Environment and Food of Denmark Environmental Protection Agency **162a**.
ProDepot. (2024). "Qurox 946ML." from https://pro-depot.com/product/qurox-946ml-2/.
Restek Corporation. (2023). "30042.SEC / 502.2 Calibration Mix #1 Safety Data Sheet." from https://www.restek.com/api/documentaccess/get/sds/30042.SEC/30042.SEC_USENG.pdf.
Schmidt, A., E. Bjarnov, et al. (2008). Survey of chemical substances in headphones and hearing protection. Survey of Chemical Substances in Consumer Products Danish Ministry of the Environment Environmental Protection Agency **91**.
Shintech. (2016). "Vinyl Chloride Monomer Safety Data Sheet (SDS) ", from https://www.shintech.com/UserFiles/files/Safety-Data-Vinyl-Chloride-Monomer.pdf.
Sigma-Aldrich Inc. (2023a). "EPA HC Purgeable C Safety Data Sheet." from https://www.sigmaaldrich.com/US/en/sds/supelco/48057-u.
Sigma-Aldrich Inc. (2023b). "EPA VOC Mix 6 Safety Data Sheet." from https://www.sigmaaldrich.com/US/en/sds/supelco/47408.
Sigma-Aldrich Inc. (2023c). "VOLATILE ORGANIC COMPOUNDS MIX 6,1X1.5ML,2000UG/ML METHANOL Safety Data Sheet." from https://www.sigmaaldrich.com/US/en/sds/supelco/crm48799.
SpecialChem. (2023). "Universal Selector." from https://coatings.specialchem.com/selectors/c-resins-vinyls-polyvinyl-chloride-vinyl-chloride-copolymers-pvc.
SPIN. (2023). "Substances in Preparations in Nordic Countries." from http://www.spin2000.net/spinmyphp/.
Summers, J. W. and U. b. Staff (2006). Vinyl Chloride Polymers. Kirk-Othmer Encyclopedia of Chemical Technology.
Tonning, K., E. Jacobsen, et al. (2009). Survey of Health Assessment of the exposure of 2 year-olds to chemical substances in Consumer Products. Survey of chemcial substances in consumer products Ministry of Environment of Denmark Environmental Protection Agency. **102**.
U.S. Environmental Protection Agency (EPA). (2002). "1986-2002 Historical IUR Data." from Excel File.

U.S. Environmental Protection Agency (EPA). (2006). "2006 IUR Public Database." from https://www.epa.gov/chemical-data-reporting/downloadable-2006-iur-public-database.
U.S. Environmental Protection Agency (EPA) (2014). "Non-Confidential 2012 Chemical Data Reporting (CDR)."
U.S. Environmental Protection Agency (EPA). (2017). "Non-Confidential 2016 Chemical Data Reporting (CDR)." from https://www.epa.gov/chemical-data-reporting.
U.S. Environmental Protection Agency (EPA). (2018). "Look up table for BR Waste Code (National Biennial RCRA Hazardous Waste Report)." from https://www.epa.gov/sites/default/files/2015-06/documents/codes.pdf.
U.S. Environmental Protection Agency (EPA). (2020a). "National Emissions Inventory (NEI) ", from https://awsedap.epa.gov/public/single/?appid=20230c40-026d-494e-903f-3f112761a208&sheet=5d3fdda7-14bc-4284-a9bb-cfd856b9348d&opt=ctxmenu,currsel.
U.S. Environmental Protection Agency (EPA). (2020b). "Non-Confidential 2020 Chemical Data Reporting (CDR)." from https://www.epa.gov/chemical-data-reporting/access-cdr-data#2020.
U.S. Environmental Protection Agency (EPA). (2023a). "2021 Toxics Release Inventory (TRI) Data (Updated May 2023)."
U.S. Environmental Protection Agency (EPA). (2023b). "2022 Toxics Release Inventory (TRI) Data (Updated October 2023)."
U.S. Environmental Protection Agency (EPA) (2023c). ChemExpo.
U.S. Environmental Protection Agency (EPA) (2023d). CompTox Chemicals Dashboard v2.2.1.
U.S. Environmental Protection Agency (EPA). (2023e). "Water Pollutant Loading Tool - Data Downloads ", from https://echo.epa.gov/trends/loading-tool/get-data.
Washington State Dept. of Ecology. (2018). "Children's Safe Product Act Reported Data." from https://fortress.wa.gov/ecy/cspareporting/.

Appendix A: Method for Uses and Products Tables

To compile the uses, EPA searched publicly available databases listed in Table A-1 and conducted additional Google searches to clarify uses or find current products in commerce.

