System Preparation: Conversion to Ethanol Blends
Conversion to Ethanol Blends

Investigative/ Preparation for Retail Units

- Verify storage system for materials compatibility
  - Tanks/ Tank Liners/ Submersible Pumps
- Verify dispensing system for materials compatibility
  - Dispenser, Filter, Hose, Nozzle
- Verify safety equipment for effectiveness with new fuel
- Modify inventory system for new fuel
- Train personnel on new fuel
- Notify regulatory authorities (if necessary) and insurance contacts
State level Requirements

• Review State level expectations
• Possible registration requirements
  – Underground storage tank programs
  – Pump Labeling
  – Checklists
Storage Tanks

- Confirm material compatibility of system
  - Tank material composition
  - Tank liners
  - Vapor equipment and lines
  - Tank gauging equipment
  - Submersible pump equipment
- Known incompatibilities with tanks manufactured prior to 1981 with ethanol blends
- Verify equipment safety testing status
Water Contamination

• Investigate history of water problems and take any necessary corrective actions
• Check for tight seals on fill caps and proper water run off from covers
• Inspect tank bottoms
  – Remove residue, have tanks cleaned if necessary
• Remove all water bottoms
  – Check for tank tilt
  – Inspect both ends of tank portals, remove gauge head if necessary
• Install rain caps on vent lines
Dispensing Equipment

• Confirm material compatibility of system
  – Fuel dispenser fuel pathway
  – Hanging hardware (hoses, nozzles, breakaways)
  – Spill containment and sumps
Dispensing Equipment

- Install 10 micron final filter if pumps are so equipped
  - Water sorb filters optional
- Verify equipment safety testing status
Safety Equipment

• Verify fire equipment for effectiveness with new fuel
• Contact local emergency response to alert of new fuel
• Utilize ethanol specific training information
  – www.ethanolresponse.com
Inventory System

- Fuel Procurement
  - Contractual requirements
- Develop product receipt procedures
- Recommend Positive Displacement meter construction
- Standardized conversion factor: 6.58#/ gallon fuel ethanol
  - API Standardized tables 6B, API Gravity 51.5°F.
- Temperature correction in RFA publication
Company Policy Considerations

- Verify policy
  - Corporate, Branded, etc.
- Signage and labeling may be provided
- Retail Conversion/Conversion Preparation system information may be available
Personnel Considerations

- Educate employees and contractors on new fuel blends
- Train employees on any new equipment
- Communicate with transport personnel
- Contact local emergency response to alert of new fuel blends
- Contact regulatory authorities (if necessary)
Pre Introduction Activity

- Verify conversion activities have been completed successfully
- Issue alcohol compatible water detection paste and dispose of any old paste
- Procure necessary pump labels
  - “Contains Ethanol”, Octane, etc.
- Verify accounting procedures for conversion
- Lower inventory levels
1st Receipt of Ethanol Blends

- Follow normal delivery procedures
  - Safety
  - Stick readings
  - Pump Readings, etc.
- Verify that driver is putting CORRECT COMPARTMENTS in the right tank
- It is recommended that pumps be shut down during initial conversion delivery
- Install necessary signage, pump labels
Post Introduction Activity

- Verify conversion procedures completed, or review state check list
- Change pump filters as needed in initial phase of conversion
  - Ethanol blended fuels may dissolve any gums and tars from years of gasoline handling
- Recalibrate pumps about 2 weeks after conversion
  - Preventative maintenance activity to ensure any gums or tars have been dislodged
Water Contamination

- Check tanks for water accumulation every eight hours for first 48 hours after delivery
- Check for water daily thereafter
- Have any water build up pumped out immediately
- Utilization of tank bottoms sampler, if applicable
- Blends should eliminate trace levels of water present and normal condensation

ANY WATER LEVEL IS UNACCEPTABLE!
Preventing Water Concerns

KEEP THE SYSTEM DRY!
E85 Conversions/ Installations

• Terminal and Retail Conversions:
  – Follow all steps for E10 storage/ conversion
  – Verify suitable fuel dispenser and associated equipment (hoses, nozzles, etc.)
    • Review safety listing requirements and status
• Review fire protection system for appropriateness
• Follow any State requirements
General Material Compatibility with Ethanol

• Ethanol compatible materials may be different composition from traditional gasoline compatibility components

• Examples of nonmetallic materials that may be incompatible with ethanol
  – Natural rubber, polyurethane, adhesives (used in older fiberglass piping), certain elastomers and polymers used in flex piping, bushings, gaskets, meters, filters, and materials made of cork