

**California Air Resources Board
California Energy Commission**

**Alternative Diesel Fuels
Symposium**

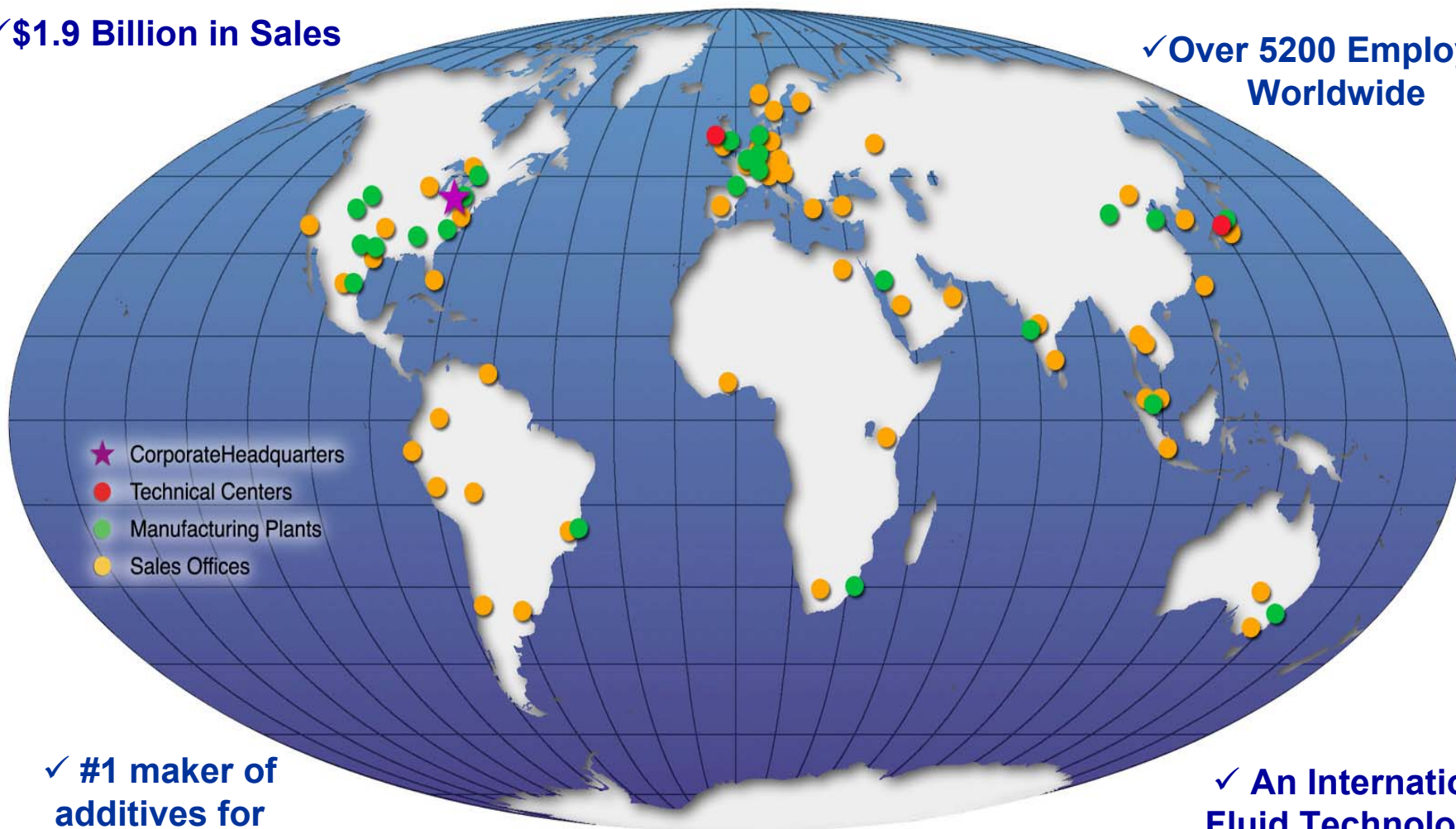
August 19-20, 2003

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

A photograph of a dandelion seed head against a clear blue sky with some light clouds. The seed head is in the foreground, and the background shows green grass and more dandelions.

