Turning wastewater into algae

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Wei Liao advises testing program that is using brewery wastewater to produce algae as a clean energy source

Michigan State University and California-based PHYCO2 are now using wastewater from breweries to produce algae as part of the ongoing partnership to generate clean energy sources.

This production is performed by PHYCO2’s carbon dioxide-capturing technology, known as the algae photo bioreactor, or APB. Researchers have discovered the bioreactor can grow pure microalgae from the nitrates and phosphates found in wastewater from distillation and fermentation manufacturing plants such as breweries and wineries.

Wei Liao, associate professor and director at the Anaerobic Digestion Research and Education Center in the Department of Biosystems & Agricultural Engineering, is advisor to PHYCO2’s testing program.

As a renewable energy source, pure microalgae can be used for a host of everyday products, from lipstick to ice cream, from gasoline to feed.

This is the fourth phase of the multi-year trial with MSU and PHYCO2, a company that focuses on algae growth and CO2 sequestration. In previous phases, the bioreactor absorbed CO2 emissions directly from a power plant, creating high-density pure algae cultivations.

“The PHYCO2 APB and test program worked well with our plant operations and we were very pleased with the results that used the CO2 from our plant exhaust to grow algae,” said Dan Bollman, MSU associate vice president for infrastructure planning and facilities.

“The ability to also treat wastewater,” he added, “opens a new area of research and development that are consistent with the university goals of sustainability and implementation of green technologies in our campus programs.”
Located in MSU’s T.B. Simon Power Plant, the bioreactor allows pure microalgae to grow indoors, 24 hours a day, in any geographic location and at any time of the year.

The treated wastewater from the breweries can also be re-used in the brewery operations.

“Wastewater is a major concern for manufacturers, our governments and everyday citizens,” said William Clary, chief executive officer of PHYCO2. “This new technology allows manufacturers to tackle this issue head on.”

Related Website: Story courtesy of MSUToday
Read more in BIOMASS Magazine
Communications contact: Patricia Mroczek

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