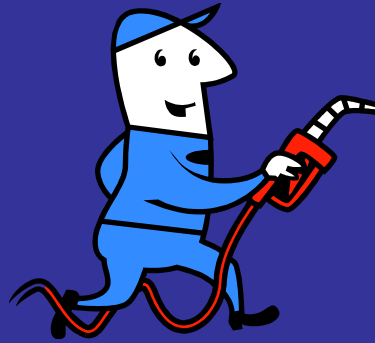


# **Alternative Fuels & Enforcement Actions**

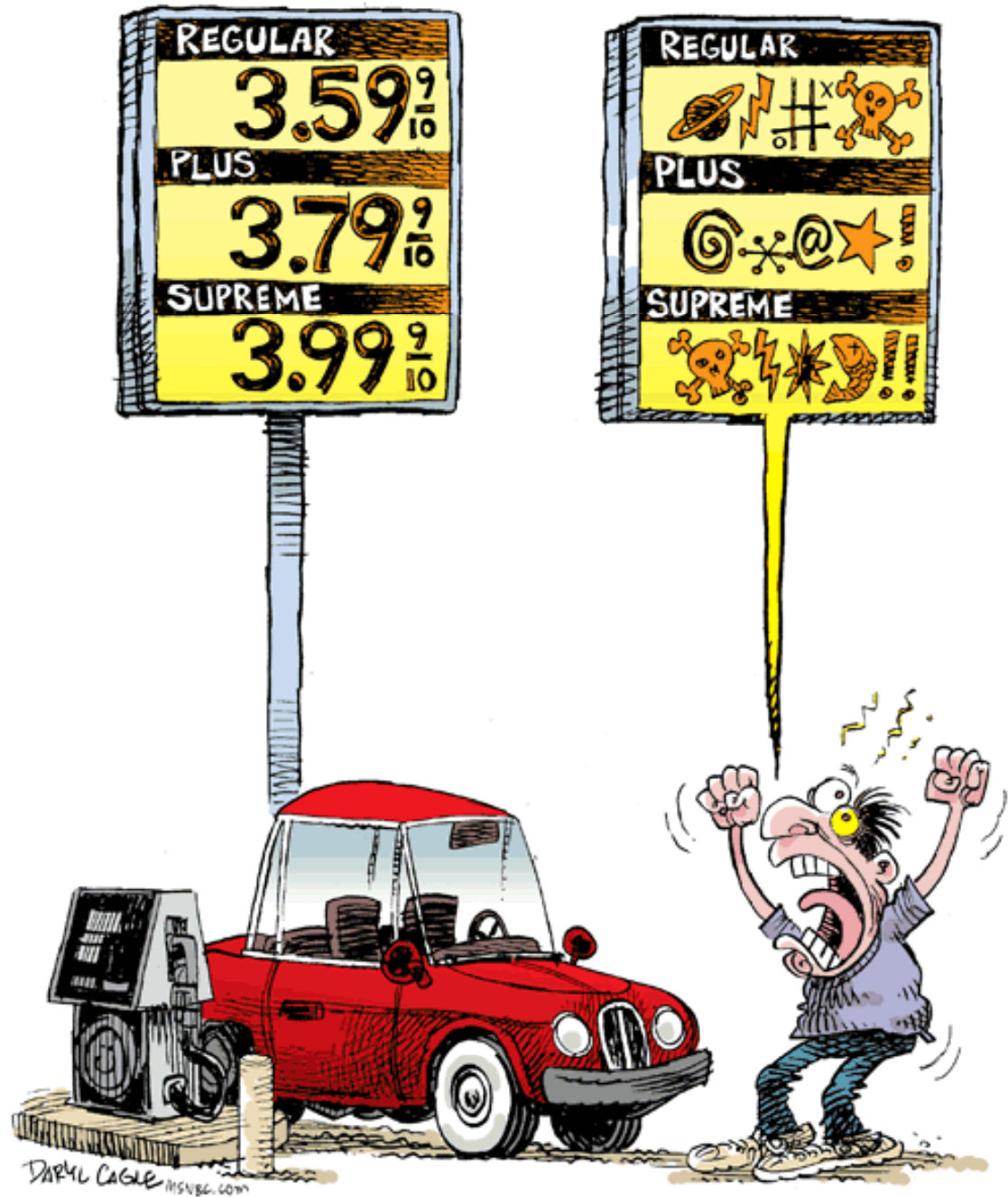


**Douglas K. Carr, P.E.**

**Alabama Department of  
Environmental Management**

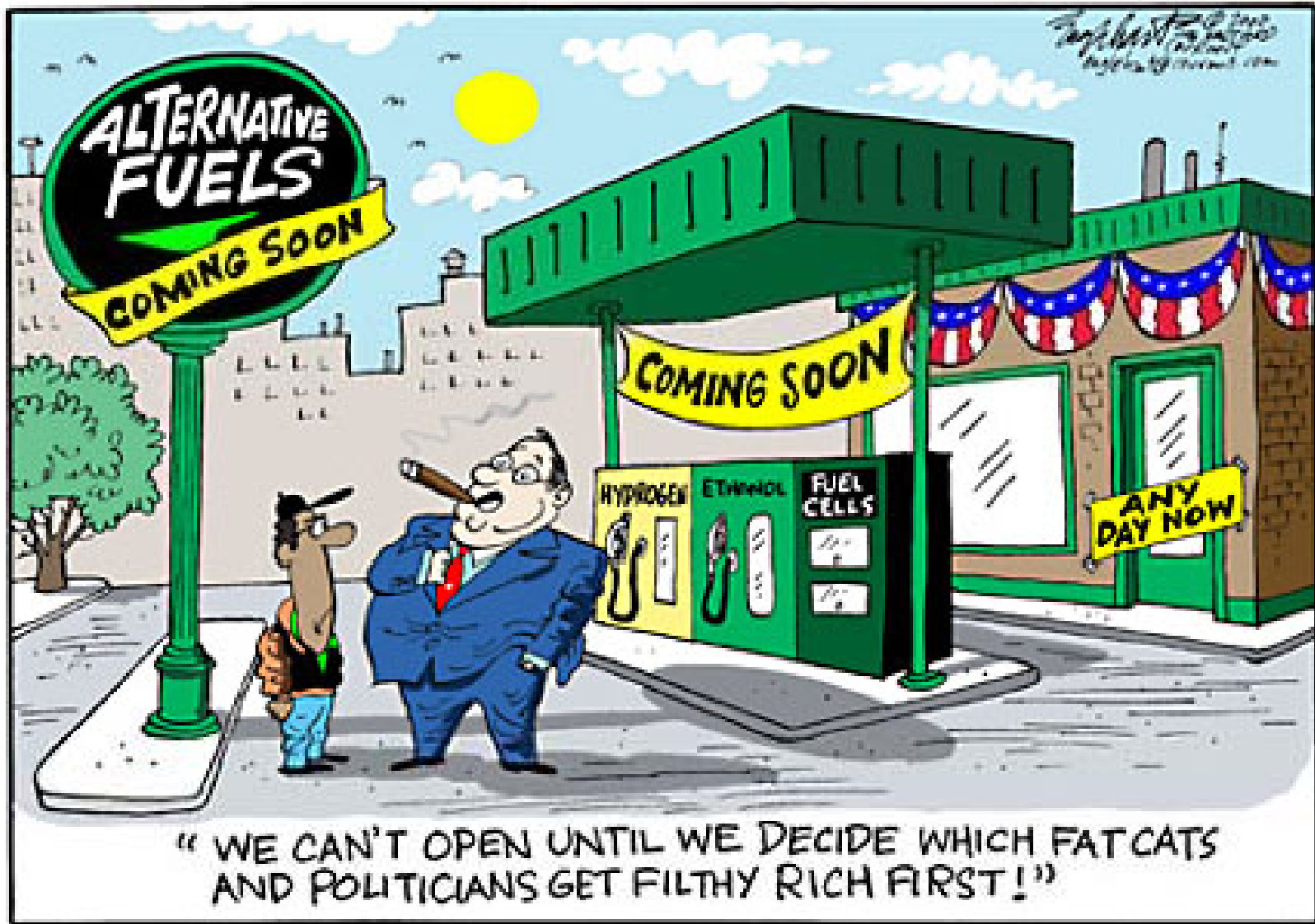






Mike Keefe THE DENVER POST 11/09/07 www.caglecartoons.com





