

WASTE ACTIVATED SLUDGE PHOSPHORUS AND MAGNESIUM STRIPPING PROCESS AND STRUVITE PRODUCTION SYSTEM

ABSTRACT OF THE DISCLOSURE

[0032] A method of treating a mixture of microorganisms with readily biodegradable carbon compounds (RBCs) in the form of one or more volatile fatty acids (VFAs), by first inducing the mixture microorganisms to release phosphorus and magnesium which is then tapped off as the mixture is thickened, to produce phosphorus and magnesium-rich liquid and phosphorus and magnesium-reduced treated mixture. This treated mixture is placed in an anaerobic digester where ammonia is formed but combines very little with phosphorus or magnesium as these elements have been greatly reduced in concentration. Next the high-ammonia mixture is dewatered, to produce an ammonia-rich liquid, which is combined with the phosphorus and magnesium-rich liquid and reacted to form struvite. In one preferred embodiment, VFAs are formed *in situ* via an upstream unified fermentation and thickening (UFAT) process and are added to the waste sidestream to strip phosphorus and magnesium found therein. In another preferred embodiment a usable struvite product is harvested from the reacted phosphorus, magnesium and ammonia, also *in situ*. The production of nuisance struvite in the anaerobic digester is greatly reduced, in comparison with prior art waste treatment methods.

Figure 2A