

The modern methods of processing dust copper-smelter enterprises

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Abstract

The production of metals from secondary raw materials plays an important role in the overall balance of production and consumption in our country. At the territory of Russia there are no enterprises for primary production of metals. Currently, a number of circuit and technologies for processing of lead-containing industrial products have developed, but they has not found industrial application in metallurgical enterprises. At the territories of copper and zinc refineries plants wastes are accumulated. They belong to Class I hazards and enterprises have to pay for the storage of these wastes. The establishment of an environmentally friendly, technologically efficient and cost-effective scheme for processing of lead-containing industrial products and wastes is becoming increasingly relevant.

Technological and environmental disadvantage of pyrometallurgical circuit extraction of metals from waste and industrial products determine the need to find better ways for their complex processing. Foreign companies have been conducting an active search for alternative technologies.

Today there are different ways of processing man-made structures. Pyrometallurgical methods, such as: smelting in blast, reverberatory, rotary, and electric furnaces are characterized by high specific capacity and relatively low cost of reagents used. But their shortcomings are the poor quality of the products obtained, the need for cleaning and removal of gases and low recovery of valuable components. The obtained products in most cases require an additional (often hydrometallurgical) refinement.

Hydrometallurgical methods, such as: acidic, saline and alkaline leaching requires an acid-proof equipment for their realization. When using alkaline there are difficulties with solvent recovery and recycling. The use of organic solvents allows to achieve high selectivity of extraction of metals in solution, they are characterized by a high capacity for non-ferrous metals as well as the possibility of their regeneration. This solvents do not require special construction materials.

Recycling of dusts with a complexing agent provides the selective extraction of metals and the possibility of electrochemical regeneration of the solvent.