CARB Activities Relating to Mobile Refrigerants

Tao Zhan, Ph.D., P.E.

California Air Resources Board
• Review of existing programs
• Regulatory activities for LD mobile refrigerants
• Regulatory activities for HD mobile refrigerants
• Summary
Review of Existing Programs - LD MVAC Credit Programs

- CA
  - AB 1493 (Pavley) Rule (2009 MY - 2012 MY)
  - LEV III Rule (2017 MY - present)
  - "deemed to comply"

- US
  - EPA 2017-2025 Rule (2017 MY - present)
  - "deemed to comply"
Review of Existing Programs - “Small Can” Regulation

- Measure to reduce HFC-134a emissions from do-it-yourself automotive AC service
- Adopted by the Board in 2009
- Became effective on 1/1/2010
Review of Existing Programs - HD MVAC Leakage Standards

- **CARB Phase 1 Rule**
  - Adopted by CARB

- **CARB Phase 2 Rule**
  - Being developed

- **2014 MY**
  - CA
    - CARB Phase 1 Rule
  - US
    - EPA Phase 1 Rule

- **2021 MY**
  - CA
    - CARB Phase 2 Rule
  - US
    - EPA Phase 2 Rule

* 2018 MY for trailers
In August, 2014, U.S. EPA issued a proposed rule to change the status of HFC-134a from acceptable to unacceptable for use in new LD MVAC. Final rule was published in July, 2015.

• CARB provided supportive comments to U.S. EPA on the proposed rulemaking.
• CARB recommended additional subsectors (e.g. HD MVAC, TRU, refrigerated shipping container) for which high-GWP refrigerants could be phased out in the future.
Regulatory Activities for LD Mobile Refrigerants - “Small Can” Regulation Amendment

• Positive impacts of regulation
  – Significant sales reduction (1.9 million → 1.1 million) indicating effectiveness of self-sealing valve
  – Less overall emissions (0.85 → 0.47 MMTCO$_2$e)
  – Less overall consumer expenses ($19 million → $15 million estimated)

• Issues identified during implementation
  – Low container return rate (~70% vs 95% benchmark)
  – Low container heel (2-4% vs 22% prior to regulation)
  – Deposits for unreturned containers retained by retailers

• Amendment options being considered
  – Eliminate refundable deposit
  – Eliminate container return program and requirement to recover refrigerant from returned containers

- CARB intends to provide comments and recommendations
  - Support extension of AC leakage standard to vocational vehicles.
  - Recommend inclusion of a low-GWP requirement for HD MVAC, separate from a leakage standard.
  - Recommend establishment of a refrigerant usage monitoring program for TRU, in order to collect TRU leakage data for future rulemaking.
  - Encourage phase-out of high-GWP refrigerants for refrigerated transportation under SNAP as soon as viable alternatives become available.
Sustainable Freight Strategy discussion draft (April, 2015), and Short-lived Climate Pollutant Reduction Strategy concept paper (May, 2015)

• CARB will consider developing regulations to phase out high-GWP refrigerants in HD MVAC and refrigerated transportation, if such rules were not enacted at federal level.
CARB supports or recommends U.S. EPA to phase out high-GWP refrigerants in new LD MVAC, HD MVAC, and refrigerated transportation.

CARB will consider developing regulations to phase out high-GWP refrigerants for HD MVAC and refrigerated transportation, if such rules were not enacted at federal level.

CARB plans to amend its regulation on small cans of HFC-134a for DIY automotive AC service.
For questions or comments, please contact:

Tao Zhan
Tel: (916) 445-9495
Email: tao.zhan@arb.ca.gov

For more information, visit
http://www.arb.ca.gov/cc/hfc-mac/hfc-mac.htm