

Copper was produced at about 25 mines in Ontario, the main operations being the nickel-copper mines of the Sudbury district, copper-zinc and copper mines near Timmins, and copper-zinc mines near Manitowadge. Ontario production fell to 194 340 t valued at \$318.8 million. This decline was mainly the effect of the lengthy strike at the Sudbury operations of Inco Ltd.

Production in Manitoba was 60 580 t valued at \$99.4 million. The major producer was Hudson Bay Mining which produced copper in Manitoba's Flin Flon and Snow Lake areas. Other areas of production were at Lynn Lake, Fox Lake, Ruttan and Thompson.

Production of copper in British Columbia amounted to 274 632 t valued at \$450.5 million. Most production comes from large open-pit mines. Production in Yukon increased substantially in 1977 and 1978.

12.3.3 Zinc

Canada remained the world's largest producer and trader of zinc in 1978. Approximately 25% of all zinc consumed in the western world originates from Canadian mines; this makes Canada's zinc industry over 90% reliant on foreign markets.

In 1978, there were 30 mine-mill operations in Canada producing zinc-in-concentrate. The zinc content of this production is estimated to be 1.2 million tonnes, compared with 1.3 million in 1977. No new capacity came on stream during the year; two projects were deferred because of the poor investment climate. There were no significant production disruptions due to transportation or labour strikes but some companies made use of vacation shutdowns as a means of inventory control. Thus mill capacity utilization remained at a level of about 84%. There was little change in the average recovery of zinc from ores, which in 1977 was 83% for zinc in zinc concentrates, and 89% for zinc in all concentrates.

Zinc metal production in Canada for 1978 was 495 420 t, up slightly. There is no secondary metal production in Canada; all production is derived from four electrolytic refineries. The two largest plants in the world are in Canada, operated by Cominco Ltd. and Canadian Electrolytic Zinc Ltd.

After 20 years of basic research, Sherritt Gordon Mines Ltd. concluded a successful pilot scale process for the pressure-leaching of zinc concentrates. The Sherritt process produces elemental sulphur and eliminates atmospheric emissions of sulphur-dioxide gas. The process can achieve extractions as high as 98% so that residue treatment is not necessary. In 1977, Cominco Ltd. and Sherritt conducted a joint venture pilot-plant program to further develop the process. The favourable results indicate high potential for commercial application.

The availability in Canada of zinc in scrap metal has traditionally been modest and until 1977 only small quantities of about 5 000 t were consumed directly in the manufacture of copper alloys, zinc oxides and dusts. In late 1977, Fers et Métaux Recyclés Ltée started up an auto-metal reclamation system which recovers about 5 000 t a year of zinc diecast alloy, mainly from shredded automobiles. The plant's capacity to process the non-ferrous portion of scrapped automobiles exceeds the automotive scrapping rate in Canada; further units are not likely to be built in Canada in the near future, given the small domestic market.

Domestic zinc metal consumption increased to 145 000 t in 1978, from 125 000 t. This consumption strength appeared to be broadly based, prompted in part by the ability of zinc consumers to be more competitive in foreign markets due to the devalued Canadian dollar.

12.3.4 Nickel

Canadian production of nickel in 1978 declined 44% relative to 1977 (Table 12.10). World production decreased 3.8%. At Inco Ltd., Sudbury, Ont., substantial production cuts early in the year were followed by further decreases because of a strike which began in September 1978. Increased nickel demand reduced Inco's inventories of nickel to 104 000 t at the end of 1978 down 50 000 t from year-end 1977. Ontario operations, the Copper Cliff North and Crean Hill mines, were placed on standby in 1978. The Sudbury rolling mill was completed at the end of 1977 at a cost of \$25 million and small amounts