" WE CAN'T OPEN UNTIL WE DECIDE WHICH FAT CATS AND POLITICIANS GET FILTHY RICH FIRST!"

# Overview

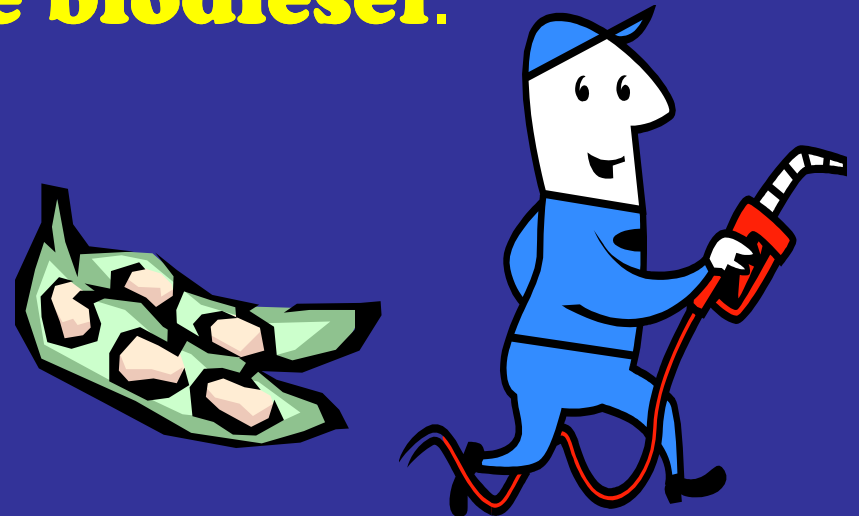
- **Permitted Alternative Fuels**
- **Biodiesel Production**
- **Relevant Regulatory Requirements**
- **Specific Problems and Enforcement**
- **Other Alternative Fuel Sources**

