

Project Overview

ADM Corn Processing
Columbus, Nebraska

Intern: Hunter Flodman
Major: Chemical Engineering
School: University of Nebraska – Lincoln



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The Company

Archer Daniels Midland Company is a world leader in agricultural processing of soybeans, corn, wheat, and cocoa. ADM Corn Processing in Columbus is a wet mill corn processing facility with 285 employees. Approximately 220,000 bushels of corn are processed per day and the major products are high fructose corn syrup and up to 100 million gallons of ethanol per year (by air permit limits). Other products produced include food grade starch, wet feed, liquid feed, road deicer, chicken feed, and germ.

Project Description

Although most of the byproducts generated during corn processing at ADM are used in a beneficial manner, in the summer of 2005, source reduction opportunities and alternative disposal methods were investigated for those waste streams that were being landfilled. These included wastewater biosolids, wood waste, corncob waste, and ion exchange resins. In addition, disposal methods for excess and rarely used chemicals in the warehouse were determined, recommendations to the plant wide recycling program were made, and a comprehensive waste assessment of the Lube and Vehicle Maintenance Shop was performed.

Pollution Prevention Benefits

Wastewater biosolids, corncob, and wood waste management suggestions were made to reuse the organic material in an off-site composting process. Removing and disposing of rarely used and unused chemicals stored in the warehouse will reduce the risk of chemical release and employee injury. Recommendations to the recycling program will add structure to the program, have the potential to save ADM a large amount of resource expenses, and ensure ADM will maintain a sustainable operation.

Results

The quantitative suggested pollution prevention opportunities are summarized in Table 1. Some opportunities that are not listed below include improvements to the recycling program, suggestions to establish secondary containment, and future pollution prevention opportunities that involve extensive process changes.

Table 1. Pollution Prevention Opportunities and Benefits

Pollution Prevention Opportunity	Benefits	Quantification	Annual Cost Savings
Wastewater Biosolids Composting	Reduce Landfilled Waste	1,000,000 lbs/yr	\$100,000
Warehouse Chemical Disposal	Employee Safety	43,700 lbs	
Corn cob Composting	Reduce Landfilled Waste	252,000 lbs/yr	\$7,015
Wood Waste Composting	Reduce Landfilled Waste	84,000 lbs/yr	\$535