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Antimony / Gold Mineralisation of the Murchison Greenstone Belt

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Consolidated Murchison Mine in the Murchison greenstone belt of the north-eastern Kaapvaal craton, was for many years the world's largest antimony producer with gold as a co-product. The belt is comprised of a range of metasediments and metavolcanics. The Weigel formation hosts the "Antimony Line", an up to 250m wide, locally discordant zone of sheared talcose and chloritic schists enveloping a core of carbonate rock that hosts the bulk of the antimony mineralisation. The Antimony Line occurs immediately south of the quartzitic Antimony Bar, with centres of mineralisation occurring immediately south of thickened nodes of the latter. Auriferous stibnite deposits along the Antimony line are often associated with grey and green quartz- carbonate schists, quartz -carbonate rock and quartz muscovite schists, as well as occasional bodies of albitite.

Prime concentrations of antimony and gold occur within massive, competent, siliceous carbonate rocks which have been fractured or brecciated and include massive stibnite mineralised fractures or reefs, irregular stibnite-quartz-carbonate veins and stringers as well as stibnite disseminations within green and cherty carbonate rocks. Massive stibnite ore and complex tetrahedrite -rich antimonial ore are the main types, the latter reflecting a marginal style of ore containing Cu, Ni, Fe, Co and Zn. An iron-antimony mineral berthierite, occurs sporadically on the periphery of stibnite ore bodies. A brief description of some of the major ore bodies of the Antimony Line is presented. The Antimony Line is interpreted as representing a unit of original komatiitic rocks that acted as the locus for major ductile shear /fault movement followed by a huge carbonate alteration event. Silicification of the core of the Antimony Line, accompanied by arsenic and potassium introduction was followed by late stage antimony and gold mineralisation that was emplaced into silicified rocks that had suffered brittle deformation. Historical production up to 2015 was 605000-tonnes of antimony (in both sulphide and oxide form) averaging 3.3% Sb and 44.7 tonnes (1.5 Moz) of gold from 24 million tonnes of ore at a grade of 2g/t Au.

