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柴达木盆地三湖地区生物气横向运聚成藏研究 [点此下载全文](#)

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摘要:

本文系统研究了地层水盐度对微生物菌生长发育的制约, 矿化度对生物气在地层水中溶解度的影响, 泥岩盖层的控制作用。柴达木盆地三湖(台吉乃尔湖, 涩聂湖, 达布逊湖)地区主要受南缘昆仑山冰雪溶水的补给, 地层系地层水的矿化度最高, 北斜坡污水-汇水区高盐度条件下生物菌的活跃程度受到抑制, 影响生物气大量生成并从南部低矿化度条件下更适宜生物气的生成, 生物气在地层水中的溶解度随矿化度的增高明显降低, 南缘低矿化度向北携带, 在北斜坡高矿化度条件下大量游离出来, 实验测试证明泥岩饱和高矿化度地层水时, 其突破压力增加并有效地保存了北斜坡游离相生物气, 研究显示生物气总体上具有向北斜坡以水溶气方式进行横向运聚的特征, 展现了北斜坡含气的巨大勘探潜力。结合生物气本身的发育特征和三湖地区的水文地质条件, 提出了生物气首先以水溶气方式再以游离相进行垂向运聚成藏, 这一结论对下一步三湖地区生物气勘探具有直接的指导意义。

关键词: [生物气](#) [水溶气](#) [溶解度](#) [盐度](#) [水动力](#) [柴达木盆地](#) [成藏模式](#)

Lateral Migration and Accumulation of Biogenic Gas in the Sanhu Area, Qaidam Basin

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Abstract:

This paper presents a systematic study of the constraints of salinity of Quaternary formation micro-fungus, the effect of salinity on solubility of biogenic gas in formation water, and the control in the mudstone cover. The Sanhu (three lakes: Taijinar Lake, Suli Lake, Dabsan Lake) area is mainly formation water migrating from south to north, which is supplied by the snow water from the southern the highest salinity at the north slope. The fungus growth was restricted by the high salinity of the area at the north slope, therefore a large amount of biogenic gas was generated and separated from better low salinity environments for biogenic gas to form in the central depression and the southern solubility of biogenic gas in formation water decreases with increasing salinity. The low-salinity high solubility of biogenic gas migrated from south to north, and then the biogenic gas was separated from Quaternary formation water at the north slope and accumulated there. Experiments have demonstrated mudstone breakthrough pressure increases by about 100 times when the mudstone is saturated with high salinity which means the mudstone sealing ability is greatly improved so that it can effectively seal the formation. Above studies demonstrate that the biogenic gas generally migrated laterally to the north slope in which also suggests that the north slope is rich in biogenic gas resources, and so has a good prospect. Formation characteristics of biogenic gas and the hydrogeological conditions of the Sanhu area, the biogenic gas, dominated by solution gas, migrated laterally far away to the north slope in the Quaternary then vertically migrated and accumulated in the free state at the north slope.

Keywords: [biogenic gas](#) [solution gas](#) [solubility of biogenic gas](#) [salinity](#) [hydrogeology](#) [Qaidam Basin](#)