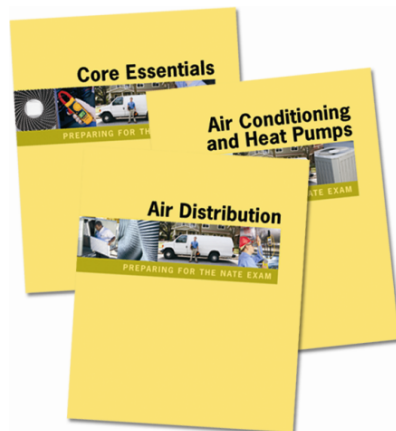


AMERICA **ATMO** the Business Case
sphere **natural refrigerants**

June 12-13 2012 | Washington DC



RSES Overview

- **Founded in 1933**
- **Single Mission:**

***To Educate & Train
HVACR Service Professionals***

RSES Overview

Training and Education

- **Training Courses - Full spectrum of HVACR industry**
- **Instructor-led, self-paced, online, local**
- **1-2 day seminars, Annual Conference**
- **Monthly *RSES Journal***
- **CTE Schools, wholesalers, etc.**

RSES Overview



Certification Preparation

- **North American Technician Excellence (NATE)**
- **EPA Section 608 (CFC/HCFC)**
- **R-410A Safety Training**

What Technicians Need to Know

- **Fundamentals of Refrigeration & Air Conditioning**
 - Heat Transfer (Thermodynamics)
 - Gas Laws & Behavior
 - Pressure-Temperature (Enthalpy) Relationships

What Technicians Need to Know

- **Fundamentals of Refrigeration & Air Conditioning**
 - Electricity & Electronics
 - Component Function
 - **Refrigerant Handling**

What Technicians Need to Know

- **Fundamentals of Refrigeration & Air Conditioning**
 - Piping
 - Controls
 - Troubleshooting Techniques

What Technicians Need to Know

- **Legislative/Regulatory Environment**

Environmental Protection Agency

- **HCFC phaseout holdovers**
- **HFC Phasedown**
- **SNAP Approvals (e.g., HCs)**

What Technicians Need to Know

- **Legislative/Regulatory Environment**
 - **Department of Transportation**
 - **Individual State Requirements**
 - **Utility Requirements**

HC Refrigerant Training For Technicians

Safety group			
↑ Increasing flammability	Higher flammability	A3	B3
	Lower flammability	A2	B2
		A2L	B2L
	No flame propagation	A1	B1
Lower toxicity		Higher toxicity	
→ Increasing toxicity			

HC Refrigerant Training For Technicians

- “Combustion Triangle”
 - Fuel
 - Oxygen
 - Ignition Source
- LEL/LFL
- UEL/UFL



HC Refrigerant Training For Technicians

- Monitor
- Ventilate
- Eliminate



HC Refrigerant Training For Technicians

RETROFITTING

HC Refrigerant Training For Technicians

**VENTING**

HC Refrigerant Training For Technicians

- Introduction
- Environmental Impact
- SNAP-approved HCs
- Regulations & Standards
 - SNAP Regulations, allowed uses, etc.
 - UL, NFPA, ASHRAE, etc.



HC Refrigerant Training For Technicians

- Refrigerant Safety
- Safety Classifications
- Flammability
- MSDS & Boiling Points
- Gas Monitors & Cylinder Handling



HC Refrigerant Training For Technicians

- DOT Regulations
- Brazing & Soldering
- New, Rated Equipment **ONLY**
- **NO RETROFITTING !!!!**



HC Refrigerant Training For Technicians

- **System Flushing, Purging and Leak Testing**
- **Service Procedures**



RSES HC Training

- **Hydrocarbon Refrigerants**
 - **Safety Focused**
 - **European Expertise**
 - **NA-Industry Vetting**
 - **All Refrigerants Must be Handled Properly**
 - **Proper Refrigerant Handling Helps Assure Safe Usage**



RSES – The HVACR Training Authority

www.rses.org

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