Biomass Studies Completed for PEDA News

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PRESS RELEASE
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The Energy Institute recently completed two studies for the Commonwealth of Pennsylvania that focused on biomass utilization. Fuel Flexibility in Boilers for Fuel Cost Reduction and Enhanced Food Supply Security? was a collaborative effort between the Pennsylvania Energy Development Authority (PEDA), Penn State and several industrial partners.

The study, under the direction of Bruce G. Miller and Sharon Falcone Miller, research faculty at The Energy Institute, involved the testing of 16 biofuels in which a series of combustion/emissions tests were conducted to address energy security and food supply safety. Biofuels?including animal proteins, fats and tissue; herbaceous plants; and food industry products/wastes?were assessed for their viability as fuels for green heat applications.

A main goal of the program was to promote widespread acceptance of various biofuels for their uses in industrial, cogeneration, and utility boilers. The study noted that many of these fuels provide several benefits, including multiple fuel options for the consumer and economic security for energy users in a period of volatile energy prices. It was demonstrated that the liquid biofuels exhibited emissions that were comparable to or lower than those when firing natural gas or fuel oil.

?The project was very successful,? Miller said. ?We were able to generate a database of emission factors to facilitate the use of alternative fuels, expand the overall knowledge base for using alternative fuels, provide energy and security options for the industrial sector and demonstrate the excellent performance of animal fats and greases as boiler fuels.?

Xiaoling Ma, senior research associate at The Energy Institute, and Chunshan Song, professor of energy science in the Department of Energy and Geo-Environmental Engineering, also completed a study in June for PEDA that pertained to biomass utilization.

The primary objective of the research was to develop a novel solid sorbent that could be used to remove hydrogen sulfide and carbon dioxide from coal and biomass gasification streams more efficiently, economically and environmentally-friendly.

?The novel sorbent and process developed in this project exhibit some significant advantages, including the ability to remove hydrogen sulfide to levels sufficient for fuel cell application. The process exhibits high capacity and selectivity, and ease of regeneration,? Ma said. ?The sorbent and process also have a great potential for upgrading biogas, landfill gas and natural gas for use in fuel cells."