



# Biomass Program

## Enhancement of Co-Products from Bioconversion of MSW

Much of the municipal solid waste (MSW) in the U.S. is currently disposed of in landfills. However, MSW represents a potential source of biomass that could be used as a feedstock for valuable products. Masada OxyNol, LLC has developed a process for the conversion of MSW to sugars. The sugars are then converted to ethanol for use as a transportation fuel, with valuable co-products of gypsum, carbon dioxide, energy and ash.

Researchers are examining the unit operations of the current Masada OxyNol™ process to achieve the improvements needed for future commercial operation. Work will focus on improving conversion efficiencies, mitigating scale-up risks, mitigating risks associated with recycle stream contaminants, improving the co-product quality and marketability, and proving the capability of the plant to operate at near zero discharge.

The most effective process improvements will ultimately be incorporated into the Masada OxyNol™ design for current and future operating facilities.



**Municipal solid waste—a potential feedstock for bioproducts.**

### R&D Pathway

In the first stages of research, test protocols will be developed, followed by system design and procurement of equipment and raw materials. Tests will then be conducted to determine the efficiency of biosolids processing, hydrolysis, and lignin residue production, and acid/sugar separation processes.

Later testing activities will focus on sugar and acid concentration processes, conducting hydrolysis with re-concentrated acid, and fermentation. Downstream processes such as product distillation, production of waste water and wastewater treatment will also be evaluated.

## Integrated Biorefineries R&D

### Benefits

- Provides a new process to convert MSW into bioenergy

### Applications

Incorporate the most efficient and effective process improvements into the Masada OxyNol™ design for current and future facilities.

### Project Participants

Masada OxyNol, LLC  
Harris Group  
Lizan Process Solutions  
Tennessee Valley Authority  
Seattle University

### Project Period

FY 2001 – FY 2004

### For more information contact:

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Visit the Web site for the Office of the Biomass Program (OBP) at  
[www.eere.energy.gov/biomass.html](http://www.eere.energy.gov/biomass.html)

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