Complete treatment of manure by membrane filtration process

Background: Importance of manure management and treatment in livestock farming and in the biogas industry is increasing significantly. In terms of resource management, raw manure and digestate also play an important role in the national nutrient budget. Liquid manure is often applied as a Nitrogen (N)-rich agricultural fertilizer. Regionally, this has a considerable impact on groundwater quality and leads to exceeding the nitrate limit of the Drinking Water Ordinance (50 mg / L NO^{3-}). Hence, membrane filtration technique which is highly rated for its solid/liquid separation ability can be used as one of the vital steps to eliminate or recover some of these N-rich inputs from manure and possibly to lower the nitrate concentration in the groundwater at a very short notice. In addition, the entry of ammonia and nitrous oxide into the atmosphere caused by the application of manure and digestate can be lowered.

Work objectives: In detail, the following goals are focused on the project:

i. Optimizing solid/liquid separation of manure by membrane filtration process as a pretreatment step for the sequential evaporation and deammonification process.

ii. Further identification of the influence of different treatment levels on the retention of micropollutants (especially antibiotics from the animal fattening area) and antibiotic resisting genes will be examined.

The scope of the assignment can be adapted to a Bachelor's or Master's thesis or as a study project.

Especially suitable for students from the disciplines of: **CIW, BIW, VT, WaSE**

More Details: http://wasserchemie.ebi.kit.edu/

Type of work: Primarily practical

Beginning: Immediately, after consultation

Supervision: Engler-Bunte-Institute, chair of water chemistry and water technology

Contact: **Prantik Samanta; Geb: 40.14; Zi: 110; Tel: 608-42596,**

Email: prantik.samanta@partner.kit.edu