Benefit
the
environment



PuriNOx™ Technology

Low-emission diesel fuel system



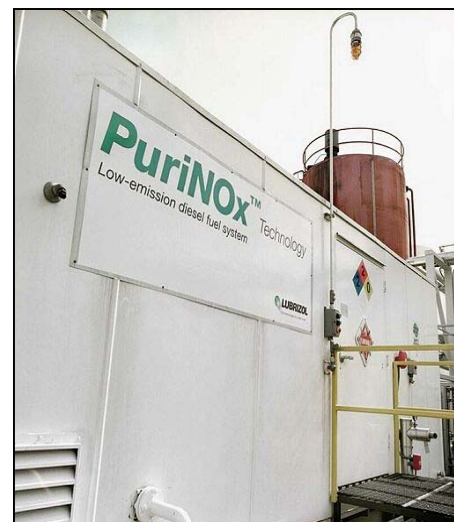
PuriNOxTM Technology

**PuriNOxTM
Additive
Package**

Water

**Diesel
Fuel**

**Seasonal or
Other
Components**



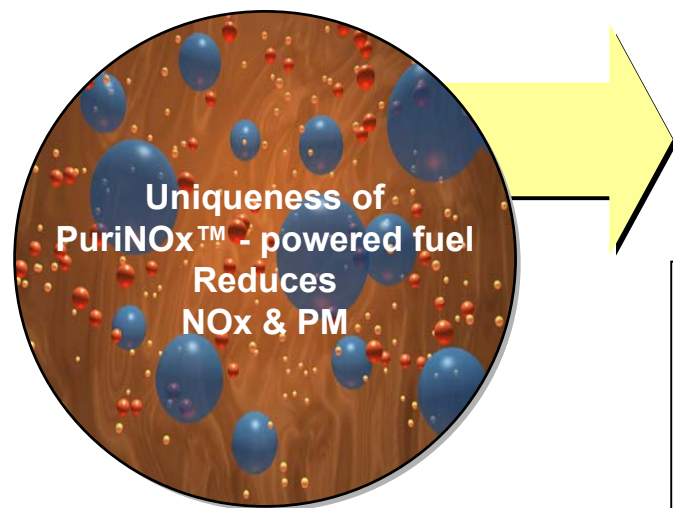
**PuriNOxTM
Blending Unit**

=

**PuriNOxTM -
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**

