B.2.2.2 Control Technology Available

The control technology discussed in Section B.2.2.1 (sulphuric acid and liquid sulphur dioxide plants) can be considered as available control technology for either new smelters or for retrofitting existing smelters. A summary of Cu/Ni smelter SO_2 control systems is given in Table B.2.6.

For those plants where it is not practical or economical to market sulphuric acid because of remote location or market saturation, the cost of acid neutralization and gypsum impounding must be added. The operating costs for total fixation of the sulphur in smelter gases are shown in Table B.2.7.

Technology for fixing sulphur as elemental sulphur is also available. However, it is much more expensive ($129/tonne sulphur) than producing either sulphuric acid or liquid SO_2. A relatively concentrated SO_2 stream of low oxygen content is required together with substantial quantities of reductant. Therefore it is not applicable to most existing smelter gas streams.

TABLE B.2.7 COST OF SULPHUR FIXATION WITH NEUTRALIZATION AND GYPSUM IMPOUNDING OF H_2SO_4 STREAM (EPS-3 AP-79-8) ($ CAN. June, 1979)

	$/Tonne Sulphur Fixed Double Catalysis	Single Catalysis
All Gases to Sulphuric Acid and Acid Neutralization		
(1) 540 t/day H_2SO_4	169	164
(2) 1 100 t/day H_2SO_4	144	140
Liquid SO_2, Acid Production and Acid Neutralization		
(1) 160 t/day SO_2 and 540 t/day H_2SO_4 to neutralization	158 - 163	155 - 160
Elemental Sulphur, Acid Production, and Acid Neutralization		
(1) 270 t/day elemental sulphur and 540 t/day H_2SO_4 to neutralization	155	152

NOTE: Liquid SO_2 and elemental sulphur are produced from high-grade continuous gas streams. Lower-grade variable converter gases are processed to sulphuric acid, which is neutralized and impounded.