Biodiesel Research, Manufacturing, and Marketing in California

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Yesterday's comment:

"Those ethanol and biodiesel folks will tell you anything just to make a point."

Biodiesel Efforts

- Research additives for NOx neutrality or to *reduce* NOx
- Improve plant efficiencies to reduce costs
- Work through federal, state, and local legislators to lower the cost of *renewable fuels*
- One advantage that biodiesel and ethanol have over LNG and CNG is that they are *renewable*

Biodiesel Efforts

- Comment about farmers in the midwest?
- We don’t have a lot of oilseeds in California.
- A California solution for a California problem.
  - 50 billion pounds per year processed
  - Fill up the nation’s landfills in four years
  - Energy Life Cycle for soy estimated 3 to 1
  - Energy Life Cycle for recycled cooking oil as high as 7 to 1

General Biodiesel Info

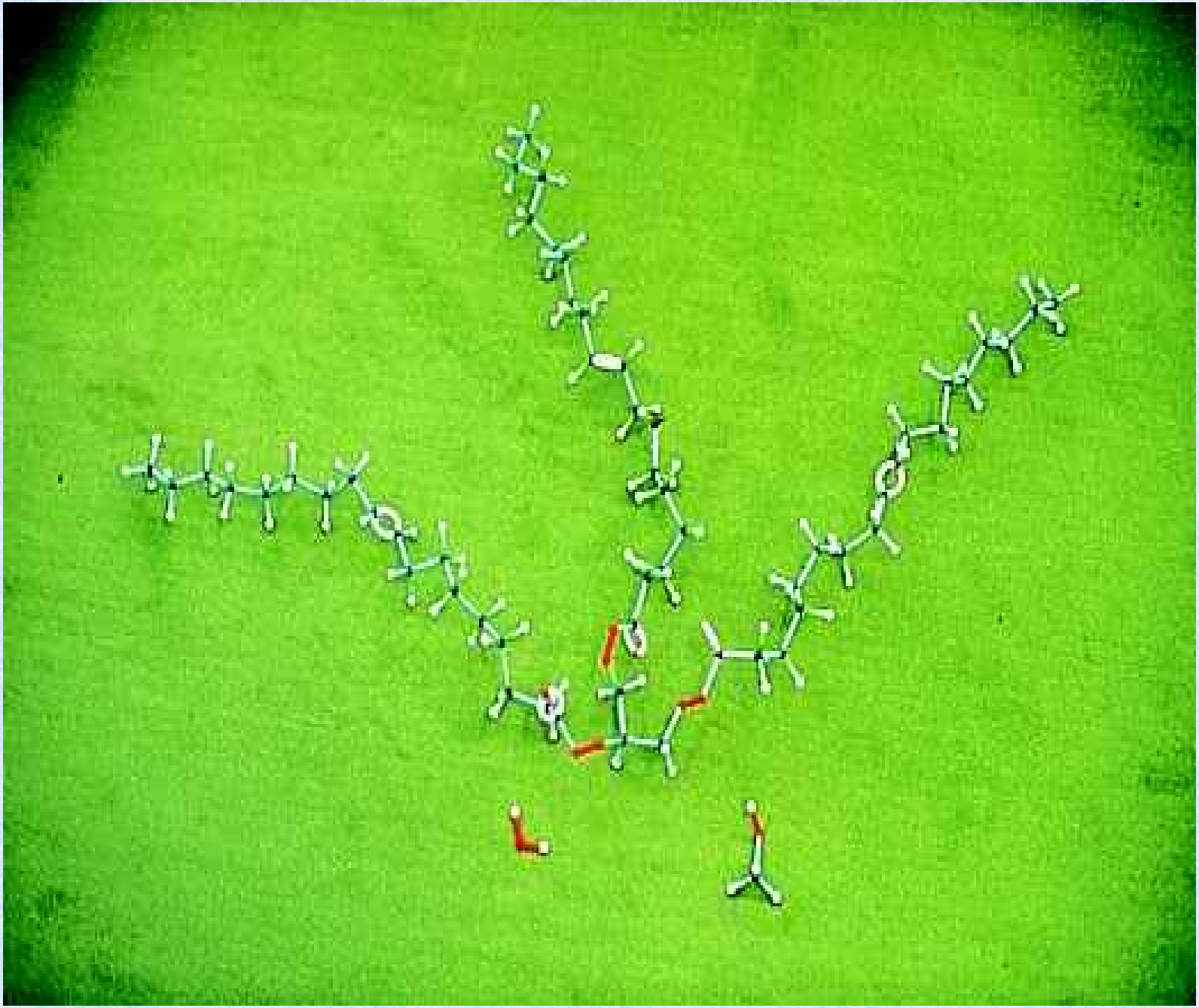
- About 12 million gallons sold in the US last year.
- Another 2 million gallons from US exported
- This year: about 20 million gallons
- Plants, plants, plants - 30 mm gallons
- 35 million gallons
- FREE WASTE COOKING OIL!