In addition, note that the U.S. Patent and Trademark Office has an online database that shows 1,504 patents referencing "Vinyl Chloride" (2019). Although patents could be useful in determining reasonably foreseeable uses, the information can be extremely technical, and it is difficult to confirm whether any of the patented technologies are currently in use. Therefore, uses inferred from patents containing Vinyl Chloride were not included in the analysis.

Table A-1: Sources Searched for Uses of Vinyl Chloride

Title	Author and Year	Search Term(s)	Found Use Information? [1]
Sources searched for all use reports			
California Links to Pesticides Data	California Dept of Pesticide Regulation (2019)	Vinyl Chloride, Chloroethylene	No
Canada Chemicals Management Plan information sheets	Government of Canada 2023	Vinyl Chloride, Chloroethylene, Poly(vinyl chloride)	No
Chemical and Product Categories (CPCat)	CPCat 2015	75-01-4	Yes
ChemView [2]	EPA (2018a)	75-01-4	Yes
Children's Safe Product Act Reported Data	Washington State Dept. of Ecology (2018)	75-01-4	Yes
Consumer Product Information Database (CPID)	DeLima Associates (2018)	75-01-4 9002-86-2	Yes
Danish surveys on chemicals in consumer products	Danish EPA (2018)	Vinyl Chloride	Yes
Datamyne	Descartes Datamyne (2018)	Not Searched	Not Searched
DrugBank	DrugBank (2018)	75-01-4	No
European Chemicals Agency (ECHA) Registration Dossier	ECHA (2019)	75-01-4	Yes
eChemPortal [2]	OECD (2018)	75-01-4	Yes
Envirofacts [2]	EPA (2018b)	75-01-4	Yes
Functional Use Database (FUse)	EPA (2017a)	Not Searched	Not Searched
Kirk-Othmer Encyclopedia of Chemical Technology	Cowfer et al. 2006	Vinyl Chloride	Yes
National Emissions Inventory	U.S. Environmental Protection Agency (EPA) 2020a	75-01-4	Yes
Clean Water Act, National Pollutant Discharge Elimination System (NPDES) Permits	U.S. Environmental Protection Agency (EPA) 2023e	75-01-4	Yes
Non-Confidential 2016 Chemical Data Reporting (CDR)	U.S. Environmental Protection Agency (EPA) 2017	75-01-4	Yes
Non-Confidential 2012 Chemical Data Reporting (CDR)	U.S. Environmental Protection Agency (EPA) 2014	75-01-4	Yes

Appendix B: Tier Uses of Vinyl Chloride

This appendix contains uses classified as Tier 2. These may be historic, non-TSCA use, or more anecdotal.

Table B-1: Tier 2 Uses of Vinyl Chloride

Use or Process	Expected Users	Description of Use or Process and References
Uses with Minimal Substantiation		
Intermediate in Safety Equipment	Commercial, Consumer	Fischer et al. 2014 PVC is used in safety equipment, including in boots and work shoes, aprons, lifejackets and in other waterproof materials. These uses were not corroborated by additional sources. Expected users are commercial and consumer.
Intermediate in Medical Equipment	Commercial	Fischer et al. 2014; Pampell 2021 PVC is used in medical products like tubing and bags used for blood work and dialysis. These uses were not corroborated by additional sources. Expected users are commercial.
Historical Uses		
Refrigerant	Commercial	Hardie 1964; International Agency for Research on Cancer 1974; International Agency for Research on Cancer 2012 Vinyl chloride historically used as a refrigerant, but this use is no longer active. Expected users were commercial.
Extraction Solvent	Industrial	Hardie 1964; International Agency for Research on Cancer 1974; International Agency for Research on Cancer 2012 Vinyl chloride historically used as an extraction solvent for heat sensitive materials, but this use is no longer active. Expected users were industrial.
Aerosol Propellant	Commercial, consumer	Hardie 1964; International Agency for Research on Cancer 1974; International Agency for Research on Cancer 2012 Vinyl chloride historically used as an aerosol propellent in some pesticide and aerosol hair-spray products. In 1974, the EPA banned new production of these products using vinyl chloride as a propellant. This impacted an estimated 28 products used in homes, food-handling establishments, and hospitals. Following this ruling, manufacturers recalled consumer aerosol hairspray products containing vinyl chloride and the Consumer Products Safety Commission proposed a ban on the sale of all pressurized products containing vinyl chloride. Expected users were commercial and consumer.
Drugs	Consumer	Hardie 1964; International Agency for Research on Cancer 2012 Vinyl chloride was historically used in the production of chloroacetaldehyde which is an intermediate in the synthesis of sulfa- drugs. This use has not been reported as active since 1964. Expected users were consumer.

