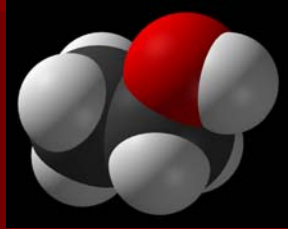


ETHANOL

Chris Calderone



An Answer to the World Energy Crisis?
The Ultimate Renewable Resource?
Alternative to Fossil Fuels and Gasoline?

Sources of Ethanol

Three Major Sources
In 2006

- Sugar Cane
- Corn
- Sugar Beets



Ethanol Production

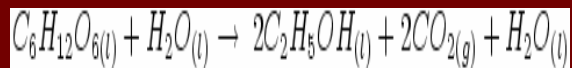
90% of the ethanol production in the U.S. comes from Corn

The dry mill production involves a six step process.

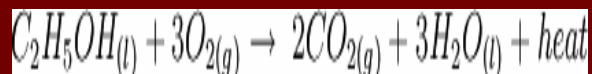
1. Refinement to Starch
2. Liquification
3. Saccharification
4. Yeast Fermentation
5. Distillation
6. Dehydration

Ethanol Chemistry

- Ethanol Fermentation: Glucose to Ethanol and Carbon Dioxide



- Ethanol Burning: Ethanol and Oxygen to Carbon Dioxide, Water, and Heat



Environmental Costs

- Ethanol releases large amounts of Carbon Dioxide into the atmosphere during both fermentation and burning
 - This Carbon Dioxide Production is partially offset by the Carbon taken up by feedstock
 - Ethanol plants have the potential for sending harmful VOCs into the atmosphere

Energy Benefits

- “For every unit of energy that goes into producing ethanol, we get back one-third more energy as transportation fuel.”
 - U.S. Department of Energy
- Ethanol based fuel burns more efficiently
- Ethanol burns particulate-free
- Ethanol energy comes from a renewable resource - PLANTS

Economic Costs

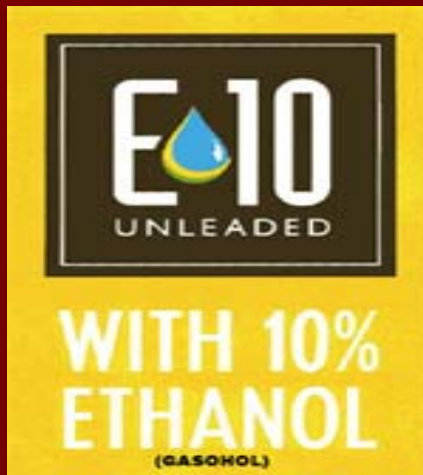
- The energy used for Ethanol has effected the demand for feedstock
- Price increases for Corn
 - Effects on the price of livestock feed
 - Beef, Chicken, and Pork prices rise
- Alternative crops may offset the price
 - Sugarcane and sugar beetsHigher sugar content = Higher energy content

Ethanol and Automobiles



Ethanol Blends

- E-10 Blend
 - Combustion Engine
- E-85 Blend
 - FFV
- E-100 Blend
 - Ethanol Engines



Fuel Flexible Vehicles

- Automobiles which have the ability to operate on both gasoline and ethanol fuel



National Ethanol Conference

- This week, the Renewable Fuels Association hosted it's 12th Annual National Ethanol Conference in Tucson, AZ
- [I Love Ethanol](#)
(5 min MP3)

