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"Gheorghe Asachi" Technical University of Iasi, Romania

CHARACTERISTICS OF COALBED PRODUCED WATER IN THE PROCESS OF COALBED METHANE DEVELOPMENT

Mei Yang[1], Yi-wen Ju[1*], Li Tong[1], Guang Xu[2]

[1]Key Lab of Computational Geodynamics of Chinese Academy of Sciences, College of Earth Science, Graduate University of Chinese Academy Sciences, Beijing, 100049, China.
[2]Department of Mining and Minerals Engineering, Virginia Tech, Blacksburg, 24060, USA.

Abstract

Chemical composition data of coalbed produced water can provide information to determine the water sources, understand the evolution, select appropriate treatment processes and increase the utilization efficiency of water resources. Based on methods of hydrogeology, water chemistry and environmental chemistry, the characters of coalbed produced water in the Powder River Basin in the USA and Qinshui Basin in China have been analyzed. Conclusions have been drawn as follows: (1) The coalbed produced water have characters of high mineralization, high salty and low water volumes in Qinshui in China, but low TDS and high water volumes in the Powder River Basin. (2) Because the two basins have different hydrological and geological conditions, so the characteristics of coalbed produced water are different from each other. (3) In the Powder River Basin, sodium and kalium ions and TDS have good correlations; While in Qinshui Basin, chloride ion, sodium and kalium ions and TDS have good correlations, calcium ion, magnesium ion, sulfate ion and TDS have bad correlations. (4) In the Powder River Basin, concentrations of sodium and kalium ions, calcium ion, ammoniumion ion and magnesium ion increase with the concentrations of TDS increased; but in Qinshui Basin, concentrations of all dissolved ions increase with the concentrations of TDS increased, chloride ion and sodium and kalium ions are easier to dissolve than others in general. It will provide useful information to select appropriate treatment to treat the wastewater from coal seam and protect the environment in different coal-bearing basins.

Key words: coal-bearing basins, coalbed methane development, produced water, routine hydrochemistry ions

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[*] Author to whom all correspondence should be addressed: E-mail: juyw03@163.com; Phone: +86 10 88256466; Fax: +86 10 88256012