

Excuses! Excuses! *Its Time for A 2nd Opinion*

By:

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For:

**Public Consultation Meeting on Regulatory
and
Non-Regulatory Fuel Activities for 2005**

May 2, 2005

March 17 Documents Imply:

- **CARB can't calculate permeation emissions**
- **The model is wrong**
- **The fleet is wrong**
- **Ethanol costs less**

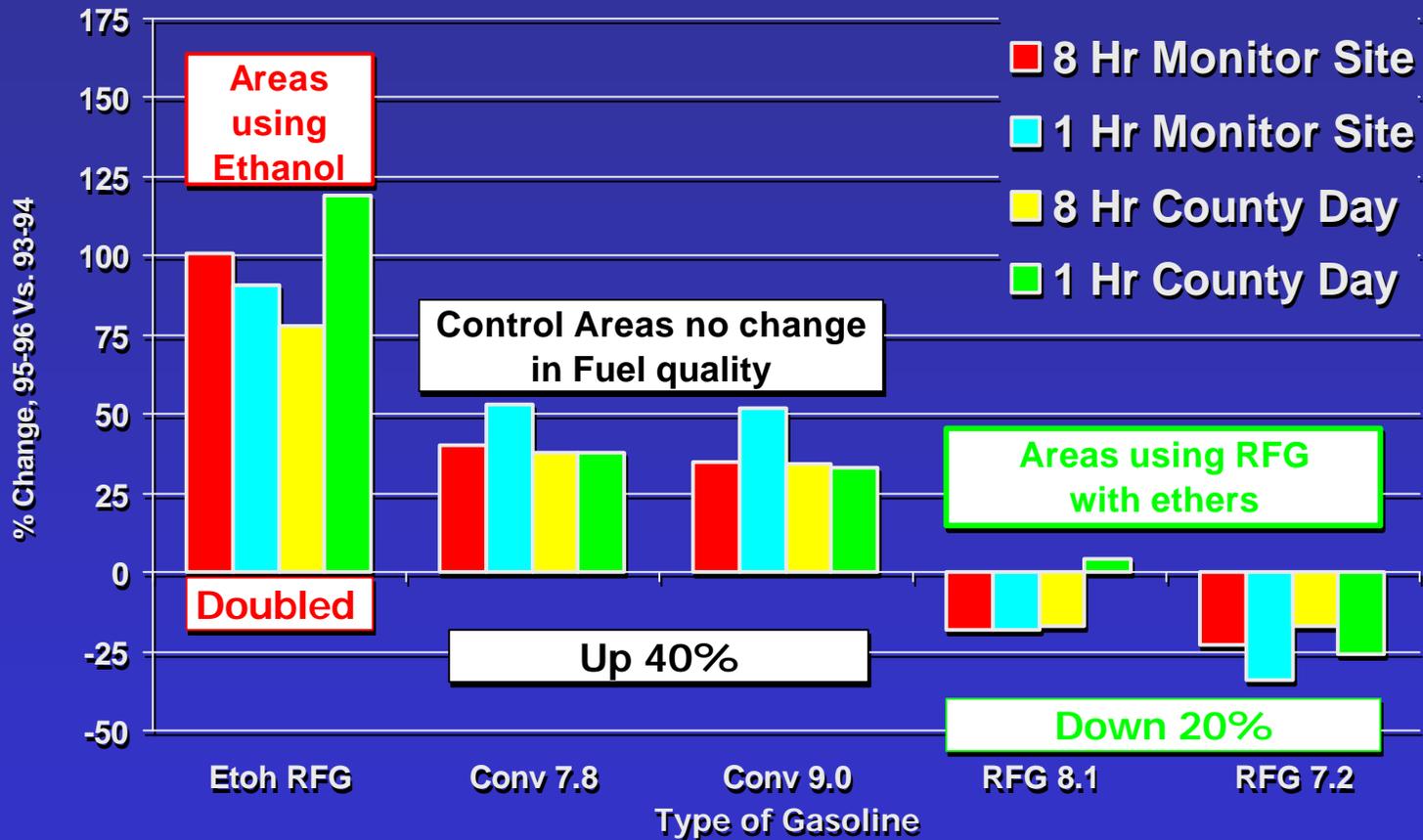
We Need a Reality Check

Real World Ozone Data Indicates Model Missing Ethanol Emissions

- **CARB is right to account for them**
- **Early RFG ozone data indicates missing ethanol emissions**



