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EPA GRANT WORK DEVELOPS METHOD TO CONVERT NEWSPAPERS TO ALCOHOL FOR USE AS FUEL

CINCINNATI, OHIO --- The growing concern over the cost and availability of fossil fuels emphasizes the urgent need for low-cost, abundant fuel alternatives. According to environmental scientists, one possible fuel of the future is solid waste. That is, what we dispose of today may become an energy source of tomorrow.

Research efforts are reflecting this problem, as well as this possible solution, at the Environmental Research Center in Cincinnati, Ohio. In the final phase of an $880,000, three-year grant, the U.S. Environmental Protection Agency and New York University (NYU), New York City, are completing research into the conversion of cellulosic waste products, including paper, forestry and agricultural wastes, into glucose. The glucose can then be used to produce chemicals for the fuel process.

The project is under the management of Walter Brenner, NYU Professor of Applied Science, and EPA project officer, Charles Rogers, Senior Research Chemist.

Since paper, and other waste products, are complex bonds of simple sugars, or glucose, and alcohol can be produced by fermenting the glucose, the object of the research is to find a cost-efficient method of converting these wastes into glucose.

Acid hydrolysis, the method developed in this project, provides the basis for gasohol, a possible extender of gasoline, for use in automobiles; for methane, a substitute for natural gas in heating, and for industrial chemicals.

"There is a large, growing demand in industry for a low-cost method of producing chemicals as well as alternative fuels, because most chemicals are petroleum-based and are extremely expensive due to the rising cost of petroleum," Rogers said.

In another EPA-sponsored grant, NYU developed a rapid, high temperature hydrolysis process which has given glucose

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yields of 50 percent, with 20 second reaction time. Under the current project, the university scientists developed, obtained and installed the equipment and materials specifications to carry out continuous processing on a large scale.

The second year brought the operation and optimization of the system in a plant processing one ton of old newspapers a day, producing about a half-ton of glucose.

Now, Rogers said, the goal is to further develop and perfect the process in order to provide a data base for subsequent scale up to 50-100 tons a day. The project will also include the evaluation of other possible waste feedstocks and the effectiveness of waste pretreatments.

The scenario of the future, as Rogers described it, would locate acid hydrolysis plants in areas of high waste concentration, utilizing not only municipal paper waste, but also crop wastes, such as corn stalks and peanut hulls, and forest wastes, such as leaves and twigs. The liquid glucose would then be transported from the hydrolysis plants to fermenting centers for conversion into alcohol or other chemicals.

Two major benefits may be accrued from developing and utilizing an efficient method of conversion. First, by recycling the billions of tons of cellulosic wastes Americans produce each year, the use of existing landfills and incinerators will be minimized, causing a reduction in land and air pollution.

Secondly, the cost of fuel alternatives and industrial chemicals will decrease since the feedstock will be practically cost-free waste rather than expensive petroleum or cereal grains.

"No longer can we depend on oil and natural gases to meet our energy needs. We must look for new fuel sources. The development of acid hydrolysis methods is one viable alternative for the near future," Rogers concluded.

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