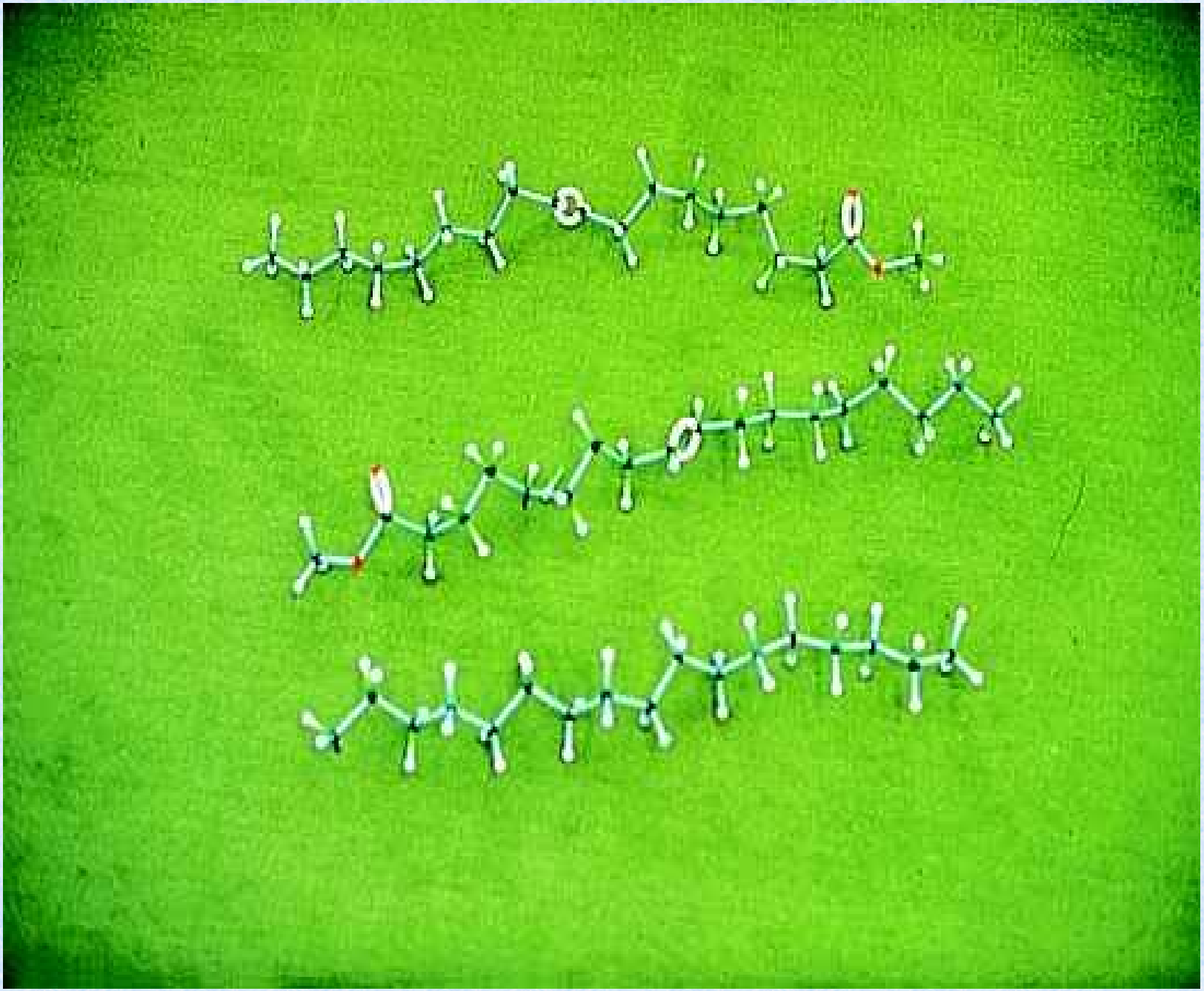
Biodiesel Info

- A few companies producing biodiesel on an industrial scale.
- More people selling biodiesel **plants**.
- Even more people selling stock or investment opportunities in biodiesel plants.

Biodiesel is really a methyl ester of fatty acids

To make methyl ester, react methanol (also known as wood alcohol) with animal fat or vegetable oil. Can be fresh or recycled.





Recycled Vegetable Oils vs. Virgin Vegetable Oils

- Recycled oils are less expensive
- With increased population eating out more, restaurant grease is increasing. Must find a home for this product other than landfills and wastewater.
- Recycled oils have an advantage in NOx emissions due to higher level of saturation.
- Vegetable oils have an advantage in lower cloud point and easier processing to make methyl esters. Improved quality of co-products.

