

## Project Overview

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Major: Civil Engineering

School: University of Nebraska – Lincoln

## Summer Projects

The 2005 summer projects were giving educational presentations to Extension offices throughout Nebraska and providing assistance to small businesses in Chadron, Nebraska. Tasks included conducting applied research, training Extension personnel who in turn could educate the public, performing comprehensive waste assessments for businesses, and reassessing a business served by an intern earlier.

## Education

After researching arsenic and uranium in groundwater with a focus on private wells, a presentation for Extension Educators, assistants, and staff was given in those counties along the Platte River Valley and the Republican River Valley with elevated levels of arsenic and uranium in the groundwater. A total of 12 presentations were given to 14 counties. The total attendance was 39 people.

The presentation, Arsenic and Uranium in Groundwater: Focus on Private Wells, primarily addressed water treatment and disposal concerns and has the potential to affect a large audience. Extension serves as an information link between the experts at the University of Nebraska-Lincoln and the general public. The results from the presentations are given in Table 1.

**Table 1. Educational Opportunities and Results**

<b>Counties Visited</b>	<b>Number of People who could potentially receive benefits</b>	<b>Number of Non-community Water Supplies</b>	<b>Number of Registered Wells</b>
<b>14</b>	<b>64,186</b>	<b>191</b>	<b>46,003</b>

## Waste Assessments

Two waste assessments of auto repair shops/maintenance facilities were performed in Chadron, Nebraska. To evaluate the implementation of opportunities suggested by a past intern, a reassessment was conducted for a business in Lincoln, Nebraska.

## Results

Recommendations from the waste assessments include using alternative solvents, providing secondary containment for several storage tanks, changing the type of fluorescent bulbs, maintaining and managing materials properly, and modifying a process for a parts washer. By implementing the suggestions, the businesses could benefit by a reduction in solid waste and hazardous waste generation, cost savings, and increased employee safety. Table 2 shows the amount saved by implementing the pollution prevention opportunities.

**Table 2. Summary of Pollution Prevention Opportunities**

<b>Pollution Prevention Opportunities</b>	<b>Proposed Waste Reduction</b>		<b>Cost Savings</b>
Recycle Fluorescent Bulbs	80 lbs of solid waste eliminated		
Recycle used Oil Filters	1560 lbs of solid waste diverted		
Provide Secondary Containment	1,500 gallons of hazardous waste contained		
Use an Alternative to Oil Absorbent	1,652 lbs of solid waste diverted from the landfill		\$3,029
Use an Alternative for Cleaning Solvents	90 gallons of hazardous waste reduced		
Eliminate Shop Rags	550 lbs of solid waste eliminated		\$199
Replace Fluorescent Bulbs	40 lbs of hazardous waste eliminated		
<b>Total</b>	<b>Solid Waste</b>	<b>Hazardous Waste</b>	<b>\$3,228</b>
	<b>3,842 lbs</b>	<b>40 lbs Eliminated 1,500 gal Contained</b>	