# **Permitted Alternative Fuel Sources in Alabama**

- **Biodiesel**
  - 9 permitted sources, 5 operating
  - Additional small unpermitted sources
- **Ethanol**
  - 2 permits issued, zero operating
- **Tire Pyrolysis**
  - 1 permit issued, have temporary authorization to operate
- **Synthetic Diesel Production**
  - Active application

# Biodiesel

- **Pure Biodiesel: B100**
- **20% Biodiesel and 80% Diesel: B20**
- **No modifications to diesel vehicles are needed to utilize biodiesel.**



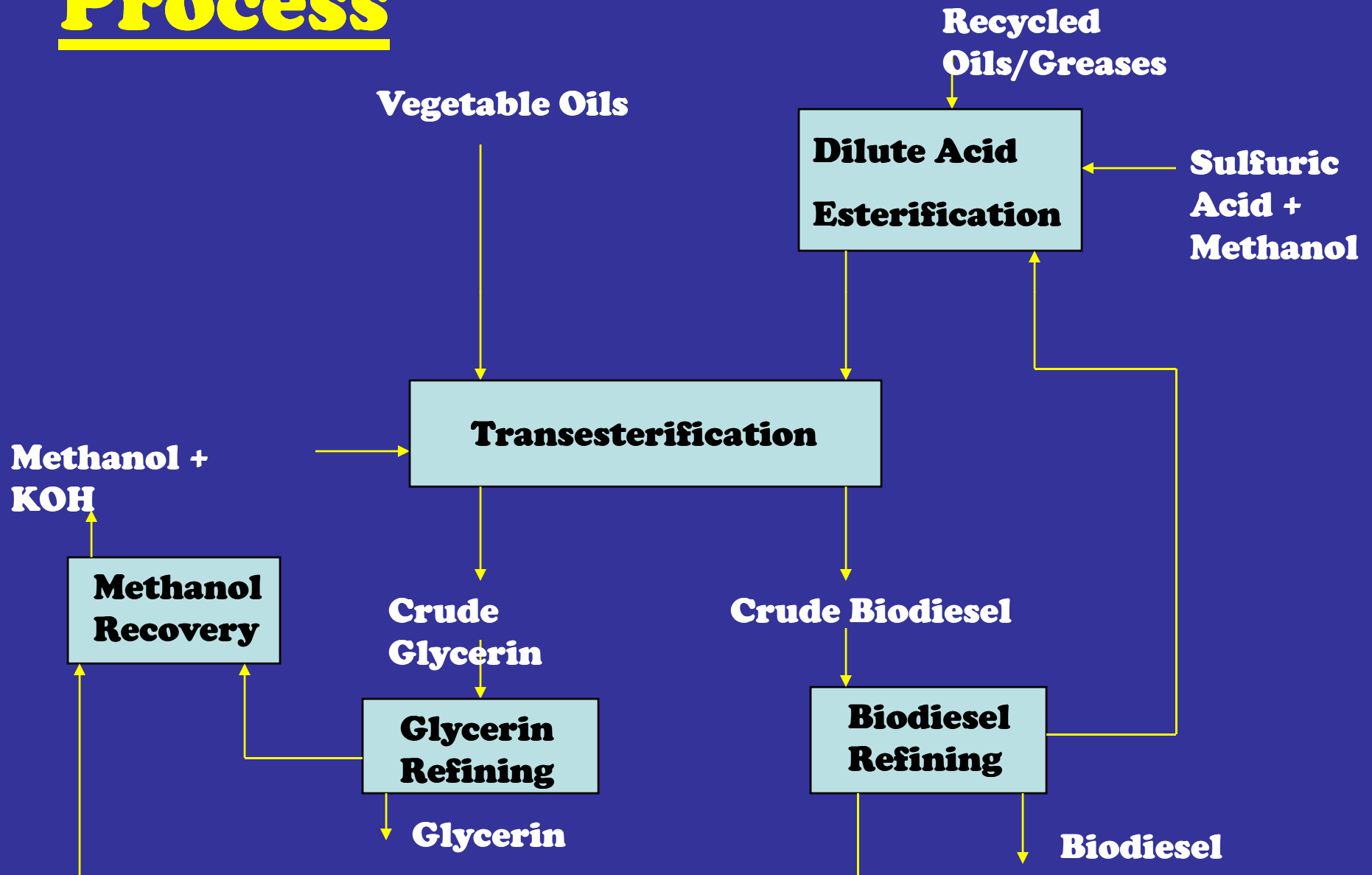


# Basic Biodiesel Production

**Vegetable  
Oils,  
Animal Fats,  
or Recycled  
Greases** + **Methanol  
Potassium  
Hydroxide Catalyst** = **Biodiesel  
Glycerin**

# Biodiesel Production

## Process



# **Biodiesel Process Variations**

- **Batch Process**
- **Continuous Process**
- **Methanol Recovery**
  - **Gravity Separation from Glycerine**
  - **Distillation for Purification and Recycling**

# Emission Sources

- **Process Vents-Condensers**
- **Process Fugitives**
- **Storage Tanks**
- **Loading Racks**
- **Boilers or Electric Heaters**

# Potential Emissions

- **Methanol- Hazardous Air Pollutant (HAP)**
  - Major Source Operating Permit applicability 10 tpy
  - MACT applicability if > 10 tpy
- **Potential Emissions increase with heated methanol recovery processes.**
- **Criteria pollutant emissions are small and result from boilers.**

# Regulations

- **For Batch and Continuous Processes:**

- **40 CFR Part 60, Subparts VV or VVa-  
Leak Detection and Repair**
- **If major source of HAP, 40 CFR Part 63,  
Subpart FFFF (MON)**
  - **HON or NSPS Subpart UU- Leak Detection  
and Repair**
- **NSPS Subpart Kb for methanol storage  
tanks.**

- **Continuous Processes:**

- **NSPS Subpart NNN-Distillation  
Operations**
- **NSPS Subpart RRR-Reactor Systems**

# Noted Violations

- **Construction without a permit.**
- **Construction of equipment not included in application &/or not constructing as applied.**
- **Increasing capacity without submitting an application.**
- **Construction/operation of a VOC Storage Tank without a vapor recovery system or submerged fill pipe. (State requirement)**

# **Noted Violations Continued**

- **Not complying with Synthetic Minor limitations, such as tracking hours of operation.**