BDI®

BIODIESEL INTERNATIONAL

Saria plant in Germany

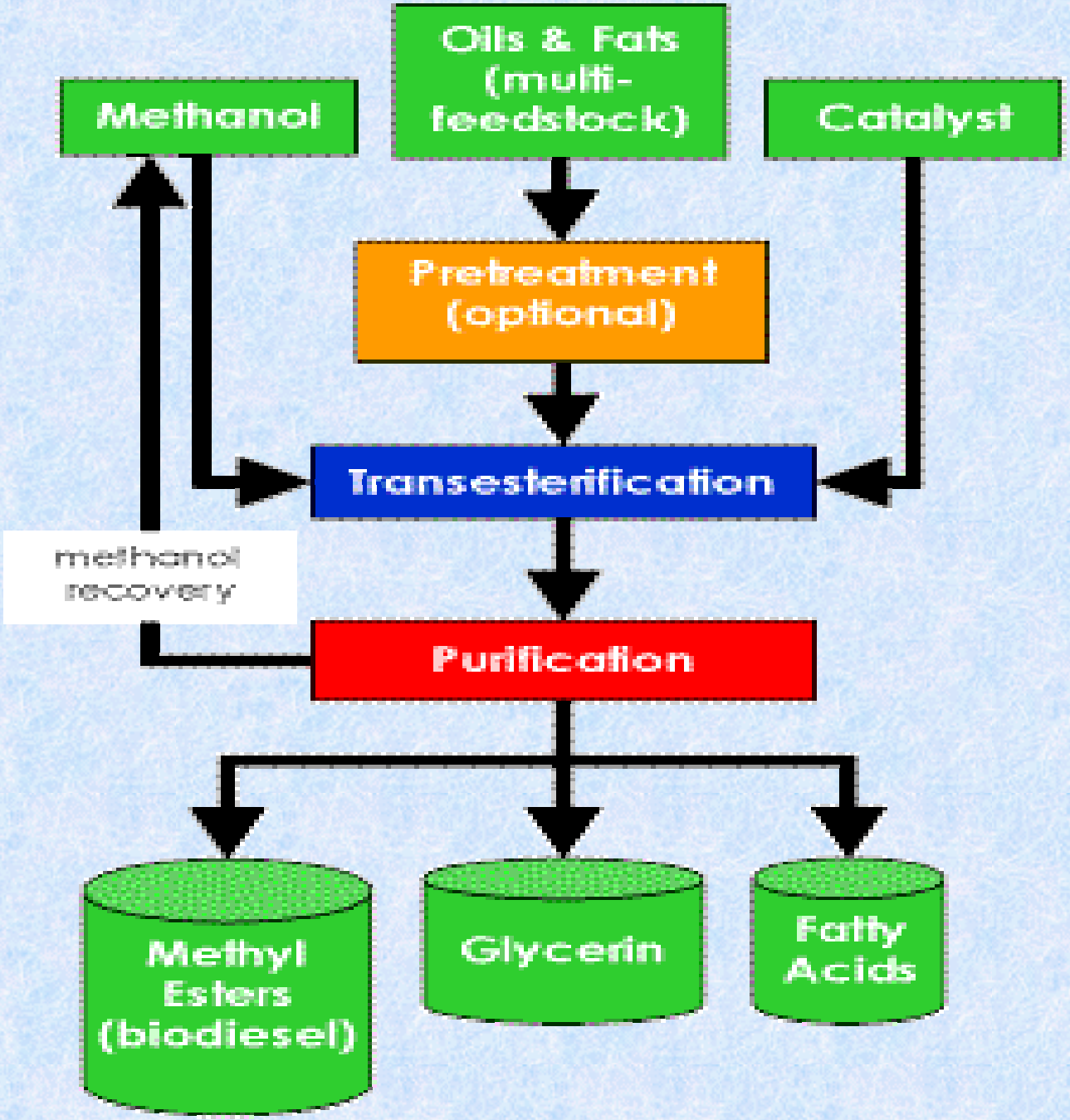
BDI®

BIODIESEL INTERNATIONAL

griffin plant in kentucky

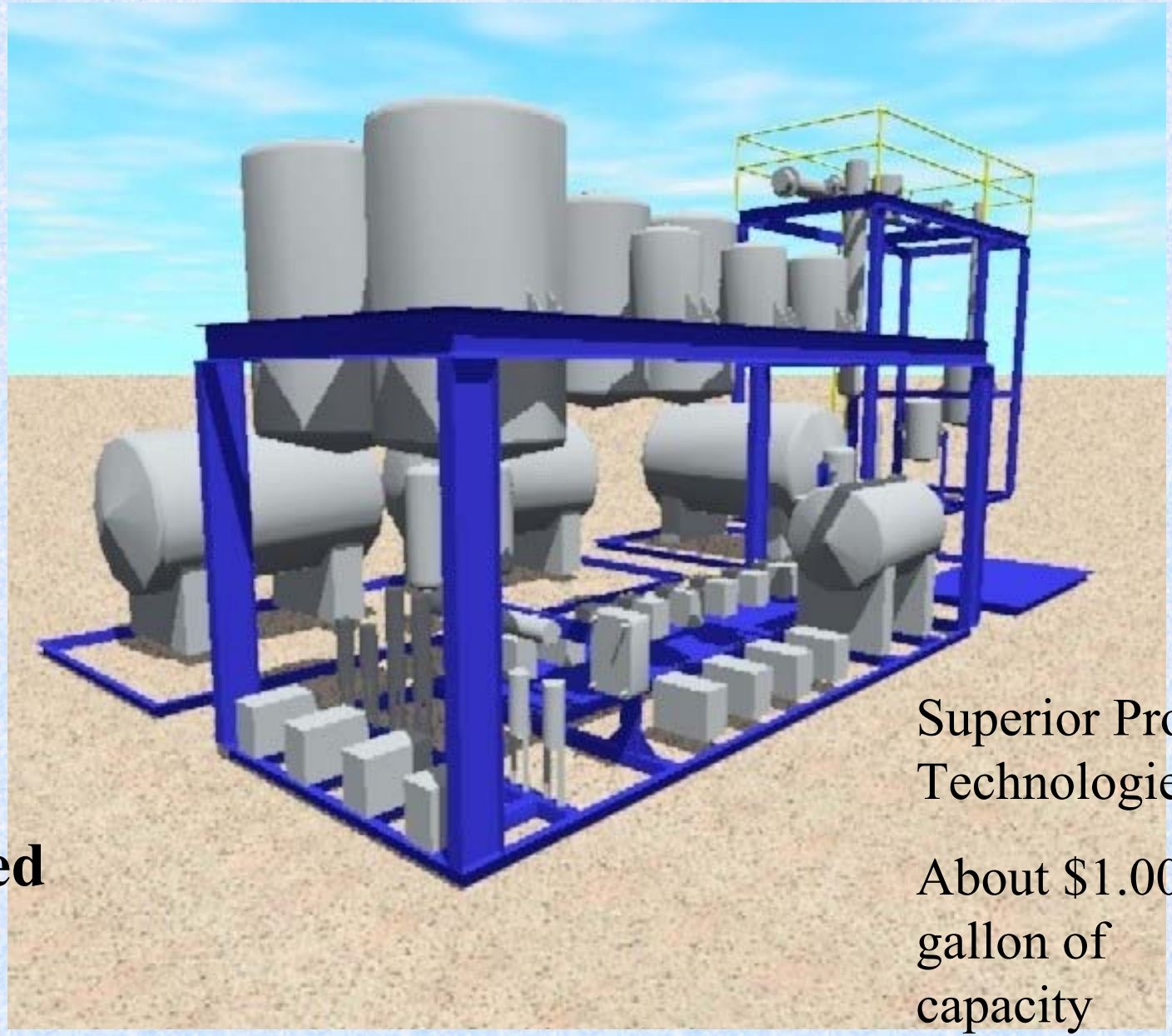
BDI plant cost:

About $1.25 per gallon of capacity



New Trend:

Skid-mounted



Superior Process Technologies:

About $1.00 per gallon of capacity

IWP/Baker capital cost for plant

Estimated capacity = 8 mm gallons per year

Estimated cost at a new facility = $6 mm

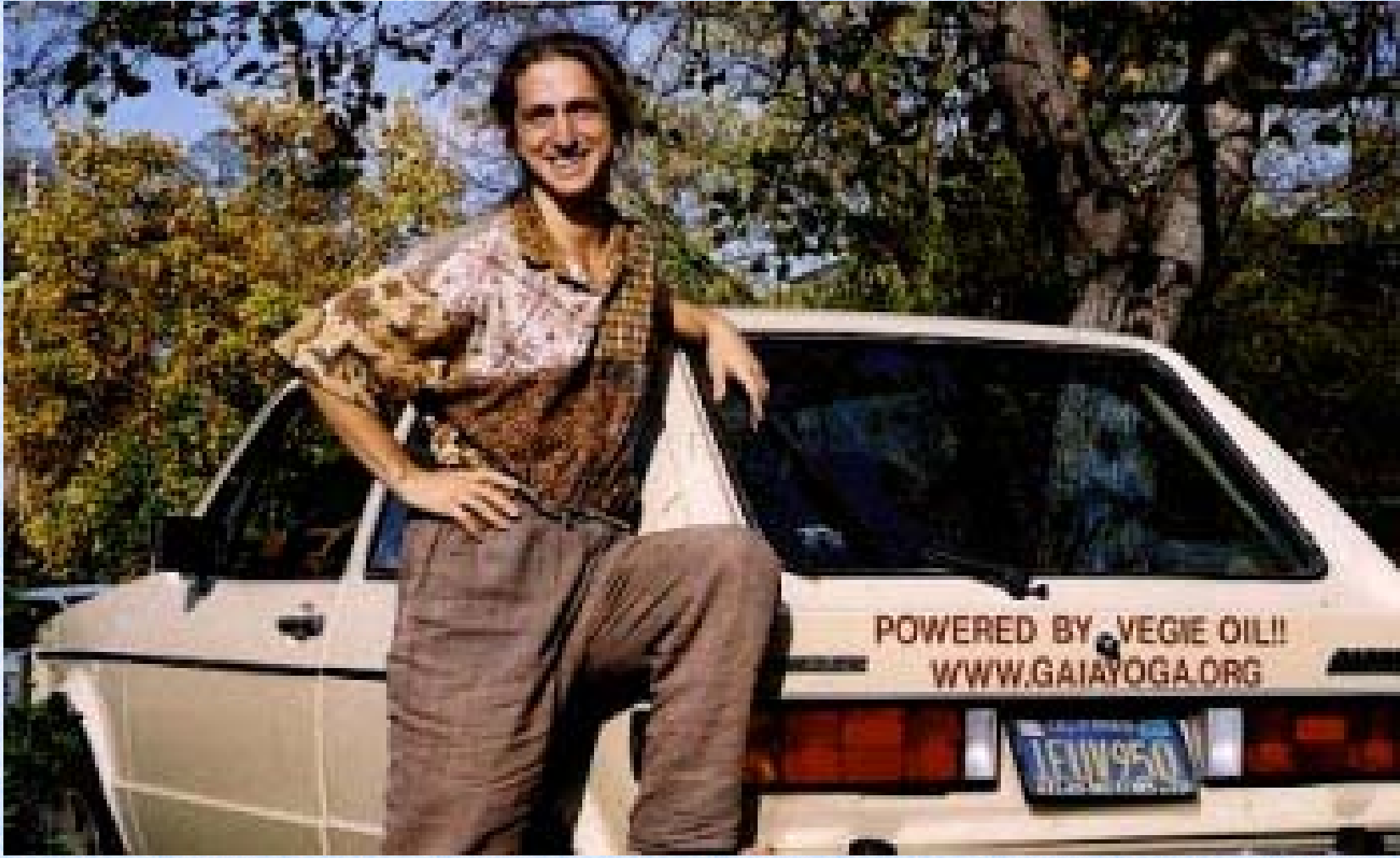
Calculates to $0.75 per gallon of capacity