1993 - 1996 Ozone Data Shows Something *Wrong* with Ethanol Model



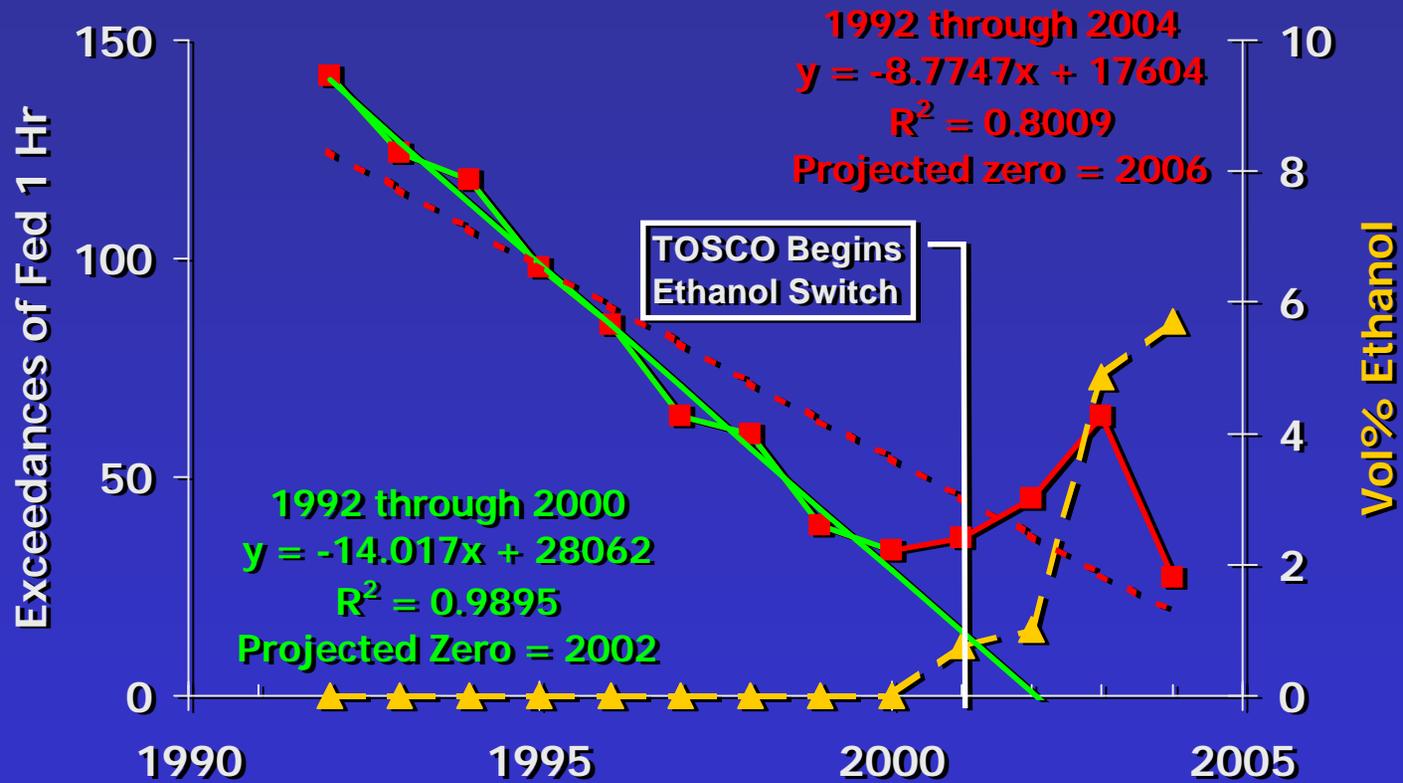
Permeation, NOx & Driveability Explain Disappointment

