

## Project Overview

**Industrial Placement Intern:** Tisha Roth  
**Major:** Chemical Engineering  
**School:** University of Nebraska-Lincoln



### Company Background

Cargill Lactic Acid in Blair, NE manufactures lactic acid from the dextrose produced initially from corn milling operation. The lactic acid is sold to Nature Works, where it is further processed into a biodegradable plastic used to make plastic food containers. Lactic Acid production runs 24 hours a day, Monday through Sunday.

### Project Description

Cargill Lactic Acid received assistance from a P3 intern during the months of June and July of 2008 to identify potential pollution prevention (P2) opportunities. An emphasis was placed on finding alternative uses for gypsum (a production by-product) and the "Burnt Sugar Stream," a mixture of burnt sugars and lactic acid generated during production, instead of sending either waste for disposal in a landfill. Additional P2 opportunities included recommendations for improving the fermenter facility's pump out system and tracking sources of wastewater.

### Pollutions Prevention Benefits

Potential benefits related to the P2 opportunities include landfill waste reductions, electricity and water usage reductions, and cost savings.

### Results

Several specific opportunities have the potential for direct cost savings, as waste and energy reductions. The opportunities, potential cost savings, and waste reductions are listed in Table 1.

**Table 1: Pollution Prevention Opportunities and Cost Savings**

| <b>Opportunity</b>   | <b>Annual Savings</b>  |
|--|--|
| Modify tote washing procedures                                       | <ul style="list-style-type: none"><li>• 671,000 gallons waste water</li></ul>  |
| Initiate program of land application of gypsum, rather than landfill | <ul style="list-style-type: none"><li>• Approximately \$30,000</li><li>• Over 67,000 tons diverted from landfill</li></ul> |
| Modify piping associated with the fermenter's pump out system        | <ul style="list-style-type: none"><li>• \$169</li><li>• 5,625 kWh/year</li></ul>   |
| Develop alternatives to land filling the "Burnt Sugar Stream"        | <ul style="list-style-type: none"><li>• Greater than \$250,000</li></ul>   |

Additional benefits related to the P2 opportunities include:

- Improved efforts toward overall environmental stewardship.
- Raised P2 awareness within company.
- Reduce regulatory burdens associated with land filling of wastes.