

**California Air Resources Board  
California Energy Commission**

**Alternative Diesel Fuels  
Symposium**

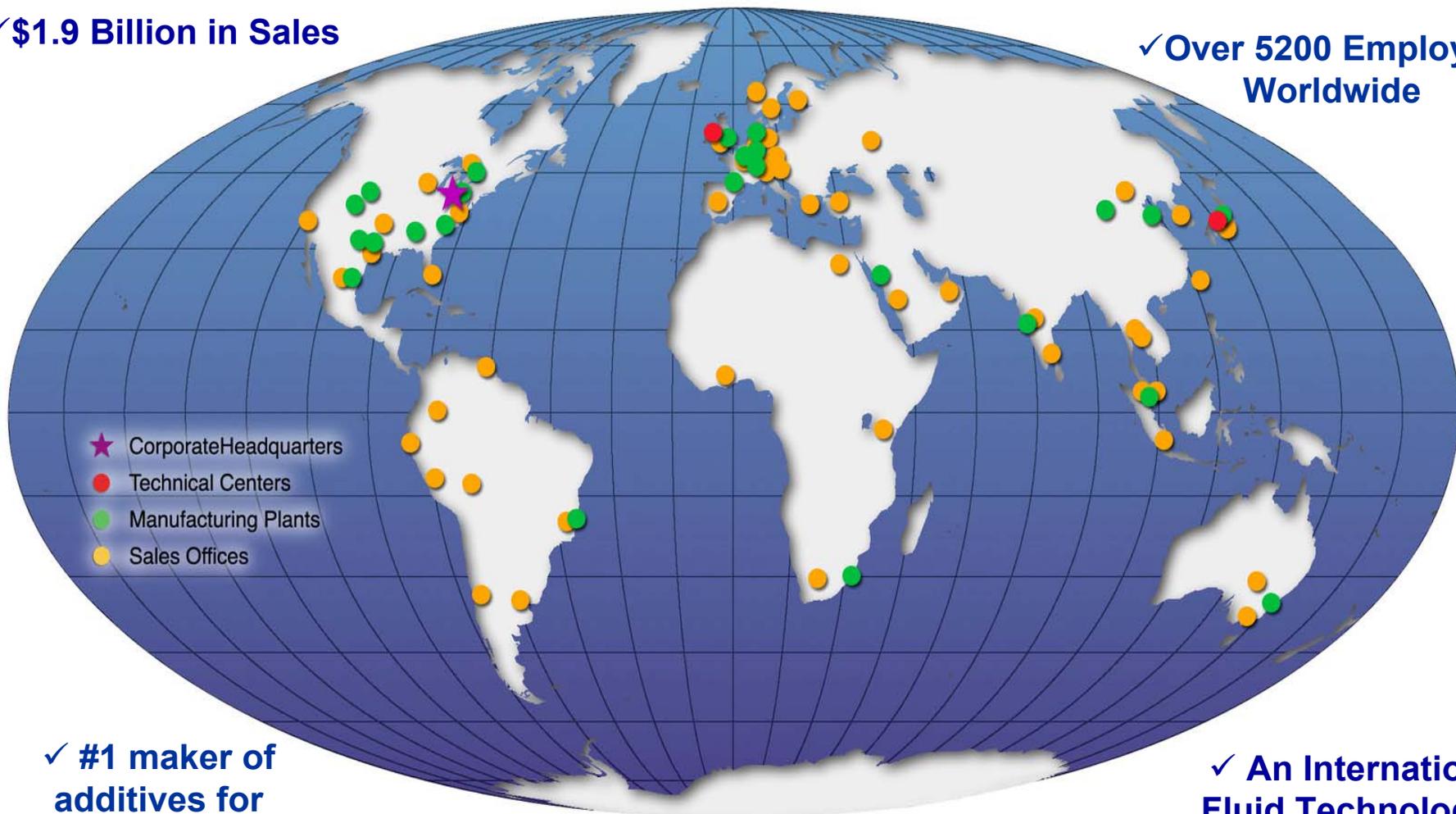
**August 19-20, 2003**

celebrating  
**75** years

# Lubrizol: Corporate Profile

✓ \$1.9 Billion in Sales

✓ Over 5200 Employees Worldwide



✓ #1 maker of additives for lubricants and fuels

✓ An International Fluid Technologies Company

# Our Vision:

Fluid

For a  
**better**  
world

Technologies



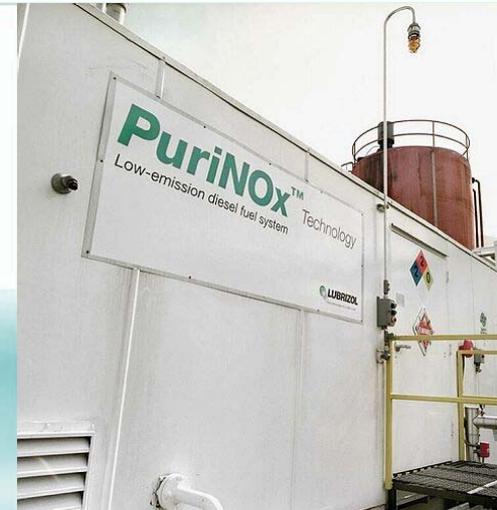
Toward  
a **better**  
world ...



Last  
longer

Work  
better

Benefit  
the  
environment



# PuriNOx™ Technology

*Low-emission diesel fuel system*



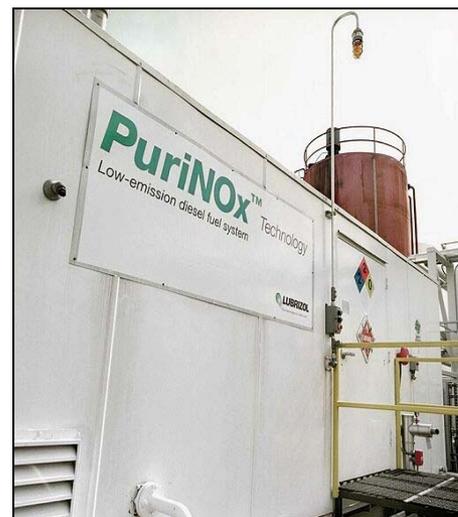
# PuriNOx™ Technology

**PuriNOx™  
Additive  
Package**

**Water**

**Diesel  
Fuel**

