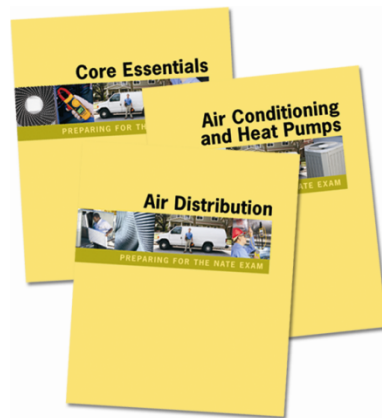


ATMO the Business Case
sphere natural refrigerants

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**


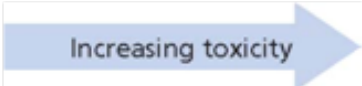
Environmental Protection Agency

- 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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