book

16
SOYBEAN POWERED
This Bus Runs On Soybean Bio-Diesel

Bio Bug

Mustard Bug



Biodiesel Veggie Rabbit

Biodiesel Jetta

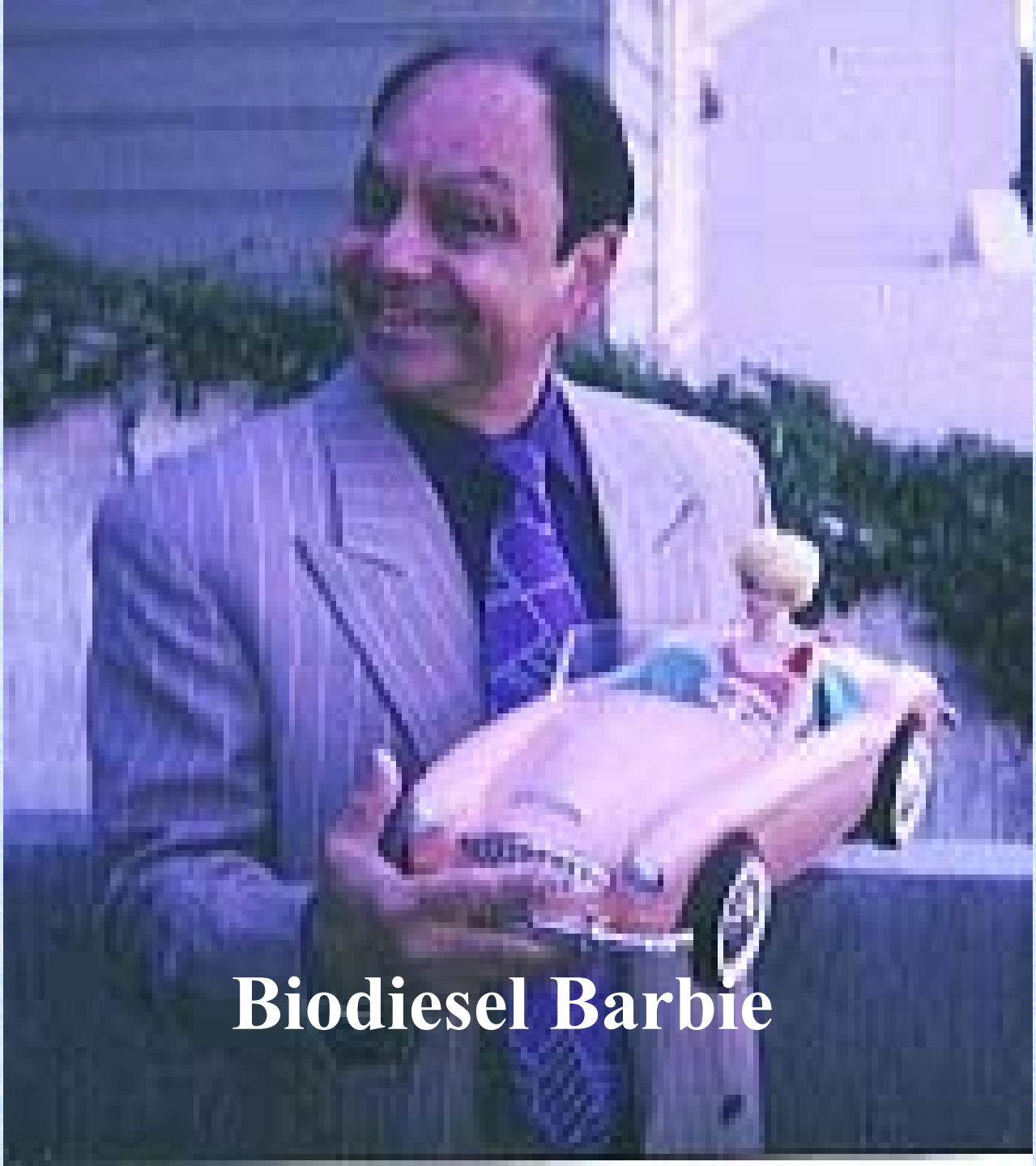
Biodiesel Mercedes

Biodiesel PickUp Truck

Biodiesel Utility Vehicle

Biodiesel Tractor (B&B)

