

# Technologies for Sidestream Nitrogen Removal

Liquid streams (“reject water” or “sidestream”) generated by the dewatering of digested solids generally contain high levels of ammonia and phosphorus. These liquids can be treated in separate or sidestream processes rather than being directly returned to the mainstream treatment process. Sidestream treatment processes can reduce overall energy and chemical costs and improve treatment reliability for biological nutrient removal facilities. Sidestream treatment processes can also be used for nutrient recovery and reuse.

This document is a compilation of a broad range of biological and physiochemical treatment processes specifically for nitrogen removal and recovery from municipal sidestreams and ammonia-rich industrial wastewaters. The benefits of these technologies are described along with design approaches and full-scale plant experiences. Reuse of recovered ammonia in the form of aqueous ammonia and ammonium salts for industrial and agricultural applications is also discussed. Future research needs in sidestream nitrogen removal and recovery are identified and summarized.



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