Generation pattern of sulfur containing gases from anaerobically digested sludge cakes


ABSTRACT
Eleven dewatered sludge cakes collected from anaerobic digesters at different treatment plants were evaluated for the amount, type, and pattern of odorous gas production. All but one of the sludge cakes were from mesophilic anaerobic digesters. One was from a thermophilic digester. The pattern and quantities of sulfur gases were found to be unique for each of the samples with regard to the products produced, magnitude, and subsequent decline. The main odor-causing chemicals were volatile sulfur compounds, which included hydrogen sulfide, methanethiol, and dimethyl sulfide. Volatile sulfur compound production peaked in 3 to 8 days and then declined. The decline was a result of conversion of organic sulfur compounds to sulfide. In one side-by-side test, a high-solids centrifuge cake generated more odorous compounds than the low-solids centrifuge cake. The data show that anaerobic digestion does not eliminate the odor potential of anaerobically digested dewatered cakes.