Anaerobic digestion for secondary sewage treatment and bioenergy production.

Summary of Findings – STRIVE 64

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This research developed a novel laboratory-scale bioprocess and employed it for the low temperature anaerobic digestion of sewage.

Background

Activated sludge plants used for munical and idustrial wasetwater treatment, require large capital investment, heavy usage of fossil fuels, high-technology operational control and also generate large quantities of sludge requiring treatment before safe reuse/recycle. Low-temperature anaerobic digestion offers a potentially attractive, energy-producing alternative.

Key Points

- A novel laboratory-scale anaerobic bioreactor and bioprocess was designed and employed for low-temperature anaerobic digestion (LTAD; 4-15˚C), using synthetic wastewaters, with average and stable total COD removal efficiencies of 70% achieved under a range of operating conditions.
- The process was also applied successfully to sewage and discharge standard, in terms of COD quality (125 mg l-1), was routinely achieved using the systems for treatment of sewage souced from the from the Mutton Island treatment plant in Galway city.
- Significantly, high levels of phosphate attenuation were achieved (up to 80% P removal) by the novel bioreactors, this is a novel finding with respect to anaerobic digestion.

- The newly developed technology has strong commercial potential. An application for European patent protection for the system was filed by NUI, Galway in November 2010.

For Further Information

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The full report Anaerobic digestion for secondary sewage treatment and bioenergy production by Dermot Hughes *et al.* is published by the Environmental Protection Agency and is available from link http://www.epa.ie/downloads/pubs/research/tech/