

Arsenic content in coarse lead concentrate can be reduced by up to ten times the content in the ore by using NaCN as a depressing agent

The paper entitled The Effect of Sodium Cyanide to Arsenic Content in the Flotation Concentrate of Lead by Srdjan Magdalinovic, Ivone Jovanovic and Vesna Ljubojev from the Institute for Mining and Metallurgy Bor, contains the results of laboratory tests conducted in order to determine the possibilities of obtaining a lead concentrate with low arsenic content. This paper is the result of the project Development of Copper Ores and Precious Metals Flotation Concentration Technologies aimed at Achieving Better Technological Results and Mechanical-Chemical Treatment of Poor-Quality Mineral Resources funded by the Ministry of Education, Science and Technological Development of Republic of Serbia. In the introduction, the authors explain that arsenic is a harmful element in selective lead and zinc concentrates. Permissible content of arsenic in these concentrates is present in tenths parts of the percentage. One of the most important minerals of arsenic is arsenopyrite (FeAsS), which is often the main tailings mineral in the sulphide ores. Accordingly, in the preparation of polymetallic ores of lead, zinc, copper, pyrite and gold, it is very important to achieve successful depression of arsenopyrite during their separation into separate concentrates.

Arsenopyrite flotation characteristics are similar to pyrite flotation characteristics. Particularly under alkaline conditions, pH value of the pulp 7-11, and in the presence of xanthate as a collector, arsenopyrite is easily converted into the concentrate. Consequently, if the ore contains arsenopyrite as an accompanying mineral, its flotation properties can cause difficulties in the flotation of other minerals, minerals, Pb, Zn, Sb, W, as arsenic is considered to be a harmful element in most metallic minerals' concentrates. In order to obtain high-quality flotation concentrate, it is often necessary to depress arsenopyrite, which can be successfully achieved by using cyanide.

A sample of ore used in the flotation experiments contained a large amount of arsenopyrite (over 40%). The results show that the content of arsenic in coarse concentrate of lead can be reduced by up to ten times the content in the ore by using NaCN as a depressing agent. The authors of this paper conclude that mineral arsenopyrite has expressed flotation characteristics, while in the presence of xanthate, under a wide range of pulp pH 7-11, is easily converted into a concentrate. Depression of arsenopyrite is not a simple method and does not always give satisfactory results. However, the results of experiments show that depression of arsenopyrite can be successfully carried out by using sodium cyanide as a depressing agent. The necessary amount of NaCN for the described procedure was 250-400 g/t, which is slightly more than the usual dose of NaCN applied in industrial plants for flotation of the lead-zinc ore.