**Seasonal or  
Other  
Components**



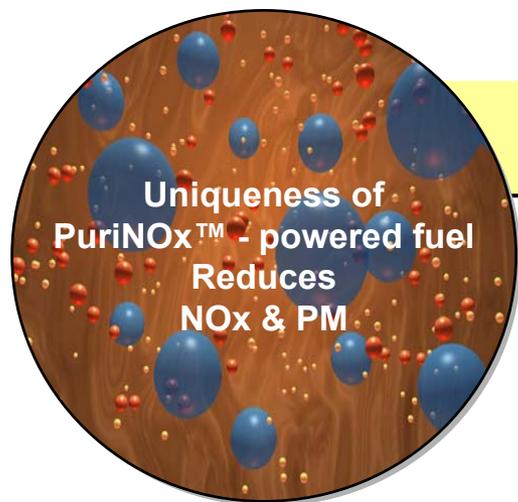
**PuriNOx™  
Blending Unit**

**=**



**PuriNOx™ -  
powered fuel**

# PuriNOx™ - Powered Fuel



**Reduces NOx by up to 30% and  
Particulates by up to 65%**

**Tested and Confirmed Energy  
Savings of 1-3%**

**Used Immediately with Minor  
Maintenance (Fuel Filter Change) by  
Dispensing Fuel Directly into Vehicle  
Tanks**

**Uses Existing Storage, Distribution and  
Fueling Facilities with Minor  
Modifications**

**Handles Like Diesel Fuel  
But with defined stability parameters**

# Emission Reduction Summary

	<b>NOx</b>	<b>Particulates</b>
LZ Claim	Up to 30%	Up to 65%
Average Dynamometer	12.6%	46.4%
Average In-Use	26.6%	45.3%
CARB	14%	63%
AIR Inc.	19%	54%
US EPA	9 – 20%	16 – 58 %

