

4. PRODUCTION, IMPORT, USE, AND DISPOSAL

4.1 PRODUCTION

Boron is produced by the chemical reduction of boron compounds with reactive metals, either by nonaqueous electrolytic reduction or through thermal decomposition. Highly purified boron is produced by zone-refining or other thermal techniques (HSDB 1989; Stokinger 1981; U.S. Bureau of Mines 1989).

The United States produces most of the world's borates. Production figures for 1988 report 566,093 metric tons of boric oxide equivalent was produced from the mining of boron-containing minerals. Domestic production has remained relatively constant over the last 5 years ranging from a low of 570,629 metric tons in 1986 to a high of 625,061 metric tons in 1987 (Ferguson et al. 1982; U.S. Bureau of Mines 1989).

United States Borax 6 Chemical Corporation continues to be the primary world supplier of sodium borates. U.S. Borax mines and processes crude and refined sodium borates, their anhydrous derivatives, and anhydrous boric acid at its plant, in Kern County, Boron, California. A second plant at Boron, California uses a proprietary process to produce technical-grade boric acid.

Kerr-McGee Chemical Corporation operates the Trona and Westend plants at Searles Lake, in San Bernardino County, to produce refined sodium borate compounds and boric acid from the mineral-rich lake brines.

4.2 IMPORT/EXPORT

The United States imported 59,875 metric tons of borax, boric acid, and the boron-containing minerals colemanite and ulexite in 1988 (U.S. Bureau of Mines 1988). As the world's largest producer of boron compounds, the United States exported 589,680 metric tons of boric acid and borates in 1988.

4.3 USE

Borates have diverse uses. Their principal uses (56%) are in the production of glass and glass products such as textiles and insulating fiberglass. It is also used to make the enamels and glazes used as coatings on household and industrial products. Borates are used in herbicides, insecticides, soaps and cleansers, cosmetics, antifreeze, and leather tanning. Borax and boric acid are used in atomic reactors as a neutron absorber (EPA 1986b; HSDB 1989; Stokinger 1981; U.S. Bureau of Mines 1989).

4.4 DISPOSAL

No federal regulations were located which control the disposal of borates including sodium borates and boric acid. No quantitative disposal data were located.