Real World Ozone Data Indicates Model Missing Ethanol Emissions

- CARB is right to account for them
- Early RFG ozone data indicates missing ethanol emissions
- More recent CaRFG ozone data indicates ethanol **not** living up to “clean fuel” claims



Switch to Ethanol Delayed SCAB Zero Exceedances by 4 Years



Real World Ozone Data Indicates Model Missing Ethanol Emissions

- **CARB is right to account for them**
- **Early RFG ozone data indicates missing ethanol emissions**
- **More recent CaRFG ozone data indicates ethanol not living up to “clean fuel” claims**
- **Fuels and cars should not require big changes to use “clean” components**
- **Performance outweighs calculations**



Other Ozone Factors

In 2003 changes in

- NOx
- Permeation
- Driveability
- Commingling
- Bad Weather

Outweighed

- Fleet evolution

In 2004 changes in

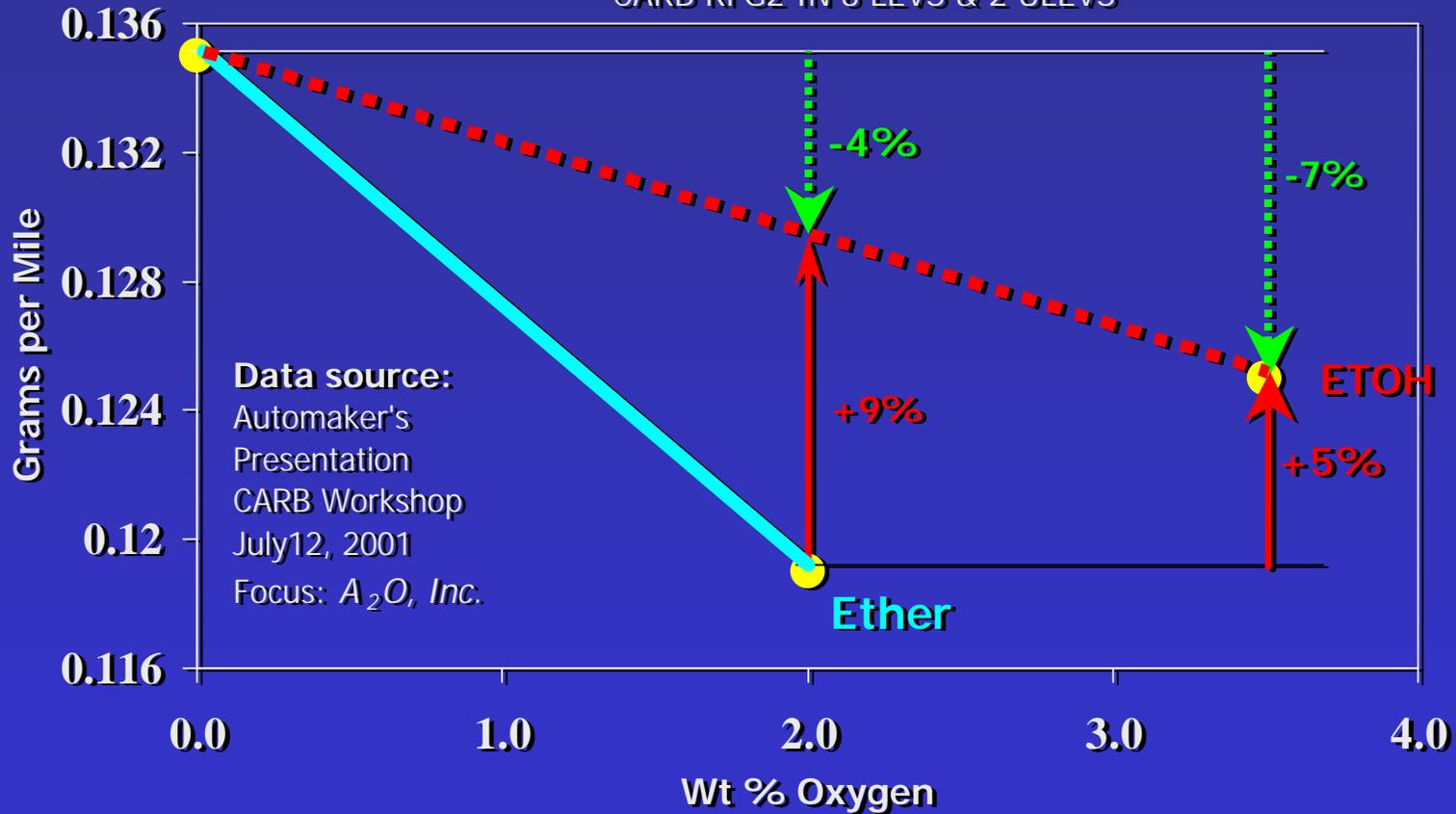
- NOx
- Permeation
- Driveability

Outweighed by

- Good weather
- Negligible commingling
- Fleet evolution

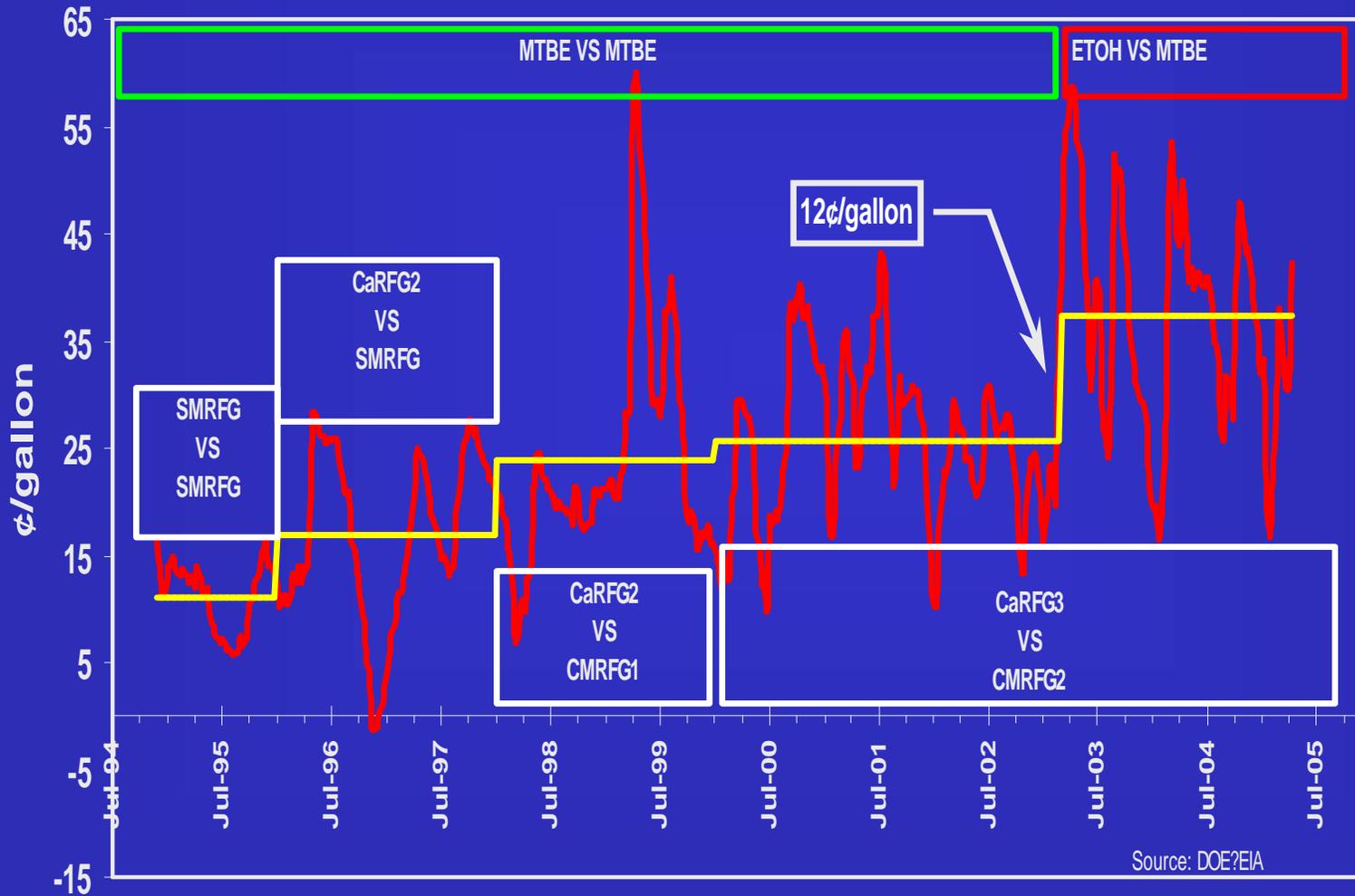
The Rest of the Story on NOx Emissions Vs Oxygenate Content

