

#### 4. PRODUCTION, IMPORT, USE, AND DISPOSAL

##### 4.1 PRODUCTION

Recent data regarding production volumes for 1,2,3-trichloropropane are not available. The estimated 1977 production volume for the chemical ranged from 21 to 110 million pounds (EPA 1989b). Current manufacturers of 1,2,3-trichloropropane include Dow Chemical U.S.A., Freeport, Texas, and Shell Oil Company, Deer Park, Texas (SRI 1989). In 1977, two additional manufacturing locations were Dow Chemical U.S.A., a major producer in Midland, Michigan, and Columbia Organic Chemicals Co., a minor producer in Columbia, South Carolina (EPA 1989b). 1,2,3-Trichloropropane can be produced via the chlorination of propylene (Hawley 1981). Other reported methods for producing 1,2,3-trichloropropane include the addition of chlorine to allyl chloride, reaction of thionyl chloride with glycerol, and the reaction of phosphorus pentachloride with either 1,3- or 2,3-dichloropropanol (NIOSH 1981; Williams 1949). 1,2,3-Trichloropropane also may be produced in potentially significant amounts as a byproduct of processes primarily used to produce other chemicals, including dichloropropene (a soil fumigant and nematocide), propylene chlorohydrin, propylene oxide, dichlorohydrin, and glycerol (Baier et al. 1987; NIOSH 1981). Technical-grade 1,2,3-trichloropropane reportedly varies between 97.5% and 99.4% purity (Alberti 1982; NTP 1983a). The material tested by the NTP (1983a) contains the following impurities: 0.066% water, 0.14% unspecified chlorohexene, two unspecified chlorohexadienes (0.24% and 0.13%), and total acidity of 48 ppm (as HCl).

##### 4.2 IMPORT/EXPORT

No data concerning the import or export of 1,2,3-trichloropropane were located.

##### 4.3 USE

1,2,3-Trichloropropane has, in the past, been used mainly as a solvent and extractive agent. No current information is available that indicates that the compound is still used for these purposes today. It dissolves a variety of resins, oils, waxes, and other materials while having a low solubility in water (Williams 1949). Common uses have included use as a paint- and varnish-remover, a cleaning and degreasing agent, and a cleaning and maintenance reagent (Hawley 1981; NIOSH 1981). Currently, it is used as a chemical intermediate, for example, in the production of polysulfone liquid polymers and dichloropropene, synthesis of hexafluoropropylene, and as a crosslinking agent in the synthesis of polysulfides (Baier et al. 1987; Ellerstein and Bertozzi 1982; Gangal 1980; HSDB 1989). No data were found concerning the approximate amounts currently used for particular purposes.

##### 4.4 DISPOSAL

1,2,3-Trichloropropane has been identified as a hazardous waste by the EPA, and the disposal of this compound is regulated under the Resource

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Conservation and Recovery Act (RCRA). Specific information regarding the federal regulations of land disposal of 1,2,3-trichloropropane is available (EPA 1988a). 1,2,3-Trichloropropane can be disposed of via atomization in a suitable incinerator equipped with appropriate effluent gas scrubbers (HSDB 1989). In case of accidental spills, the chemical may be disposed of by absorption onto vermiculite, dry sand, earth, or similar material followed by disposal in a secured landfill (HSDB 1989); however, land disposal may no longer be allowed by the disposal regulations discussed above. Significant removal of 1,2,3-trichloropropane from waste water and sewage may be accomplished through the use of activated sludge treatment processes (Matsui et al. 1975). No data were found concerning the approximate amounts disposed by the various methods.