# PuriNOx Technology - California



Sacramento  
PuriNOx Fuel Marketed by Ramos Oil Company  
5 Million Gallons Annual Capacity



25 Million Gallons  
Annual Capacity



Los Angeles  
Proformix<sup>®</sup> Fuel Manufactured by Chevron  
Marketed and Distributed by  
General Petroleum  
5 Million Gallons Annual Capacity

# End-Use Applications

*Emission Sensitive*

## Intensive Use Applications

Centrally Fueled  
Equipment

On-Highway

- Pick Up & Delivery Fleets
- Urban/School Buses
- Waste Management Fleets

Off-Highway

- Mining
- Construction
- Stationary Power
- Port

Others: Agriculture, Locomotive, Marine

*Emission Sensitive*

*Emission Sensitive*

*Emission Sensitive*

# Intermodal Equipment Retrofits



# California Applications

**Rail**



**School Buses**

**Marine**



**Off Road**



**Municipal Transit**



**Standby Equipment**



**Garbage Trucks**

# PuriNOx™ Fuel Regulatory Credentials

Credential	Date Obtained
<b>U.S. EPA Fuel Registration – PuriNOx™ All Weather Blend Fuel</b> Assessed health effects of PuriNOx™ all weather blend fuel.	July 15, 2003
<b>U.S. EPA Emissions Verification</b> Established on- and off-road emission verification values for PuriNOx™ fuel including NOx, PM, HC and CO.	December 30, 2002
<b>U.S. EPA Fuel Registration – PuriNOx™ Summer Blend Fuel</b> Assessed health effects of PuriNOx™ summer blend fuel.	October 2, 2002
<b>California Air Resources Board (ARB) Verification</b> Verified that PuriNOx™ fuel reduces NOx by 14% and PM by 63%.	January 31, 2001

*PuriNOx™ Fuel is currently the only diesel emulsion to be formally verified and registered by U.S. EPA*

