5. PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

5.1 PRODUCTION

Table 5-1 lists the number of facilities in each state that manufacture or process 1,1-dichloroethane, the activities and uses, and the range of maximum amounts of 1,1-dichloroethane that are stored on site. The data listed in Table 5-1 are derived from the Toxics Release Inventory (TRI13 2014). Based on the TRI information from 2013, there are 19 facilities that produce or process 1,1-dichloroethane in the United States. The TRI data should be used with caution since only certain types of facilities were required to report. This is not an exhaustive list.

1,1-Dichloroethane is produced commercially through the reaction of hydrogen chloride and vinyl chloride at 20–55 °C in the presence of an aluminum, ferric, or zinc chloride catalyst (HSDB 2012). Other production methods include the direct chlorination of ethane, addition of hydrogen chloride to acetylene, the reaction of ethylene and chlorine in the presence of calcium chloride, and the reaction of phosphorus chloride and acetaldehyde (HSDB 2012). 1,1-Dichloroethane can also be produced as a byproduct during the manufacture of chloral, as a byproduct in the production of vinyl chloride via ethylene oxychlorination (HSDB 2012; Marshall 2003), and as an intermediate in the production of 1,1,1-trichloroethane by thermal or photochemical chlorination of vinyl chloride (Cowfer 2006). It has been reported that 1,1-dichloroethane often occurs as an unwanted byproduct in numerous chlorination and oxychlorination processes of C2 hydrocarbons (HSDB 2012).

Information regarding the production volume of 1,1-dichloroethane in the United States is not reported in SRI Directory of Chemical Producers (SRI 2011). Additionally, no data are reported for U.S. production volume in the Hazardous Substance Data Bank (HSDB 2012).

Data from the Chemical Data Reporting (CDR) information system indicates that three companies within the United States manufactured or imported 1,1-dichloroethane (EPA 2014a). The Dow Chemical Company reported 0 pounds/year for imported and exported data, confidential business information (CBI) for manufactured data, 0 pounds/year for volume used on site and ‘CBI’ for past production volume data. 1,1-Dichloroethane is reported to be used as an intermediate, a substance used to form another compound by the Dow Chemical Company. The Shin Etsu Company reports ‘withheld’ for imported data, 1,844,512 pounds/year for exported data, ‘withheld’ for manufactured data, 2,629,704 pounds/year for volume used on site data, and 2,959,696 pounds/year for past production volume data (EPA 2014a). The

Table 5-1. Facilities that Produce, Process, or Use 1,1-Dichloroethane

State[a]	Number of facilities	Minimum amount on site in pounds[b]	Maximum amount on site in pounds[b]	Activities and uses[c]
KY	1	10,000	99,999	1, 3, 6
LA	9	0	9,999,999	1, 2, 3, 4, 5, 6, 8, 12, 13
NY	1	100	999	12
OH	1	1,000	9,999	12
SC	1	100	999	12
TX	6	1,000	999,999	1, 2, 3, 5, 6, 8, 12, 13, 14

[a]Post office state abbreviations used.
[b]Amounts on site reported by facilities in each state.
[c]Activities/Uses:

1. Produce
2. Import
3. Onsite use/processing
4. Sale/Distribution
5. Byproduct
6. Reactant
7. Formulation Component
8. Article Component
9. Repackaging
10. Chemical Processing Aid
11. Manufacturing Aid
12. Ancillary/Other Uses
13. Manufacturing Impurity
14. Process Impurity

Source: TRI13 2014 (Data are from 2013)

Shin Etsu Company reports use of 1,1-dichloroethane as 'not reasonably known or ascertainable.' The national production volume ranged between 1,000,000 and 10,000,000 pounds/year. There are no data reported for consumer products or consumer uses.

According to EPA Inventory Update Rule (IUR) records, in 2006, two companies in the United States produced 1,1-dichloroethane in 2006: Oxy Vinyls in La Porte, Texas and The Dow Chemical Company in Plaquemine, Louisiana (EPA 2010). Both of these companies manufactured 1,1-dichloroethane primarily to be used as an intermediate, a substance used to form another compound. Production volume data were not provided for each specific company. Aggregated national production volumes reported in 2006 were in the range of 500,000–<1 million pounds (EPA 2010).

5.2 IMPORT/EXPORT

No information was found concerning U.S. imports and exports of 1,1-dichloroethane.

5.3 USE

The largest individual use of 1,1-dichloroethane is as an intermediate in the manufacture of 1,1,1-trichloroethane (Dreher et al. 2014; HSDB 2012). 1,1-Dichloroethane also has limited use as a solvent for plastics, oils, and fats, and is thus employed as both a cleaning agent and a degreaser (O'Neil et al. 2006). In the past, 1,1-dichloroethane was used as an anesthetic (HSDB 2012; O'Neil et al. 2006). Other uses of 1,1-dichloroethane include fabric spreading, varnish and finish removers, organic synthesis, ore flotation, and as a fumigant and insecticide spray (HSDB 2012). 1,1-Dichloroethane is also used in the manufacture of plastic wrap, adhesives, and synthetic fiber (USGS 2006a). No information is available regarding the use proportions among these categories.

5.4 DISPOSAL

1,1-Dichloroethane may be disposed of by atomization within a combustion chamber equipped with an appropriate effluent gas cleaning device, by high-temperature incineration with a hydrochloric acid scrubber, or by placing product residues and sorbent media into 17H epoxy-lined drums and disposing of them at an EPA-approved site. However, the criteria for treatment or sanitary landfill disposal practices are currently undergoing revision. Waste water treatment technologies investigated by the EPA include concentration processes such as stripping, solvent extraction, activated carbon, and resin adsorption.

Consultation with environmental regulatory agencies is advised (HSDB 2012; Marshall 2003; NIOSH 1978).