



## Experimental study on characteristics of gas field mercury-containing sludge and the sludge reduction

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### ABSTRACT

In order to obtain the basic characteristics of gas field mercury-containing sludge and provide a technical support for the sludge treatment, a detailed experiment was carried out. The experimental results showed the mercury content and moisture content of the sludge were very high, and the divalent mercury was the main existence form of mercury, and the little particle size was the main reason for the poor sedimentation performance of the raw sludge. The relations of moisture content and mercury content at different drying temperature indicated the mercury in the sludge was unstable, and the critical temperature to keep the mercury stable should below 80°C. Moreover, the volume of supernatant and the moisture content after centrifugal dehydration were used to evaluate the effect of sludge conditioning, and the proper coagulants and optimal dosages were determined. Additionally, the relations among moisture content, centrifugal rotational speed and centrifugation time showed the suitable centrifugal rotational speed was about 3,000 r/min, but the moisture content of centrifugation cannot meet the dehydration requirements of sludge packaging and transportation, thus the sludge drying should be used for further dewatering, and the reasonable drying temperature should below 80°C as also.

*Keywords:* Mercury; Sludge reduction; Moisture content; Stability; Drying temperature

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