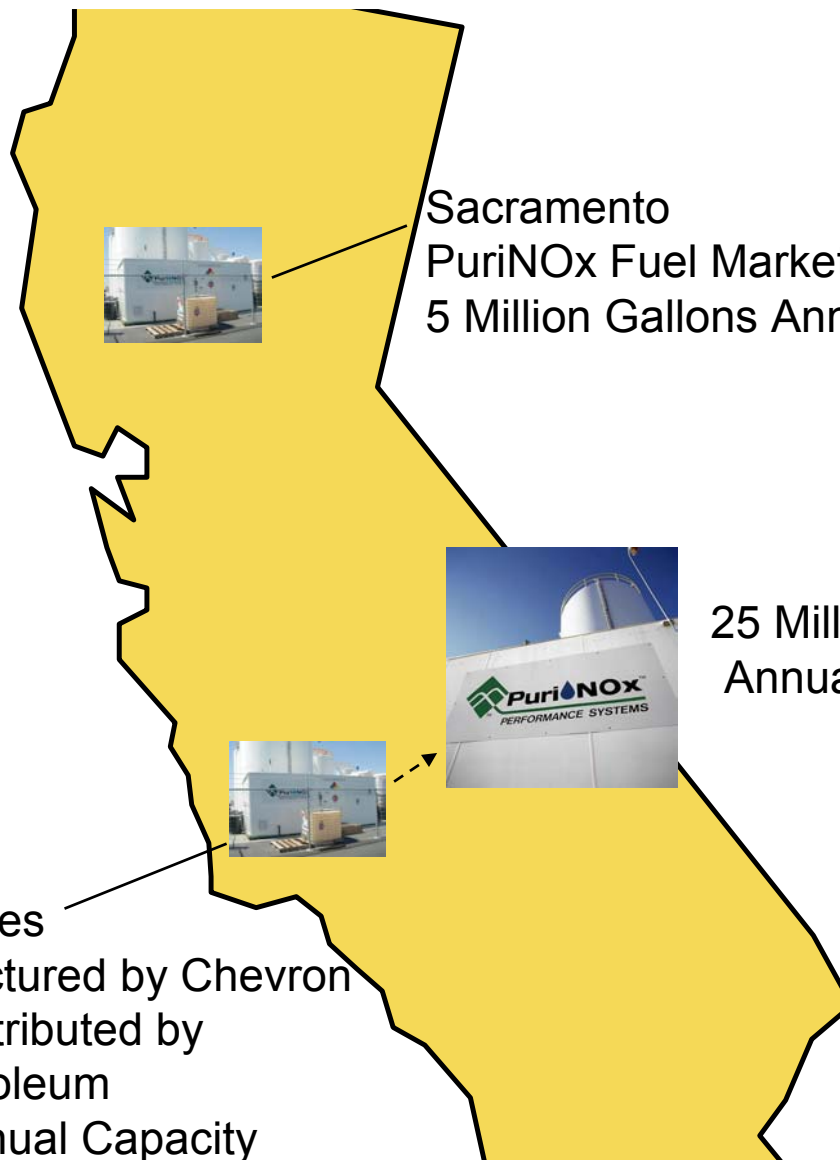
**Uses Existing Storage, Distribution and
Fueling Facilities with Minor
Modifications**

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

Emission Reduction Summary

	NOx	Particulates
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® 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

