

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

4.1 PRODUCTION

Hexachlorobutadiene was first prepared in 1877 by the chlorination of hexyl oxide (IARC 1979). Commercial quantities of hexachlorobutadiene have never been produced in the United States. The primary source of hexachlorobutadiene found in the United States is inadvertent production as a waste by-product of the manufacture of certain chlorinated hydrocarbons, such as tetrachloroethylene, trichloroethylene, and carbon tetrachloride (EPA 1980; Yang 1988). In 1982, EPA reported an annual volume of about 28 million pounds of hexachlorobutadiene inadvertently produced as a waste by-product from this source (EPA 1982b; HSDB 1993). Table 4-1 summarizes information on U.S. companies that reported the production, import, or use of hexachlorobutadiene in 1990 based on the Toxics Release Inventory TRI90 (1992). The TRI data should be used with caution since only certain types of facilities are required to report. This is not an exhaustive List.

4.2 IMPORT/EXPORT

Since 1974, most hexachlorobutadiene used commercially in the United States has been imported from Germany. Imported quantities remained fairly constant in the late 1970s, averaging about 500,000 pounds annually, but dropped to 145,000 pounds in 1981 (EPA 1980; 1982d). More recent information on the volume of imported hexachlorobutadiene is not available (NTP 1991).

4.3 USE

Hexachlorobutadiene is used as a chemical intermediate in the manufacture of rubber compounds (EPA 1982d). Lesser quantities of hexachlorobutadiene are used as a solvent, a fluid for gyroscopes, a heat transfer liquid, hydraulic fluid, and as a chemical intermediate in the production of chlorofluorocarbons and lubricants (EPA 1980; IARC 1979; Verschueren 1983). Small quantities are also used as a laboratory reagent (EPA 1982d). In the international market, Russia is reported to be one of the major users of hexachlorobutadiene, where it is used as a fumigant on grape crops.

TABLE 4-1. Facilities that Manufacture or Process Hexachlorobutadiene^a

Facility	Location ^b	Range of maximum amounts on site in pounds	Activities and uses
DOW CHEMICAL CO.	PITTSBURG, CA	1,000-9,999	As a byproduct
VULCAN CHEMICALS	WICHITA, KS	1,000-9,999	Produce; as a byproduct
VULCAN MATERIALS CO. CHEMICALS DIV. GEISMAR FACILITY	GEISMAR, LA	10,000-99,999	Produce; for on-site use/processing as a byproduct; as a reactant
DOW CHEMICAL CO. LOUISIANA DIV.	PLAQUEMINE, LA	1,000-9,999	Produce; as an impurity
PPG INDUSTRIES INC.	WESTLAKE, LA	1,000,000-9,999,999	Produce; as a byproduct
MALLINCKRODT SPECIALTY CHEMICALS CO.	SAINT LOUIS, MO	100,000-999,999	As a reactant
OCCIDENTAL CHEMICAL CORP. NIAGARA PLANT	NIAGARA FALLS, NY	1,000-9,999	As an impurity
DOW CHEMICAL CO. TEXAS OPERATIONS	FREEPORT, TX	0-99	As a byproduct; as an impurity; in ancillary or other uses

^aDerived from TRI90 (1992)^bPost Office state abbreviations

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Hexachlorobutadiene is also used as a fumigant in France, Italy, Greece, Spain and Argentina (IARC 1979; NTP 1991). Prior to 1975, the largest domestic use of hexachlorobutadiene was for the recovery of “snift” (chlorine-containing) gas in chlorine plants (HSDB 1993). More recent information from U.S. chlorine producers indicates that hexachlorobutadiene is no longer used for this process (EPA 1982d; IARC 1979).

4.4 DISPOSAL

Waste streams resulting from the inadvertent production of hexachlorobutadiene as a byproduct of certain chlorinated hydrocarbons typically contain 33-80% hexachlorobutadiene. These wastes are disposed of by various methods. Over the last decade, disposal practices have shifted from landfilling to incineration. Incineration, which is considered the preferred method of disposal, reportedly achieves greater than 99.9% destruction efficiency (EPA 1982d). In 1982, approximately 68% of an estimated 27 million pounds of hexachlorobutadiene wastes were disposed of by incineration, 32% by deep well injection, and less than 0.2% by hazardous waste landfill operations (EPA 1982d).

The generation, treatment, storage and disposal of hexachlorobutadiene-containing wastes are subject to regulation under RCRA (see Chapter 7). Underground injection of hexachlorobutadiene is subject to permits issued under an Underground Injection Control program promulgated under the Safe Drinking Water Act (EPA 1982d).

According to TRI90 (1992), 84,345 pounds of hexachlorobutadiene were transferred to landfills and/or other treatment/disposal facilities and 958 pounds were sent to publicly-owned treatment works in 1990.

