

Contact Info:
Andrew Azman (303)-444-5648
Andrew.Azman@colorado.edu

CU Biodiesel Initiative

Fall 2002 EEF Mini-Proposal

The CU Biodiesel Initiative is composed of a team of engineering students from Professor Amadei's GEEN-1400 class, working in partnership with the CU Environmental Center and Boulder Biodiesel. The goal of the project is to design transportation alternatives that benefit the environment, are easily applicable, cost effective, and reduce our dependence on foreign oil. This goal will be achieved through the development of Biodiesel – diesel fuel made from vegetable oil, *not petroleum*.

Biodiesel effectively reduces pollution both locally and globally. According to an EPA study, Biodiesel reduces carcinogenic emissions by 90%, and as there is no petroleum that is burned, it does not contribute to the net accumulation of CO₂ in the atmosphere. Biodiesel is a natural lubricant, which reduces wear on the engine and extends engine life. Biodiesel can be used in any diesel engine without modification, whether it is a generator, boat, truck, or airplane.

Bryan Flansburg, CU transportation director, has approved the use of a Buff Bus for the CU Biodiesel Initiative's pilot project. This Buff Bus will be run on Biodiesel made from discarded cooking oil from the UMC grill and the other cafeterias on campus. The school's waste oil supply is estimated at 200 gallons each month.

The process of making Biodiesel is fairly simple and can be made from both new vegetable oil and used cooking oil. The vegetable oil needs to be mixed with a strong base and an alcohol for an hour and thereafter needs to settle overnight as the glycerin precipitates out on the bottom. The following day, the glycerin is separated from the Biodiesel and the process is complete.

In addition to making fuel, this processor will function as an educational tool. A clinic on Biodiesel production can be held every time a batch of fuel is made. It is our hope to have a group of students and community members eventually making the fuel on a biweekly basis. These Biodiesel making sessions will be a great tool to inspire young community members to think about alternative energy.

The CU Biodiesel Initiative will make University of Colorado a pioneer in transportation alternatives, and act as a model for others to follow. To date only two other universities in the country have implemented this fuel and both have been overwhelming successes. Not only will this project introduce people to Biodiesel, but it will also promote development of alternative energy solutions.

Upon completion of CU Biodiesel Initiative's pilot project, information will be disseminated throughout the engineering school. Posters illustrating the project and its results will be provided to the school. A website will also be started to provide details of the pilot project and information on CU Biodiesel Initiative's current projects.

Project Budget

The CU Biodiesel Project entails three stages: vegetable oil collection, processing, and storage. We need containers to store vegetable oil, methanol, and Biodiesel, a processing tank, an industrial mixer, two electrical pumps, a hand operated pump, plus additional plumbing equipment.

Total project budget: **\$1315**

EEF request: **\$1000**

Outside funding: (Y/N)	amount	confirmed?
Department contribution:	\$ 0	
College contribution:	\$ 0	
Personal Contributions	\$ 250	Y

Budget breakdown:

Equipment and Materials:

<u>Item</u>	<u>Unit Price</u>	<u>Quantity</u>	<u>Total Cost</u>
55-gallon drum	\$20	2	\$40
400 gallon storage tank w/stand	\$550	1	\$550
Chemical mixer	\$130	2	\$260
Electrical Pump	\$120	2	\$240
Hand operated pump	\$50	1	\$50
Piping	\$75	1	\$75
Miscellaneous Equipment	\$100	1	\$100
<u>Total</u>			<u>\$ 1,315</u>