CARB RFG2 IN 8 LEVS & 2 ULEVS



Alcohol More NOx Than Ether!!!

West Coast Minus Gulf Coast Retail RFG Price (Ethanol switch costs CA Consumers \$1.8 Billion per year)



It is *wrong* for Californians
to pay \$1.8 billion per year
for poorer air quality

Ethanol must change to
fit the fleet we have

Time to Reconsider ETBE

ETBE Benefits

- **Less emissions from:**
 - **Gasoline**
 - Permeation, (bigger molecule)
 - NOx (ethers cause less NOx emissions)
 - Driveability debit (alcohol problem)
 - Generally better properties (more dilution)
 - **Ethanol distribution**
- **More gasoline supply**
- **Lower retail prices**
- **Same ethanol demand**



Replacing Ethanol with ETBE Increases Gasoline Supply 10 to 18%

Butane for RVP

- -5.7% ETOH
- +14.4% ETBE
- +2.0% Butane
- 10.7% more gaso
that is better than
it has to be

Pentane for RVP

- -5.7% Ethanol
- +15.3% ETBE
- +8.5% Pentane
- 18.1% more gaso
that is better than
it has to be

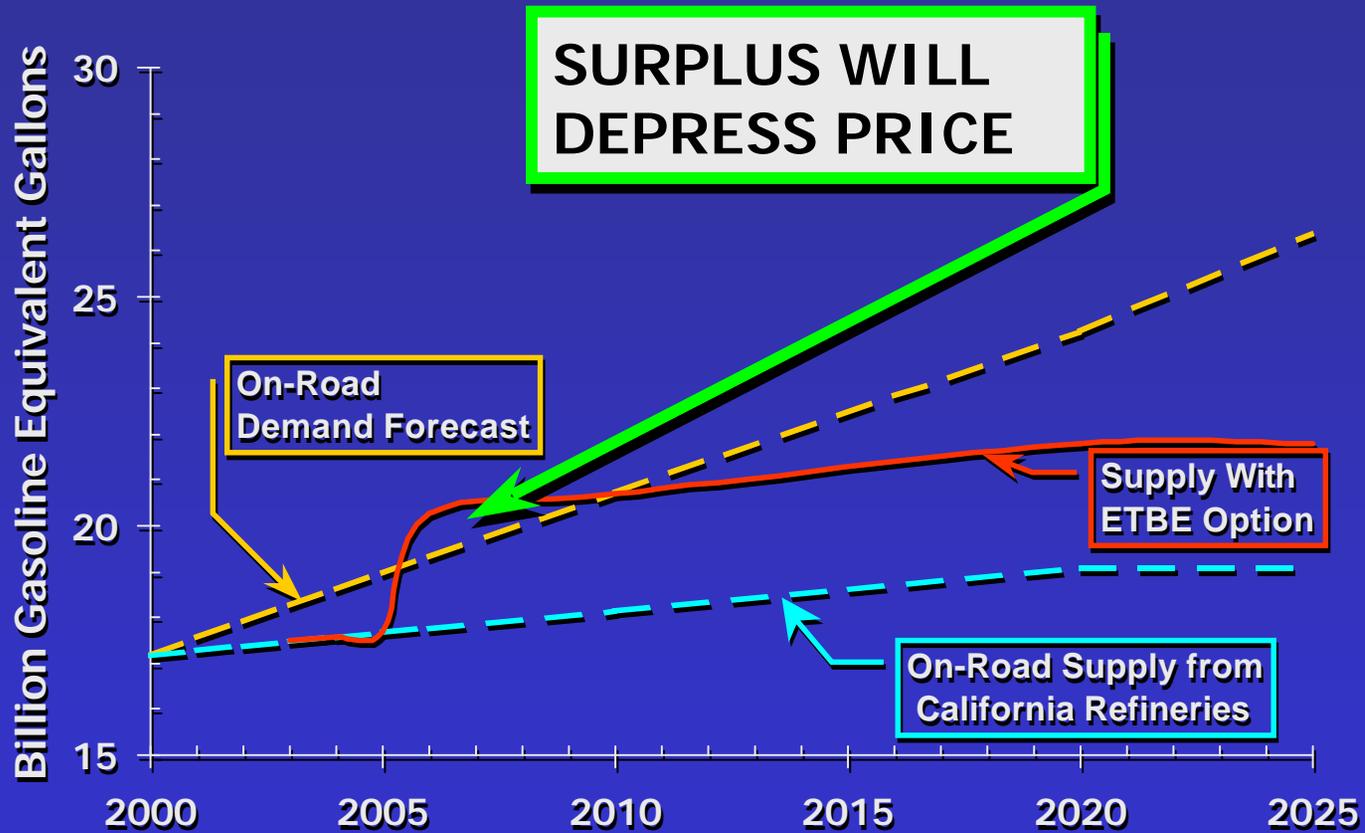
BIG Supply/Demand/Price IMPACT!

Replacing Ethanol with ETBE & Light Paraffin Improves ALL Properties

Property	Base Case	Butane Case	Pentane Case
RVP, psi	6.9	6.9	6.9
T50	213	201	201
T90	305	297	298
AROM	25.0	22.6	21.2
OLEF	6.0	5.7	5.3
OXYGEN	2.0	2.0	2.0
SULFUR	20	18	17
BENZENE	0.79	0.71	0.67
RM/2	88.0	89.5	89.3

Surplus Quality Means More Supply Probable

Why California Needs ETBE



Source: Base Supply/Demand from CEC/ARB AB2076 Report.
ETBE option from **A₂O**.

