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The past, present situations of underground coal fires in Xinjiang region of China

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Abstract: Underground coal fire is a disaster associated with coal mining around the world. It not only burns up massive coal resource, but also causes serious environmental problems, such as the damage and contamination to the surface soil, the contamination to the surface and ground water environment, and the pollution to the air and the damage to the ozone layer of atmosphere. In the present paper, the authors give an introduction of underground coal fires in Xinjiang region based on summarizing and analyzing historical data of coal fires in this region with comparing of the past and the present situation of it. The coal resource distribution and deposition characteristics in Xinjiang region was illustrated at first. Then, the mechanism of coal fire happening and propagating was explained referring to results of research work conducted by the authors, including the delineation of underground coal fire control volume, the quantification of the capacity of oxygen supply and the intensity of heat generation and transfer from coal fire. Concerning the serious impact coal fire on the environment, the authors also give an introduction of research work on the gases emission and heavy metals contamination to the soil of coal fire. Methods and technologies which were used in past and present to detect, extinguish, and monitor the coal fire were introduced in detail. Finally, the authors addressed the important aspects of coal fire research and gave applicable strategies to efficiently control the coal fire issues in Xinjiang region.