Biodiesel Boat

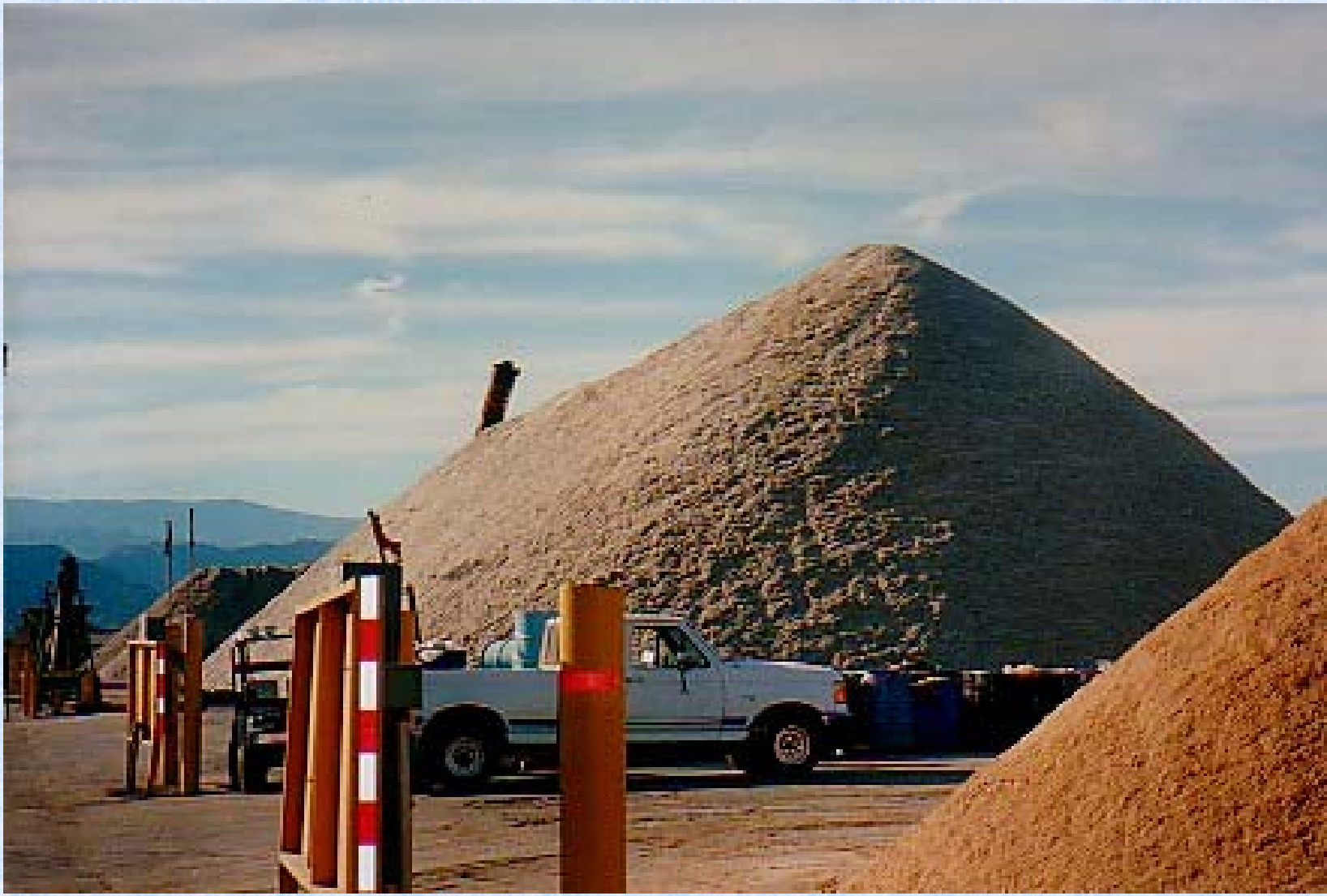

Biodiesel Barbie

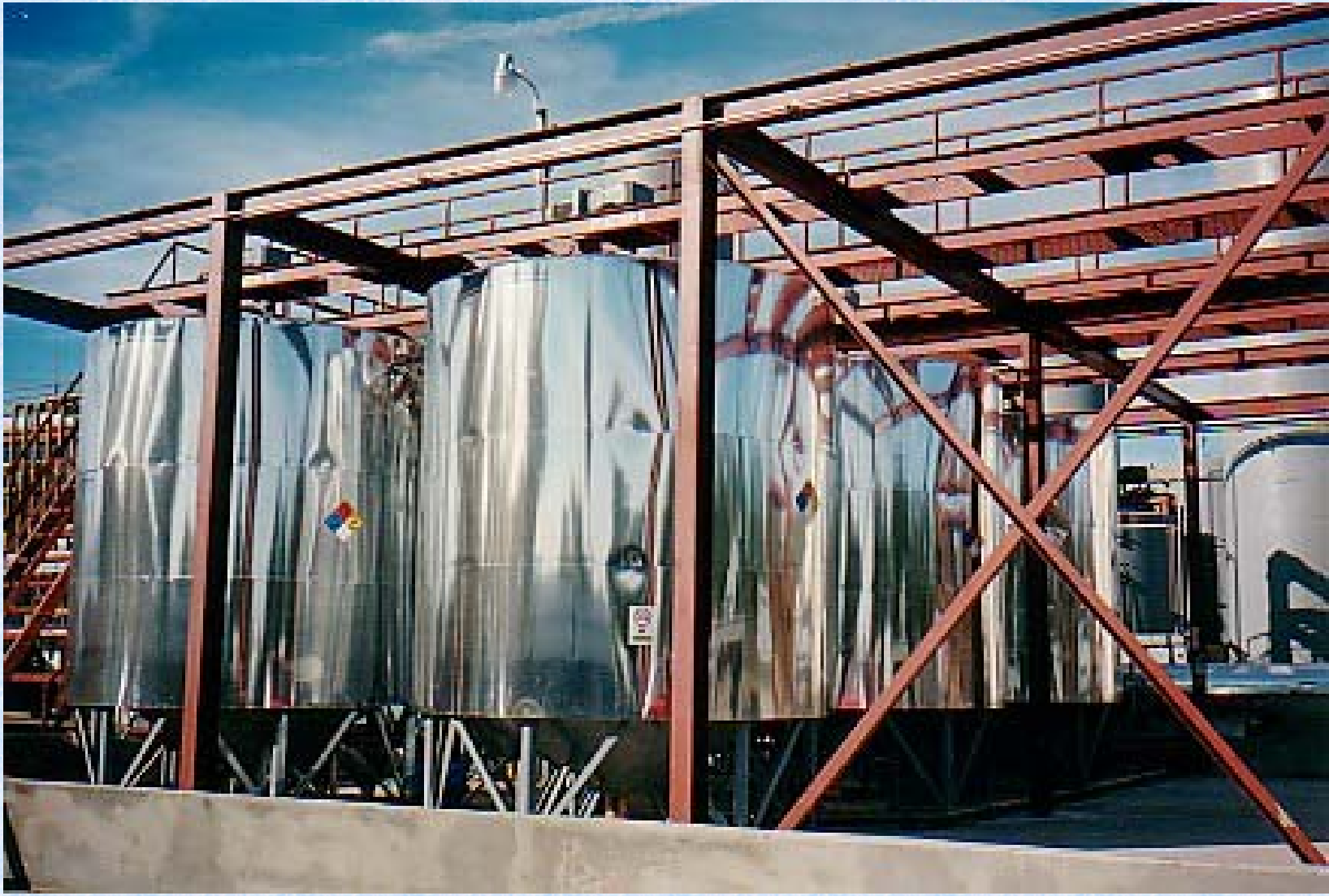
Biodiesel Barbie

IWP/Baker plant in Coachella, CA…

