

EGU2020-17244

<https://doi.org/10.5194/egusphere-egu2020-17244>

EGU General Assembly 2020

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## **A comparative study of lipid extraction methods for the quantification of steroidal biomarkers within soil and cattle slurry**

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Clean water is a precious resource and policies/programmes are implemented worldwide to protect and/or improve water quality. Faecal pollution can be a key contributor to water quality decline causing eutrophication through nutrient enrichment and also pathogenic contamination. The robust sourcing of faecal pollutants is important to be able to target the appropriate sector and to engage managers. Biomarker technology has the potential for source confirmation, by using, for example, the biomarker suite of steroids. Steroids have been used in the differentiation of human and animal faeces; however, there is no unequivocal extraction technique regarding either suite's analysis. Some of the methods used include: i) Soxhlet extraction, ii) Bligh and Dyer (BD) extraction, and iii) accelerated solvent extraction (ASE). The less costly and time intensive technique of ASE is particularly attractive, but a current research gap concerns further comparisons regarding ASE lipid extraction of soils/slurries compared with the more traditionally used methods of Soxhlet and BD extraction. Accordingly, a randomised complete block experiment was implemented to assess for differences between the three extraction methods, differences between the different sample types, and the interactions between these two factors. Following GC-MS, it was found that there was no significant difference between the steroid extraction method used, regardless of the type of sample used, for the quantity of each steroid extracted. It was concluded that ASE could be used confidently instead of the more established steroid extraction methods, thereby delivering time and cost savings.