Table B-1: Tier 2 Uses of Vinyl Chloride		
Use or Process	**Expected Users**	**Description of Use or Process and References**
Non-TSCA Use		
Drugs	Consumer	Hardie 1964; International Agency for Research on Cancer 2012 Vinyl chloride was historically used in the production of chloroacetaldehyde which is an intermediate in the synthesis of sulfa- drugs. This use has not been reported as active since 1964. Expected users were consumer.

Appendix C: NEI Emissions Data

Table C-1 contains data from 2020 for vinyl chloride that captures the total submissions for each unique combination of the four Source Classification Levels.

Table C-1: NEI Emissions Data for Vinyl Chloride (CAS RN 75-01-4)						
SCC No.	**SCC Level-1**	**SCC Level-2**	**SCC Level-3**	**SCC Level-4**	**Sector**	**Total Emissions (lbs.)**
2301010000	Chemical Manufacturing: SIC 28	Chemical Manufacturing: SIC 28	Industrial Inorganic Chemical Manufacturing	Total	Industrial Processes - Chemical Manuf	0.002
2310011600	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Oil Production	Artificial Lift Engines	Industrial Processes - Oil & Gas Production	4.09
2310020600	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	Natural Gas	Compressor Engines	Industrial Processes - Oil & Gas Production	0.11
2310021102	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Natural Gas Fired 2Cycle Lean Burn Compressor Engines 50 To 499 HP	Industrial Processes - Oil & Gas Production	0.38
2310021109	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Total: All Natural Gas Fired 2Cycle Lean Burn Compressor Engines	Industrial Processes - Oil & Gas Production	0.03
2310021202	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Natural Gas Fired 4Cycle Lean Burn Compressor Engines 50 To 499 HP	Industrial Processes - Oil & Gas Production	0.13
2310021203	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Natural Gas Fired 4Cycle Lean Burn Compressor Engines 500+ HP	Industrial Processes - Oil & Gas Production	0.26
2310021209	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Total: All Natural Gas Fired 4Cycle Lean Burn Compressor Engines	Industrial Processes - Oil & Gas Production	0.01
2310021251	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Lateral Compressors 4 Cycle Lean Burn	Industrial Processes - Oil & Gas Production	0.11
2310021302	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Natural Gas Fired 4Cycle Rich Burn Compressor Engines 50 To 499 HP	Industrial Processes - Oil & Gas Production	0.68

Table C-1: NEI Emissions Data for Vinyl Chloride (CAS RN 75-01-4)						
SCC No.	**SCC Level-1**	**SCC Level-2**	**SCC Level-3**	**SCC Level-4**	**Sector**	**Total Emissions (lbs.)**
2310021351	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Lateral Compressors 4 Cycle Rich Burn	Industrial Processes - Oil & Gas Production	0.18
2310021402	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Nat Gas Fired 4Cycle Rich Burn Compressor Engines 50 To 499 HP w/NSCR	Industrial Processes - Oil & Gas Production	0.004
2310021403	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Nat Gas Fired 4Cycle Rich Burn Compressor Engines 500+ HP w/NSCR	Industrial Processes - Oil & Gas Production	0.16
2310021700	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	On-Shore Gas Production	Miscellaneous Engines	Industrial Processes - Oil & Gas Production	0.86
2310023202	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	Coal Bed Methane Natural Gas	CBM Fired 4Cycle Lean Burn Compressor Engines 50 To 499 HP	Industrial Processes - Oil & Gas Production	0.03
2310023251	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	Coal Bed Methane Natural Gas	Lateral Compressors 4 Cycle Lean Burn	Industrial Processes - Oil & Gas Production	0.01
2310023302	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	Coal Bed Methane Natural Gas	CBM Fired 4Cycle Rich Burn Compressor Engines 50 To 499 HP	Industrial Processes - Oil & Gas Production	0.03
2310023351	Oil and Gas Exploration and Production	Oil and Gas Exploration and Production	Coal Bed Methane Natural Gas	Lateral Compressors 4 Cycle Rich Burn	Industrial Processes - Oil & Gas Production	0.01
2520010000	Inorganic Chemical Storage	Inorganic Chemical Storage	Commercial/Industrial: Breathing Loss	Total: All Products	Industrial Processes - Storage and Transfer	0.0003
2620030000	Landfills	Landfills	Municipal	Total	Waste Disposal	24.66
2630020000	Wastewater Treatment	Wastewater Treatment	Public Owned	Total Processed	Waste Disposal	0.01
Source: EPA 2020 NEI						