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Field based greenhouse gas emission measurement from onsite containments in Nepal.

Prativa Poudel^{1,2}, Sarana Tuladhar^{1,2}, Anish Ghimire³, Guy Howard⁴, Miller Alonso Camargo-Valero Camargo-Valero^{5,6}, Barbara Evans⁷, Olivia Reddy⁴, and Subodh Sharma^{1,2}

¹Kathmandu University, Department of Environment science and engineering, Dhulikhel, Nepal
(prativapoudel1@gmail.com)

²Aquatic Ecology Centre, School of Science, Kathmandu University, Nepal

³Environmental Engineering and Management, Department of Water Resources and Environmental Engineering, Asian Institute of Technology, Pathum Thani, 12120, Thailand

⁴Department of Civil Engineering and Cabot Institute for the Environment, University of Bristol, Bristol BS8 1TR, UK

⁵BioResource Systems Research Group, School of Civil Engineering, University of Leeds, Leeds LS2 9JT, UK

⁶Departamento de Ingeniería Química, Universidad Nacional de Colombia, Campus La Nubia, Manizales, Colombia

⁷WASH Research Group, School of Civil Engineering, University of Leeds, Leeds LS2 9JT, UK

On-site sanitation systems (OSS) generate greenhouse gases (GHGs) during the decomposition of fecal matter. The reported measurements of these emissions are confined to a restricted number of research examining septic tanks in high-income nations. We conducted field measurements of onsite containments to generate emissions data for Nepal. This represents the first empirical investigation of greenhouse gas emissions from onsite containments in low- and middle-income countries. Emissions were recorded from a panel of pit latrines (n=18), holding tanks (n=6), septic tanks (n=3), between December 2021 and December 2022. A calibrated static flux chamber was designed and deployed to collect gases samples at each containment site. Portable gas analyzers were employed to quantify methane (CH₄), carbon dioxide (CO₂), and nitrous oxide (N₂O). Results will be provided in detail. Preliminary investigation showed a substantial range in emissions rates notably CH₄ across different types of onsite sanitation containments. Statistical test indicated methane emission rates varied considerably within containment types (P value<0.05). N₂O was not discovered in any of the sample containments. Our preliminary findings indicate that onsite containment emissions are greater than anticipated and may be a key area for improvement in order to get net zero emissions.