Alternative Treatment and Recovery of Phosphorus from Anaerobic Lagoons. (A05-szogi084613-Oral)

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Abstract:

Manure nutrients in excess of the assimilative capacity of land available on farms are an environmental concern often associated with confined animal feeding operations (CAFO). The ability to extract phosphorus (P) from lagoon wastewater is critical to accomplish CAFO's comprehensive nutrient management plans (CNMPs) through land application without elevating soil P levels. A treatment system was developed to retrofit animal waste lagoons that requires minimal chemical addition, reduces problems of ammonia emissions during P separation from aqueous phase, and recovers P in reusable form. Phosphorus was selectively precipitated using an alkaline earth metal after carbonate and ammonia buffers were reduced via a nitrification pretreatment. The method was successfully pilot tested in nine hog lagoons in North Carolina including breeding, nursery, and finishing operations. In all cases the soluble P was effectively recovered as calcium phosphate (about 17% P2O5). The product was further de-watered to >50% solids using a flocculating polymer. In addition, this technology can be used to increase the N:P ratio of the effluent to match crop needs or remediate P overloaded sprayfields.

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