- **NSPS Subpart VV**
  - **Lack of Records of Monitoring**
  - **Not calibrating monitoring equipment**
  - **Monitoring with Explosion Meters**
  - **Not Submitting Reports**



# Biggest Problems

- **Lack of understanding of regulatory requirements.**
- **Belief that processes are 100% free of emissions to the atmosphere.**  
**“We recycle all of our methanol.”**

# **Obstacles To Enforcement**

- **Bio Fuels are Popular**
- **Political**
  - **Most facilities have some kind of economic development monies or grants**
- **Can't get blood from a turnip!**

# **Enforcement**

- **Notices of Violation- Three Issued**
  - **Construction without applications**
  - **NSPS Subpart VV**
  - **VOC Storage Tank**
- **Consent Order- One Issued**
  - **NSPS Subpart VV**
- **Ongoing enforcement with one facility.**

# **Other Media**

- **Glycerin Waste Contamination**
  - **Runoffs contaminating streams and rivers**
  - **Kill fish and other aquatic creatures**

# **Other Alternative Fuels**

# Ethanol

- **Ethyl Alcohol - Commonly used to replace MTBE in gasoline.**
- **Vehicles can burn up to 10% ethanol without any modification.**
- **Flex-fuel vehicles can utilize up to 85% ethanol in gasoline also known as E85.**



# **Ethanol Production**

- **Fermentation**

- **Sugars are fermented to produce alcohols.**
- **Alcohols undergo distillation to produce fuel.**
- **Sources include corn, sugar cane, beets.**
- **One permitted source in North Alabama (not operational).**

- **Cellulosic**

- **New technology which has proven successful on bench scale.**
- **Hydrolize wood-chips to produce a mix of 80% ethanol and 20% methanol.**
- **One Pilot Scale Plant permitted in West Alabama (not operational)**

# Tire Pyrolysis

- **Pyrolysis - the thermal distillation or decomposition of organic materials into oils, gases, and char.**
- **Fuels produced are equivalent to diesel fuel.**



# **Synthetic Diesel Production**

- **Fuels produced are equivalent to diesel fuel.**
- **Similar to Tire Pyrolysis**
- **Utilize tires, plastics, cellulose**

# **Violations & Other Issues**

- **Construction without a permit.**
- **Odor problems**
- **Ignorance of regulations & requirements**
- **BATF Permits for Ethanol Production**

**Questions?**