

4. PRODUCTION, IMPORT, USE, AND DISPOSAL

4.1 PRODUCTION

Production of chlorobenzene in the United States has declined by nearly 60%, from the peak production volume of 274,000 kkg in 1960 to 112,000 kkg in 1987. This decline is attributed primarily to the replacement of chlorobenzene by cumene in phenol production and the cessation of DDT production in the United States. In addition, pesticide production using chlorobenzene as an intermediate has declined and no major new uses have been found for chlorobenzene in recent years. Therefore, the decline in chlorobenzene production is expected to continue (EPA 1980c, 1985; Hughes et al. 1983; USITC 1988).

Chlorobenzene is produced by three United States chemical companies: Monsanto Chemical Company, Sauget, Illinois; PPG Industries, Inc., Natrium, West Virginia; and Standard Chlorine Chemical Co., Inc., Delaware City, Delaware. Production capacity for chlorobenzene at these plants has remained constant since 1985 although it appears that actual production has declined slightly during that period (Hughes et al. 1983; SRI 1985, 1986, 1987, 1988; USITC 1988).

Chlorobenzene is produced commercially by the chlorination of benzene in the presence of a catalyst (e.g., ferric chloride, aluminum chloride, or stannic chloride). This process yields a mixture of chlorobenzene, dichlorobenzenes, and higher analogs which are distilled and crystallized to obtain pure products (EPA 1985a; Hughes et al. 1983).

4.2 IMPORT

Import and export data for chlorobenzene are not readily available. Estimates indicate that for the last ten years, both imports and exports have been negligible (Hughes et al. 1983).

4.3 USE

The current primary uses of chlorobenzene are as a solvent for pesticide formulations, diisocyanate manufacture, degreasing automobile parts, and for the production of nitrochlorobenzene. Solvent uses accounted for about 37% of chlorobenzene consumption in the United States in 1981, nitrochlorobenzene production for 33%, and diphenyl oxide and phenylphenol production for 16% of consumption. Chlorobenzene

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is also used in silicone resin production and as an intermediate in the synthesis of other halogenated organics. The past major use of chlorobenzene was as an intermediate in phenol and DDT production (Hughes et al. 1983).

4.4 DISPOSAL

Because chlorobenzene is listed as a hazardous substance, disposal of waste chlorobenzene is controlled by a number of federal regulations (see Chapter 7). Spent solvent wastes, which may include chlorobenzene, are prohibited from land disposal, except under specific conditions. Land disposal restrictions (treatment standards) are proposed for other wastes containing chlorobenzene. Wastes containing chlorobenzene may be disposed of by liquid injection, rotary kiln, or fluidized bed incineration (EPA 1988a, 1989b; HSDB 1988). Since chlorobenzene is a volatile compound and is used extensively as a solvent, large quantities are released to the air. Some estimates indicate that 30 to 50% of the annual production of chlorobenzene is released to the atmosphere, while less than 0.1% is found in wastewater and less than 1% is disposed of on land (EPA 1985a).