Capacity: 8 mm gal/yr recycled
or: 10 mm gal/yr virgin oils

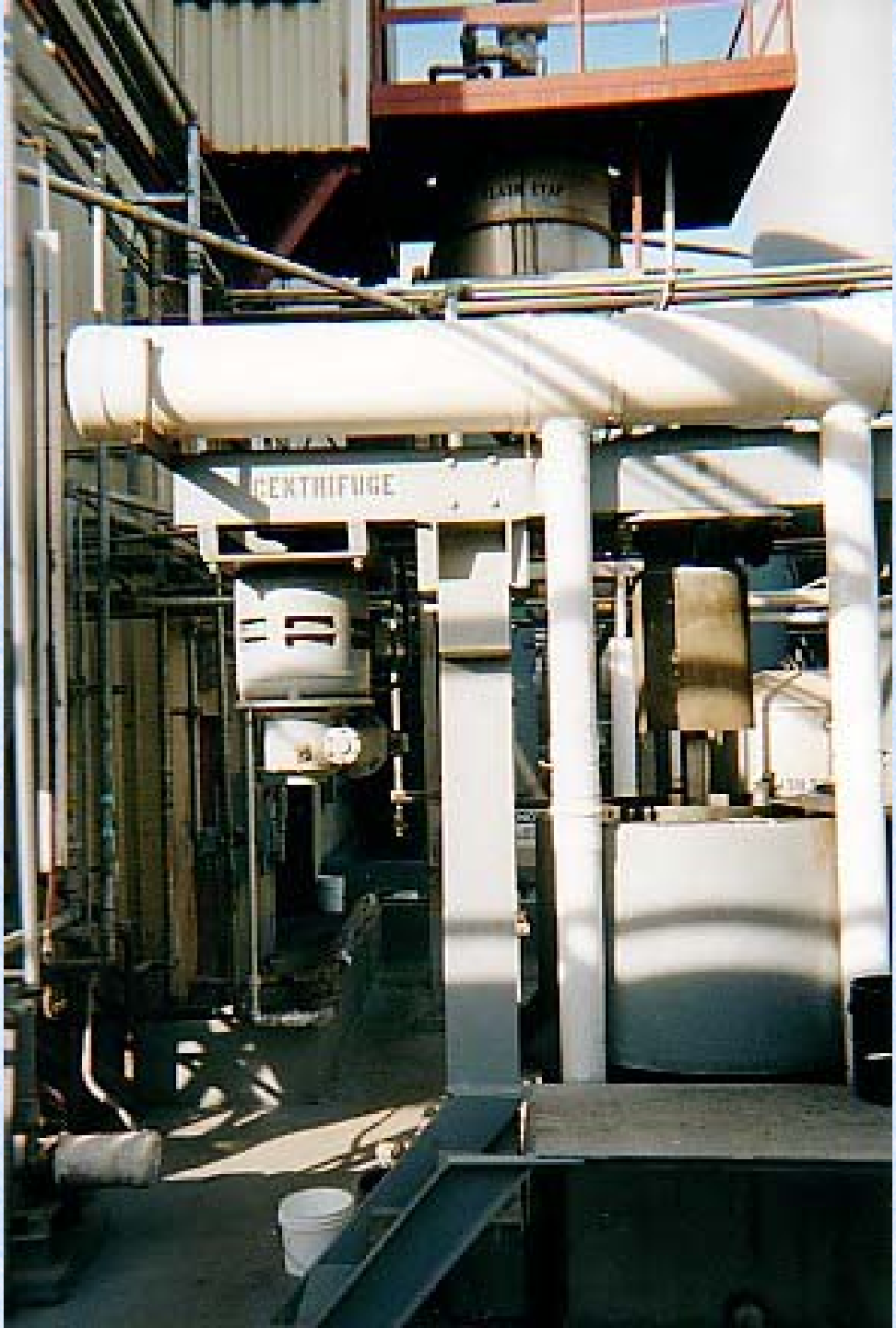
Storage capacity: 180,000 gallons
Present pricing: $1.60/gal FOB T/L or R/C





