



# Environmental Issues Related to the Gas Industry

Environmental Monitoring, Evaluation  
& Protection in NY:  
Linking Science & Policy

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Diane Saber, Ph.D.  
Gas Technology Institute  
Des Plaines, IL

# Technology Development vs. Funding

- > Technology development has had a positive economic impact on the gas industry over the last 25 years
- > Environmental R&D budgets and programs have historically been small vs. other sectors
  - Limited government funding for environmental issues
  - Federal Energy Regulatory Commission (FERC) approved R&D Budget ended in 2004
  - Sporadic gas company internal/regional R&D programs
- > Growing gas industry concern about adequate funding for *future* research and technology development for environmental issues

# Concerns in Natural Gas Industry:

- > Limited resource
- > Growing economies globally
- > New sources are few
- > High pricing
- > Environmental/Safety regulation
- > Is a GHG
- > Growing demand

# “Environmental” means many things...

- > Environmental Sector
- > Exploration & Production
- > Gas Distribution
- > Combustion (End Use)
- > Other

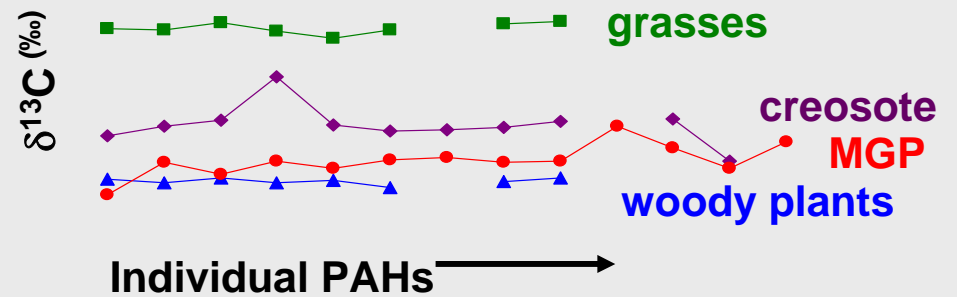
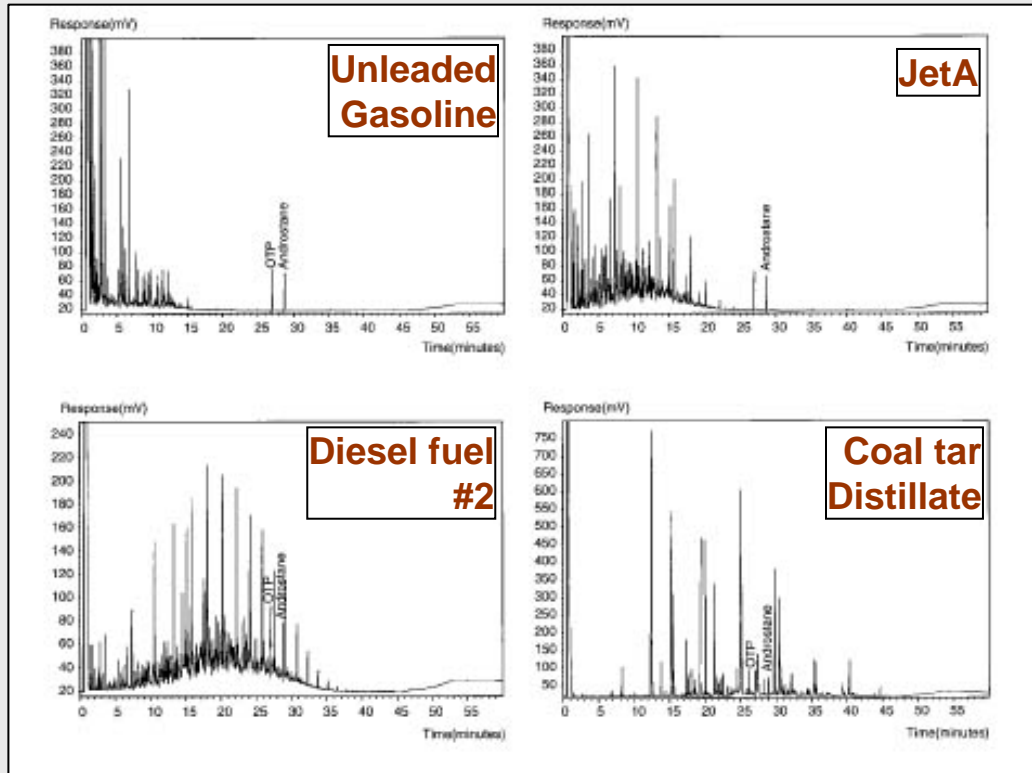
# Environmental Sector: Issues Identified Through Funding of Research

- > High-priority research areas identified:
  - Forensic Chemistry
    - > Sourcing of Wastes
    - > Urban Background Studies
  - Sediments Research
    - > Remediation Design Support
    - > Waste Identification
    - > Risk-Based Cleanups

# Environmental Sector: Issues Identified, con't

- Air Issues
  - > Indoor Air Quality
- MGP - Related Issues
  - > Remediation Design Support
- PCB Research
  - > ID PCBs
  - > Rapid Field Techniques
- Greenhouse Gas Issues
  - > Methane Tracking

# Chemical Fingerprinting and Isotopic Fingerprinting



# Environmental Issues to Watch

- > Advanced forensic techniques for ID waste and verifying cleanup strategies
- > “Emerging Contaminants” – nanoparticles
- > Use of nanotechnology in environmental cleanup efforts
- > GHG identification and tracking
- > Air quality issues



# National Topics of Interest: Exploration & Production

- > Damage to Arid Lands
  - Protection of Land Surface
  - Protection of Environment
  
- > Produced Waters from Production
  - Disposal or Recycle
  
- > Off-Shore Exploration

# National Topics of Interest: Distribution Sector

- > Effects of microbes on pipes/pipe coatings
- > Effects of hydrocarbons on PE pipes
- > “Black Powder”
- > Biosensors for methane detection
- > GHG tracking
- > Mercury cleanup – verification of safety
- > Health & Safety issues

## Microbial Induced Corrosion Testing, “MIC”



# National Topics of Interest: Combustion – End Use

- > LNG interchangeability Issues
  - Effects on indoor air/outdoor air
  - Effects on pipelines
  - Effects of mobilizing PCBs/other
  - Safety
  
- > Combustion Technologies
  - Energy Efficient Burners – meet increasingly strict standards

## Other initiatives

- > Fuel cell technology
- > Hydrogen production
- > Waste to energy
- > Safety in gas transmission
- > Sustainability

“Safer, cheaper, more plentiful...”