

TOXIC ELEMENTS IN PALEOZOIC BLACK SHALE SERIES AND ASSOCIATED DEPOSITS IN SOUTH CHINA

1Delian Fan and2Tao Zhang.1Institute of Geology,Chinese Academy of Sciences, Beijing, P.R.China; 2Bureau of Science & Technology Policy, Chinese Academy of Sciences, Beijing, P.R.China

The Paleozoic black shale series and associated mineral deposits are widely distributed in South China. Some of them are the hosting rocks of large and super-large mineral deposits. In the Lower Cambrian black chert-shale are hosted super-large barite, phosphorite deposits, and U-V, Ni-Mo-PGE deposits. In the Lower-Middle Silurian black shale series are hosted large U deposits with high content of Ni, V, Cu etc. The Upper Devonian black chert-shale-marl are the hosting rocks of super-large Xikuangshan Sb and Dachang Sn-polymetallic deposits. The latter accounts for 1900×10^4 t. total reserves, including Sn, Zn, Pb, Sb, Cu, WO_3 , S, As, and around 3×10^4 t. Cd, Ag, Hg and Ga. In the Lower Permian black chert are located large Jinyinzhai U deposit with high content of Cu, Zn, etc. Therefore these black shale series are not only concentrated industrial ores, but also concentrated toxic elements, such as S, SO_4 , As, U, Pb, Cd, Hg etc. Under the humic and hot weather in South China, the ores, especially sulfide and sulphate, and organic matter will suffer serious oxidation during weathering, and release a huge amount of S, As, U, Hg, Pb, Cd into the ground water. Especially during exploitation and processing of ores and accumulation of waste rocks will make serious pollution of the environment. Therefore, detailed study of the distribution of toxic elements in ore field and work out a comprehensive way to control the environment pollution is very important for the exploited ore deposits, especially the super-large ones.