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Removal of hydrogen sulfide (H2S) from biogas for the community in the province of Maha Sarakham

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Biogas produced from the fermentation in the province of Maha Sarakham of excreta from cow dung, fattening pigs and buffalo dung in small scale farms contained hydrogen sulfide (H2S) at 764, 926 and 1,103 ppm, respectively. This gas has offensive smell and is corrosive to motor and metal stove of farmers, thus needs to be eliminated. The adsorbent granules soaking in FeCl3 and NaOH made from grey cement mixed with diatomaceous earth or fine sand. The experiment cow dung, fattening pigs and buffalo dung farms revealed that the adsorbent granules made from fine sand mixed with grey cement had better efficiency in reducing H2S than diatomaceous earth plus grey cement or scrap iron (97.1-91.4 vs. 86.0-64.3 and 77.9-89.4%, P<0.01). The reduction of H2S increased with the increasing weight of the adsorbent tanks, made from fine sand mixed with grey cement, from 2 to 4 and 6 kg (84.1-89.2 to 92.7-98.0 and100-99.1%, respectively). Adsorbent set of 6 kg weight can reduced H2S in biogas from 2,141 to 0 ppm in the first day and to 6 ppm onday 25 of using period, during which the color of adsorbent granules changed from red brown to dark brown.

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