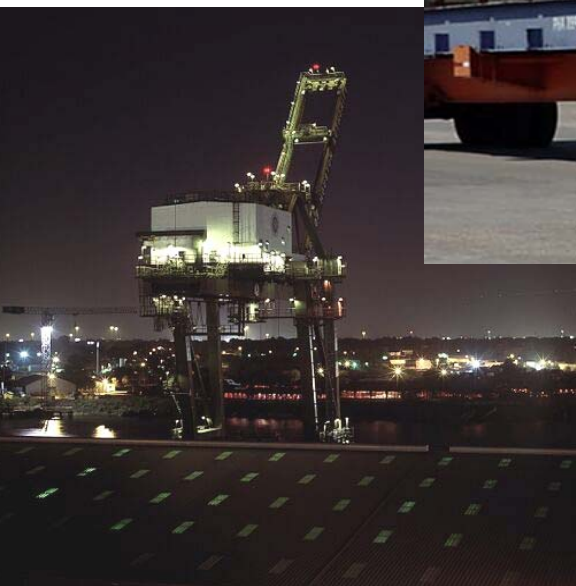
Others: Agriculture, Locomotive, Marine

Emission Sensitive

Emission Sensitive

Emission Sensitive

Intermodal Equipment Retrofits



California Applications

Rail



School Buses



Marine



Off Road



Municipal Transit



Standby Equipment



PuriNOx™ Fuel Regulatory Credentials

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

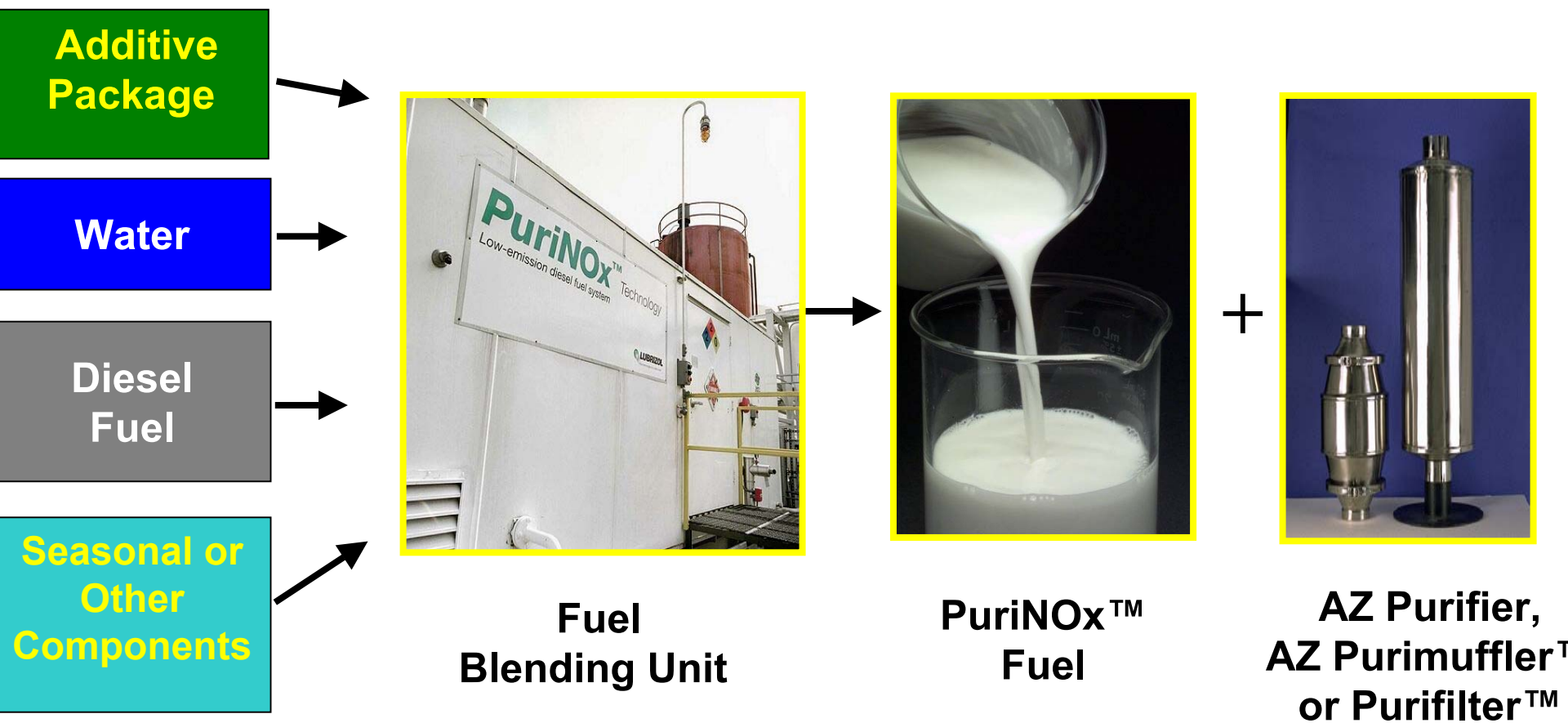
PuriNOx™ Fuel is currently the only diesel emulsion to be formally verified and registered by U.S. EPA

California Regulatory Credentials

ARB Verification Stationary Source Division (Voluntary Markets)	ARB Verification Mobile Source Division (Regulated Markets)
• 14% NOx and 63% PM • No net increase in toxic emissions • Hydrocarbon emissions are at least 25% lower than any applicable diesel vehicle standard	Lubrizol Technology •February 2003 -- ARB confirmed emission reductions of 20% NOx 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

Ideas For Consideration

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