naerobic lagoon digestion has been practiced in agricultural settings since the 1930’s, and takes advantage of microbes that are capable of breaking down manure into a nutrient-rich effluent and methane gas, a potentially valuable energy source. The process allows for wastes to be flushed into storage lagoons or pumped into anaerobic tanks that maintain conditions for maximum solids breakdown. Enclosed systems allow for methane collection and delivery to generators for electricity used locally or for grid systems. However, the presence of veterinary pharmaceuticals and endocrine disrupting compounds (EDCs) in manures raises the question of their fate during anaerobic digestion and/or their effect(s) on digestion.

Steroid hormones such as estrogens and androgens are among the most potent natural EDCs and are excreted by animals at high levels. Estimates of annual animal waste production at U.S. confined animal feeding operations are more than 100 times the mass of human sewage sludges processed by U.S. municipal waste treatment facilities. The impacts of estrogens being discharged into the microenvironment surrounding the site of manure application are potentially significant. However, studies with manure-amended soil under aerobic conditions suggest that estrogens should not persist longer than hours to days in the environment; yet estrogens are consistently detected in aquatic environments.

The fate and magnitude of natural estrogens during animal waste management is not as well understood as for municipal waste treatment plants, and previous studies with manure-amended soil under aerobic conditions are conflicting. Several waste management techniques are available to all animal feeding operations, but anaerobic lagoon digestion is the preferred option for swine operators. In a study published in the March–April issue of the Journal of Environmental Engineering and Management, researchers report the fate of 17β-estradiol in anaerobic lagoon digesters.

Fate of 17β-Estradiol in Anaerobic Lagoon Digesters

doi:10.2134/csa2014-59-3-3

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SapIP IRT Wireless Leaf Temperature

Determine if & when your crops need irrigation

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- Up to (40) IRT Nodes on a Single Gateway Modem
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- No Calibration Required
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