

(d) Comparative Unit Costs

The major factors that determine the cost competitive nature of Canada's lead and zinc industries are:

- labour (Canada has relatively high costs)
- energy (relatively low costs)
- ore grade (variable)
- byproduct and coproduct credits (high credits for silver, modest credits for sulphuric acid)
- transportation - concentrates to smelters (high costs)
 - metal to market (high costs)
- technology and productivity (high cost for lead; low cost for zinc)
- scale of operations (average to lower cost)
- metal yields (low costs; with exceptions)
- raw materials (coke costs are exceedingly high for Canada's lead smelters).

The estimated average operating cost for smelting lead concentrates in Canada's two operations is 17¢ (U.S.) per pound of lead. This is considerably higher than the estimated world average of 13¢ (U.S.); much higher than the U.S. average of 11¢ (U.S.); and only 2¢ (U.S.) below the current world price of 19¢ (U.S.). Because of non-operating costs, such as high interest expense, the lead portion of the industry operates at a loss. Sections of the lead smelting and refining plants employ old technology, have high labour components, high cost of coke and, in the case of SMS, relatively high energy cost. However Canadian smelters benefit from high silver and zinc by-product values.

U.S. lead operations are the lowest cost in the world because of scale of operations, high grade ore, nearness to coke supply, and low transportation costs between mines, smelters and markets. These smelters are simple in design, and therefore have low capital and operating costs, because the concentrate being treated are relatively free of impurities. On the other hand, by-product values are minimal.

Due to the low price of lead and to environmental regulations, resulting in reduced margins, the secondary lead industry has contracted, and a number of plants have gone out of operation. In spite of these factors, there is still some secondary lead product capacity that can operate at a profit even at lead prices from 18¢ to 25¢ per pound. In the United States, it is estimated that approximately 500,000 tonnes of secondary lead capacity exists at current prices. Because of this factor and the low growth of world lead consumption, lead prices will tend to stay low. In addition, the market for zinc is expected to grow, albeit slowly, and increased production of zinc will tend to increase the supply of lead, with which it is associated, regardless of the market for lead.

Zinc demand will grow at a somewhat faster rate than lead demand. Almost all Canadian zinc production is closely associated with lead and/or copper, and to some extent silver, values. Four Canadian zinc refineries process approximately 55 to 60 percent of the total zinc contained in Canadian concentrates. These plants are among the lowest-cost refineries in the world, enjoying the advantages of large scale of operation and relatively low energy cost as compared to other regions in the world. The estimated average cost for Canadian zinc refining is 15¢ (U.S.) per pound of zinc. This is the lowest of all world regions, which average 19¢ (U.S.). It is lower than the U.S. average of about 23¢ (U.S.), and considerably below the current world price of 43-44¢ (U.S.). In spite of high nonoperating costs, such as interest expense, the zinc portion of Canada's lead/zinc operations produces an acceptable profit.

In sum, Canadian zinc mines and their associated processors tend to be more profitable than those in other world regions. This is primarily due to relatively lower processing and refining costs and relatively high recoveries and values associated with byproduct silver.