# California Regulatory Credentials

## ARB Verification Stationary Source Division (Voluntary Markets)

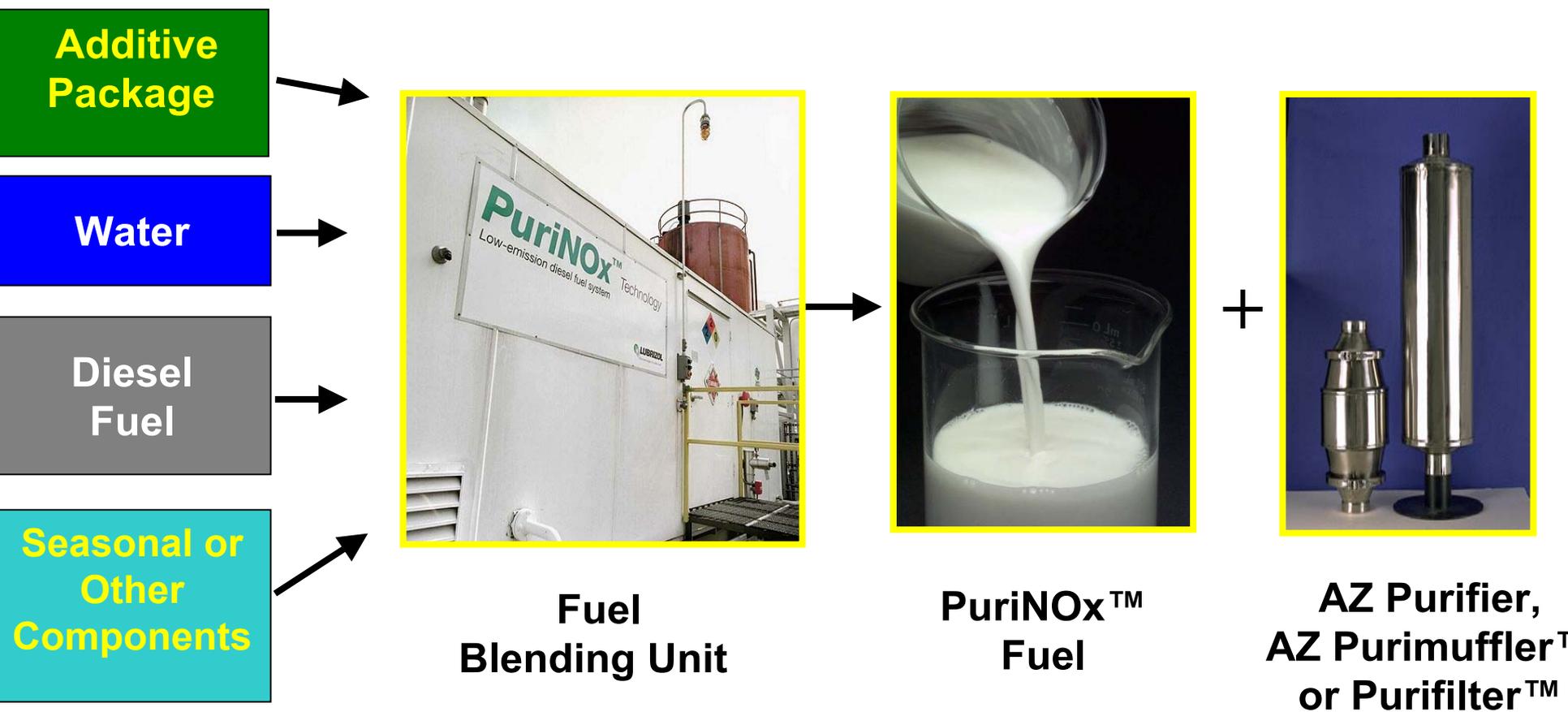
- 14% NO<sub>x</sub> and 63% PM
- No net increase in toxic emissions
- Hydrocarbon emissions are at least 25% lower than any applicable diesel vehicle standard

## ARB Verification Mobile Source Division (Regulated Markets)

### Lubrizol Technology

- **February 2003 -- ARB confirmed emission reductions of 20% NO<sub>x</sub> and  $\geq$ 50% PM for specific off road applications.**

# PuriNOx Synergies with Aftertreatment An Integrated Performance System



## **PATH FORWARD**



**The PuriNOx Technology has clearly demonstrated that Emulsified Diesel is a valid, long term emission control strategy.**

**As such, it is pioneering what we believe will become an industry.**

**Question: How best to make it a permanent and integral element of California's Clean Air Initiatives?**

# **PATH FORWARD**

## **VERIFICATION**



- **Balancing the cost effectiveness of verification processes and the obligation to ensure technologies do what they say they do is not easy.**
- **Two or more separate verification processes, whatever their cost and rigor, cannot be termed cost effective, absent reciprocity.**

## PATH FORWARD



## MOBILE EMISSIONS TRADING



**The challenge is to transform environmental value into economic value.**

**Mobile Emission Credit Trading is a viable path to assure surplus emission reductions are achieved and centrally fueled end user fleets derive value from using cleaner technologies.**

# **Preserving the Long-Term Role of “Alternative” Diesel Fuels**

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## **Ideas For Consideration**

- **Reciprocating Cost-Effective State And Federal Verification Processes.**
- **Enhance And Promote Existing Mobile Source Emission Credit Trading Mechanisms.**