VEG-OIL
1 2 3 4 5 6
POT A
CAUST

METHOX-METHANOL
1 2 3 4 5 6
METHOX
POT A
CAUST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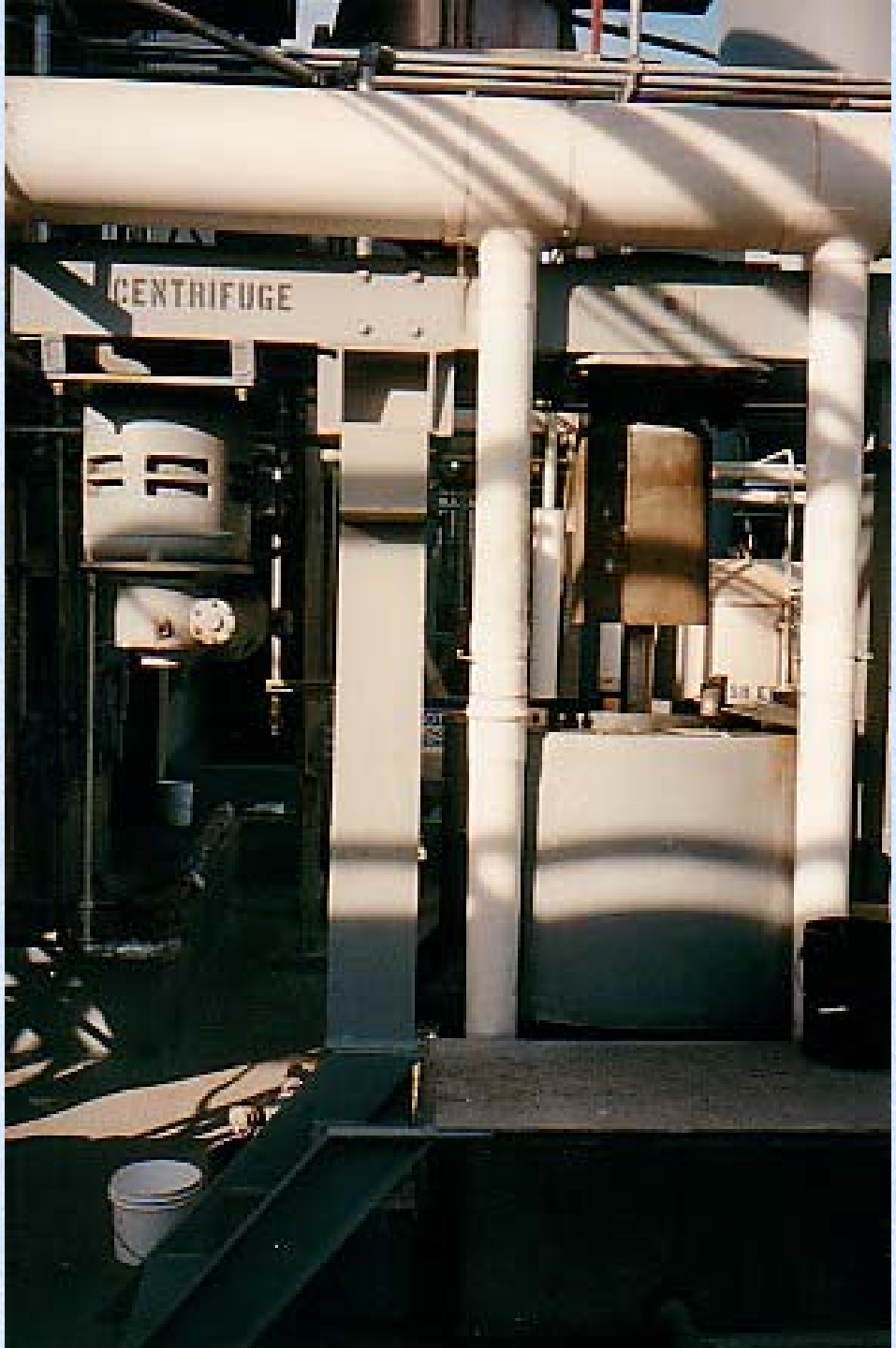
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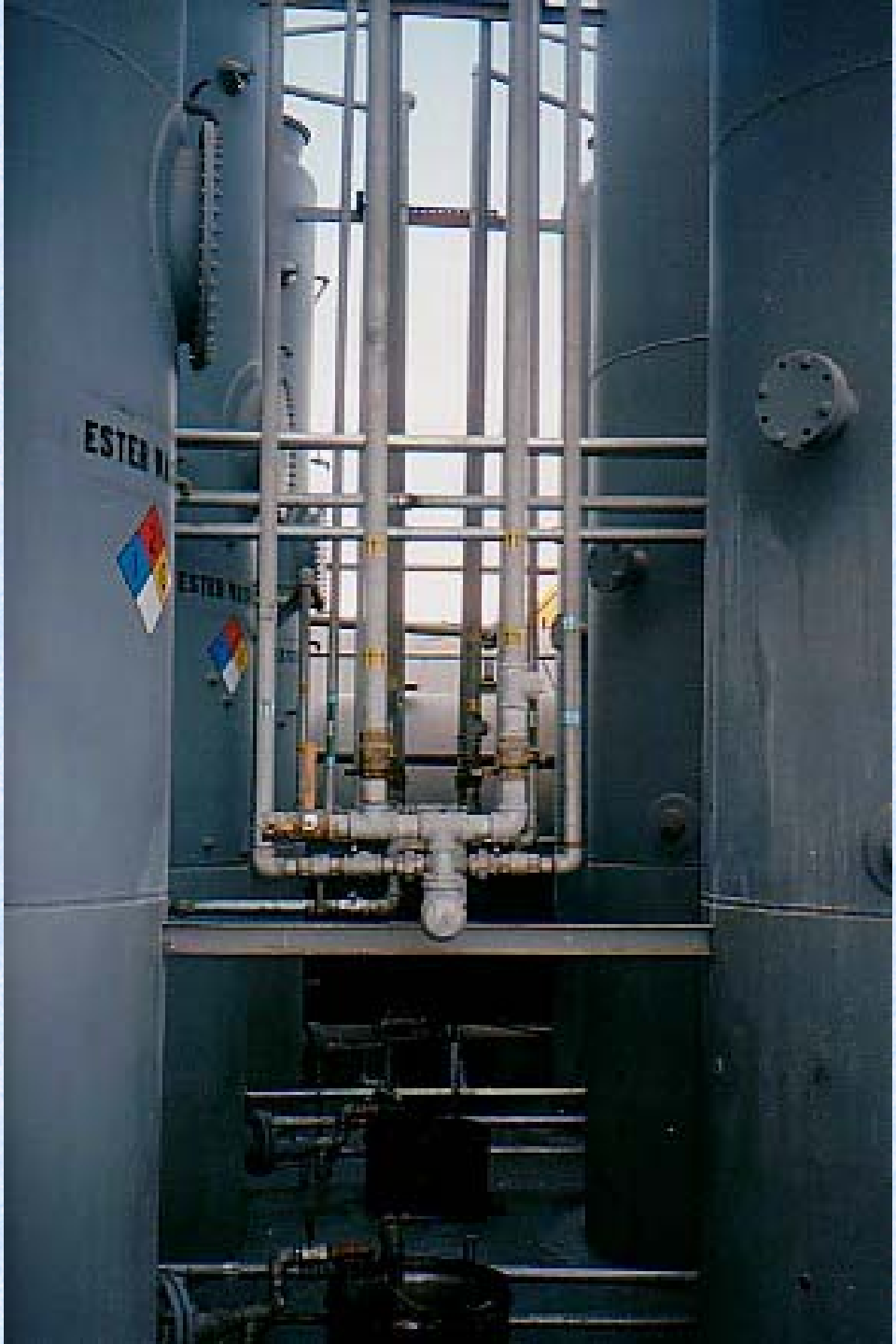
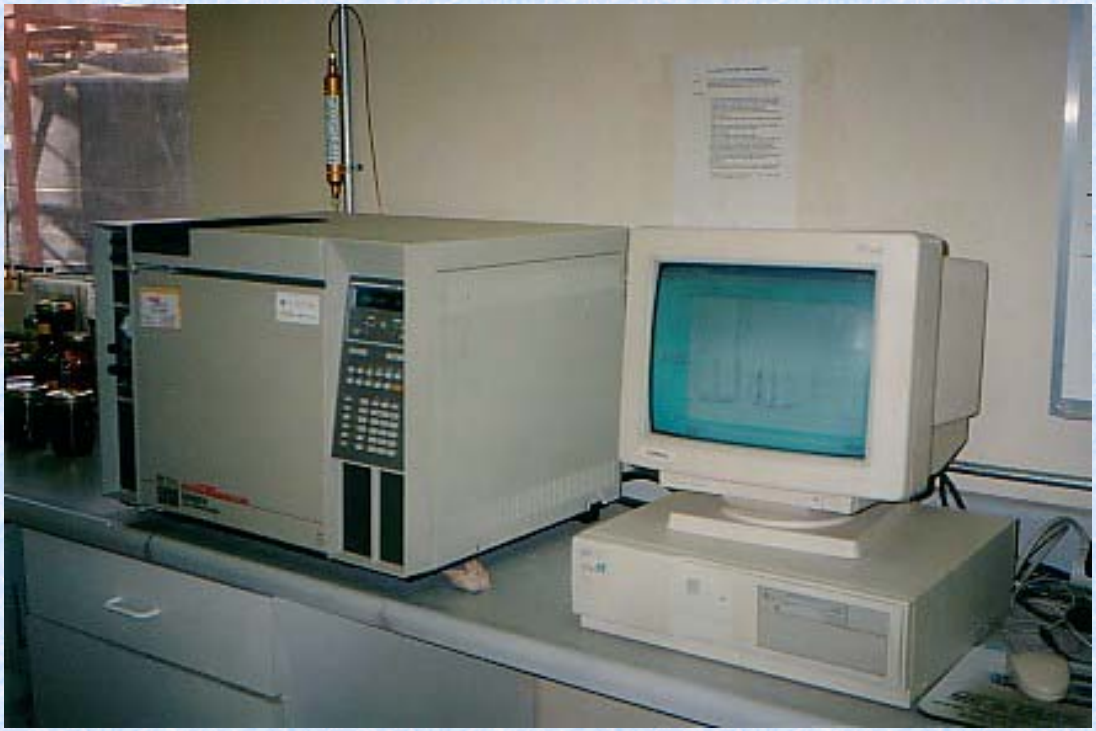

ESTER

GS-6



Recommendations: Quality Issues

- National Biodiesel Board Member
- EPA registered fuel additive
- ASTM standard biodiesel (Williams Lab – glycerin)

Other Players Ideas…

- Smithfield Foods… hog manure – methane – methanol
- Anaerobic Digestion of trap grease to make LNG

What next? Strategy considerations

- The Los Angeles fleet is already using Biodiesel, B2. Cost: Additional cost is only about $500 per month. Plan to go to B20.
- Will need cooperative involvement of the local fuel distributors.
- Processing, cost control, efficiency improvements in the Baker/IWP plant.
- Standardization of Biodiesel production facility by Baker/IWP in preparation for expansion in Washington, Nevada, Massachusetts, New York.