Compliance Models Indicate ETBE Option Reduces Emissions

Pentane Case

- NOx -1.3%
- Ex. THC -6.2%
- Tot THC+CO -3.9%
- Pot TOX -10.6%

Butane Case

- NOx -.8%
- Ex. THC -5.1%
- Tot THC+CO -3.2%
- Pot TOX -7.9%

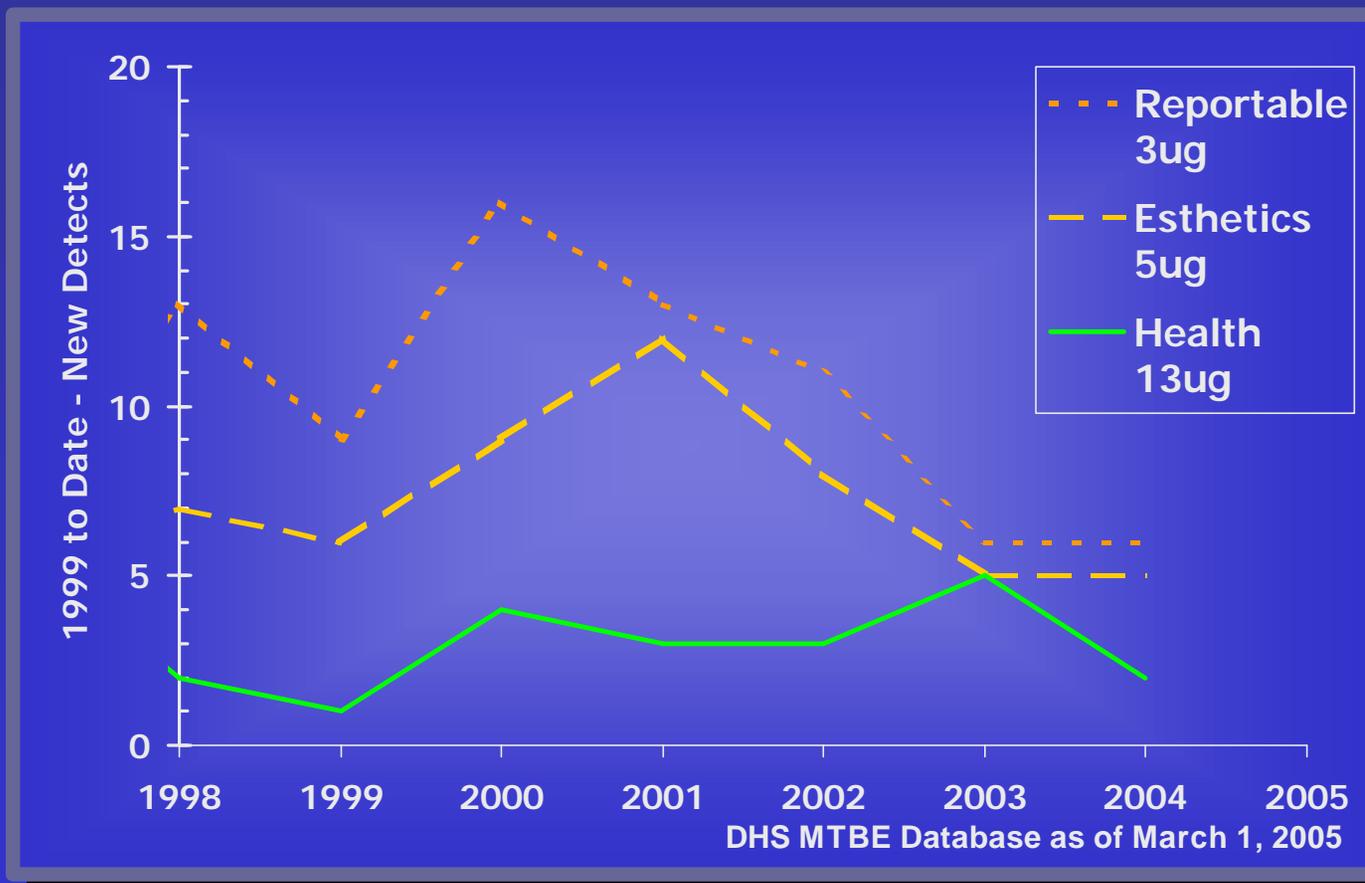
Predictive Model

Complex Model with NOx, Permeation, Driveability Fixes

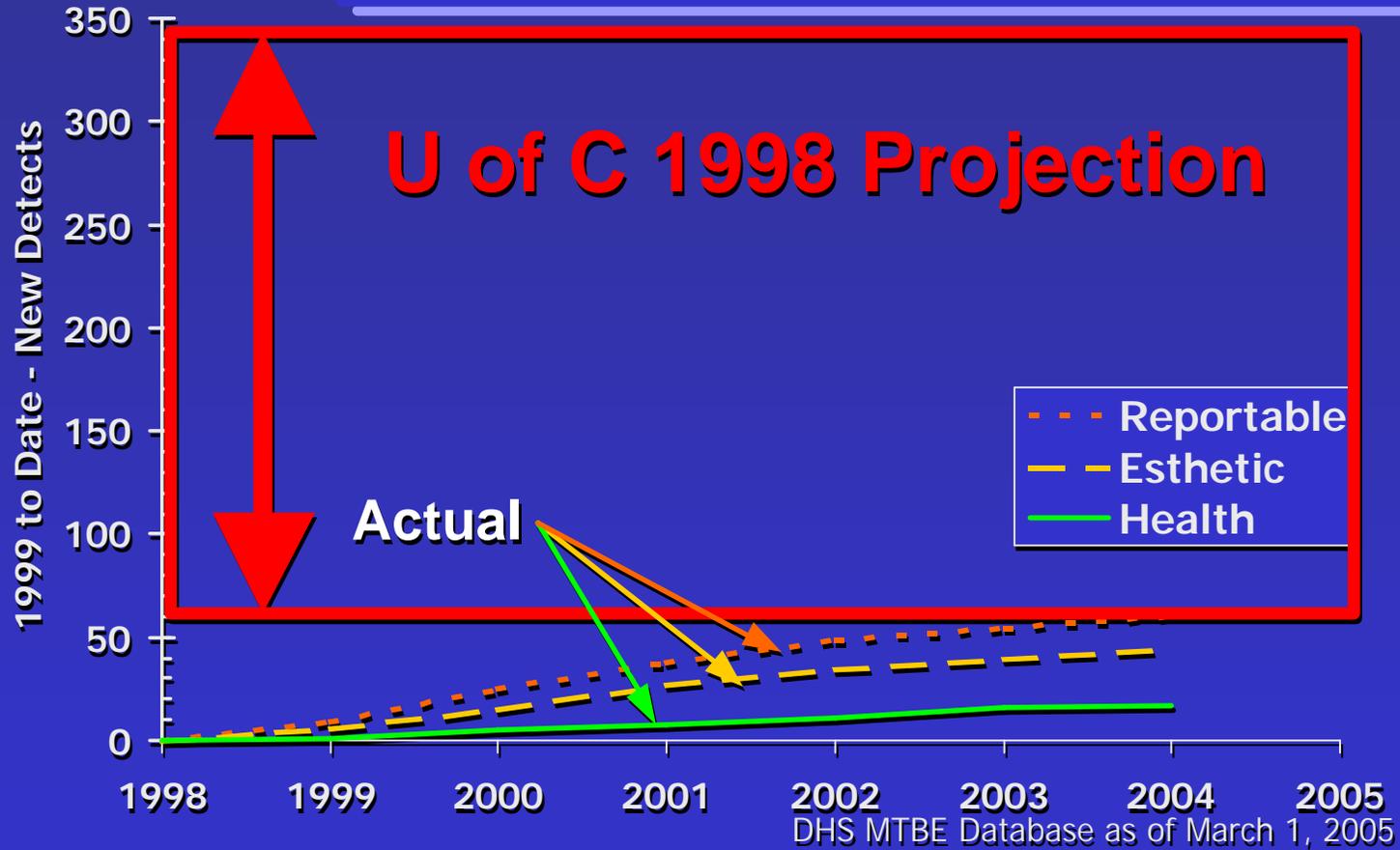
- NOx -8.9%
- VOC -12.5%
- Toxics -9.9%
- CO -3.7%

- NOx -8.6%
- VOC -11.7%
- Toxics -7.8%
- CO -2.3%

MTBE in Water Detects Are Falling



Water Issue Negligible Relative to U of C 1998 Projection



And ETBE 72% Less Soluble Than MTBE

Water Costs do *NOT* Justify \$1.8 Billion More per Year Fuel Cost

- U of C projected annual remediation costs at \$340 million to \$1.5 billion
- Industry experts projected \$15 to \$143 million dollars
- Actual experience indicates low projection more accurate
- ETBE 72% less soluble than MTBE

Less Ozone. Less Cancer. Less Cost.
Why Not?

- **Refining industry**

- Fear of 'Shercroppers'
- Margin collapse

- **Ethanol industry**

- Lower gasoline price means lower ethanol price
- Can't admit defects

**Air Board and CEC must intercede
on California consumer's behalf!**