



## **THALLIUM opens new opportunities in the Economy**

The evidence, at the beginning of this year, of the existence of an important Thallium ore in the municipality of Barreiras, in the Northwest of Bahia, did not only add another product to the extensive list of raw materials which the Country has to offer to the internal and international markets. It opened totally new perspectives in important area of the mineral prospection, since Thallium is far from being an ordinary metal.

It is sufficient to say that currently only two countries – Kazakhstan and China – are able of offering the metal to the international market. and that one of them, China, has been adopting, as of 2006 a tax restriction policy, so as to maintain the production within its borders, for the exclusive supply of its internal market. The low availability has been resulting in the increased product price. From around US\$ 2 per gram in 2005, it achieved today the range of US\$ 6 per gram.

In spite of this, the Thallium use is increasing. In medicine, Thallium has been ever more used as contrast for the generation of images in cardiovascular tests. The Thallium Chloride molecules marked with radioisotope Tl201 have been used for over 25 years and constitute today the standard in blood flow to the heart.

Thallium is an important thermo electrical material, capable of generating electric power as of a heat source. This opens enormous perspectives in relation to the conversion of the heat spread by motors into usable energy. Thallium is also used as superconductor material in high temperatures. Other uses include wireless communications filters, optical system of infrared detection, such as crystal in devices to detect gamma rays and the manufacture of Leds.

This growing use scenario for Thallium adds value to the discovery made by Itaoeste, a mineral research and development company constituted in 2002, acting in Bahia, Piauí and São Paulo. Itaoeste (associated to IBRAM) has as its main shareholder the businessman Olacyr de Moraes. The Thallium mine expanded the company's portfolio, comprised, among other elements, by Manganese, Cobalt, Iron, Gold, Copper and Phosphide.

The discovery is impressive due to its magnitude. The reserves of Metallic Thallium identified correspond to over 60 million grams. This is equivalent to six years of worldwide consumption of the product, currently at 10 million grams per year. Additionally, it is the first time worldwide in which a Thallium deposit is

found associated to Manganese and Cobalt, in a continental geologic environment.

Such results correspond to only 2% of an area of 44 thousand hectares, still being prospected by the company. The perspectives are optimistic, since on-going studies confirm the continuity of the ore and the presence of significant reserves of Manganese and Cobalt, products with high demand and market value.

In addition to placing Brazil in evidence due to the discovery of a rare ore, Itaoeste brought innovations for the attainment procedures. By means of hydrometallurgical essays, the samples were submitted to a series of operations, ending with the production of Manganese Sulphide, Cobalt Oxide and Thallium salts, with excellent metallic recoveries. The studies counted on the support of investigators hired by Itaoeste and were developed in the Mines and Oil Engineering Department of Escola Politécnica of University of São Paulo (USP).

Brazil already dominates the technology of part of the Thallium applications, especially for medical use. The Discovery of this mine opens the doors to the development of complex high technology value chains. With the supply guarantee and Independence of external sources, the Country gains the possibility of entering totally new technical areas, benefitting its Economy.

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