

HAZARDOUS ELEMENTS IN METALLIFEROUS COAL DEPOSITS OF THE RUSSIAN FAR EAST.

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Some coal deposits of the Russian Far East contain large resources of various valuable trace elements. The study of the metalliferous coal geochemistry has shown that they contain not only valuable but also hazardous trace elements. All types of the metalliferous coals are usually characterized by higher contents of Hg (up to 10-15 ppm) and Tl (up to a few ppm). The Ge-bearing coals of some deposits are enriched in Be (up to 50-100 ppm), Sb (up to 20-30 ppm) and Cd (up to 5 ppm). The REE-bearing coals are occasionally high in F (up to 0.1-0.2%) and U (up to 30 ppm). For coal seams with precious metals, typical are two various geochemical associations of hazardous elements: Hg-Sb(As)-Tl and Cr-Ni(Co)-V. The contents of each siderophile trace element may be as high as 500 ppm on whole-coal basis. These maximum contents of hazardous elements are typical only of local parts of the metalliferous coal seams, which are especially enriched in valuable trace elements. Average toxic-element contents usually are lower than the highest permissible level of the hazardous elements in coal. However, the predominantly organic mode of occurrence of some toxic elements and their high volatilisation do not exclude the possibility of emission of hazardous elements to the atmosphere during the combustion of the metalliferous coals. In this connection, studying the distributions and modes of occurrence of hazardous elements as well as their behaviour in combustion processes should be one of the investigation lines of the metalliferous coals before the industrial production of Ge and other associated metals begins.