

## **SECOND PUBLIC WORKSHOP**

### **Reduction of HFC Emissions from Do-It-Yourself Servicing of Motor Vehicle Air Conditioning Systems**

**Research Division  
California Air Resources Board  
Sacramento, California**

**July 31, 2008**

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## **Outline**

- **Background**
- **Staff Recommendation**
- **Emissions Reduction & Cost-Effectiveness**
- **Draft Regulatory Language**

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## Background

- **This is a Discrete Early Action for AB 32**
  - Enforceable January 1, 2010
- **Public Meetings:**
  - Several meetings with industry (ARPI)
  - 3 Working Group Meetings
  - 2 Public Workshops
  - Board Date is scheduled for January 2009
- **Supporting Research Projects:**
  - Industry pilot study on recycling by ARPI
  - Industry survey by Frost and Sullivan
  - Mobile Air Conditioning Society (MACS) Worldwide survey
  - ARB-sponsored emissions study by Dr. Denis Clodic
  - ARB Consumer Product Survey for 2006

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## Total Emissions from DIY Recharging

- **Annual sales based on ARB Consumer Product Survey for 2006 in California**
  - 2 million cans sold
  - 0.85 MMTCO<sub>2</sub>E HFC-134a sold
- **Estimate of small-can users based on industry data**
  - 17% to professional shops, 0.14 MMTCO<sub>2</sub>E/yr
  - 83% to DIYers, 0.71 MMTCO<sub>2</sub>E/yr

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## Business as Usual Emissions Apportionment

- **Total DIY emissions - 0.71 MMTCO<sub>2</sub>E/yr**  
(HFC-134a sold in small cans to DIY)
- **Immediate emissions (0.23 MMTCO<sub>2</sub>E/yr)\***
  - 22% Can Heel, 0.15 MMTCO<sub>2</sub>E/yr
  - 11% Servicing Losses, 0.08 MMTCO<sub>2</sub>E/yr
- **Delayed emissions (0.48 MMTCO<sub>2</sub>E/yr)\***
  - 67% charged to vehicle
  - Eventually leaks out since there is no repair



\*Clodic Study, 2008

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## DIY Profile

- **1.2 Million DIY<sup>a</sup>**
- **44% are 18-29 yrs old<sup>b</sup>**
- **18% qualify as true low income (household)<sup>b</sup>**
- **25% of DIYs leak 60% of immediate emissions<sup>c</sup>**
- **Average LDV lifetime in California is 16 years<sup>d</sup>**
- **No A/C servicing for the first 7 years<sup>d</sup>**
- **Average estimated recharge rate is once per year**

a. ARB Consumer Product Survey for 2006  
b. Frost and Sullivan Study, 2006  
c. Denis Clodic Study, 2008  
d. I-MAC Study, 2007

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## California Mitigation Approaches

- **Original proposal - Can Ban**
  - Accepted by Board June 2007
  - Europe F-gas Directive (2007) & Wisconsin (1992)
  - Minnesota considered, but not implemented (2008)
  - Lieberman-Warner (America's Climate Security Act, S.2191) discussed, then dropped, but may re-appear as negotiations continue (2008)
- **Industry counter proposal - self-sealing valves, recycle, improved labeling**
- **Other options**
  - Mitigation fee
  - Mandatory education program
  - Enhanced recycling program – mandatory targets
  - New technology development
  - Additional rulemakings on professional A/C servicing – separate measures

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## Staff Recommendation

- **Proposed approach**
  - Achieves nearly half of “Can Ban” emission reduction
  - Lower cost than “Can Ban”
  - Reduces economic hardship to EJ community
  - Supported by most key parties
  - Exportable to other states
- **Mitigation Fee**
  - Being considered for separate rulemaking

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## Regulatory Proposal - Overview

- **Self-sealing valve on can**
  - Retains “can heel”
- **Mandatory recycling**
  - Used cans returned/recover “can heel” refrigerant
- **Improved labeling on can**
  - Improved instructions: more effective refrigerant transfer
  - Warning: Global Warming impacts
  - Mandatory recycling of small cans
- **Education Program - retailers’ signage, brochures, & web sites**
  - Raise consumer (user) awareness
- **Mitigation fee being considered**
  - Money used to fund GHG mitigation projects
  - Upstream – potentially applied to all high GWP gases

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## Emissions Reduction and Cost-Effectiveness

Mitigation Approaches	Emissions MMTCO <sub>2</sub> E/yr	Emission Reductions MMTCO <sub>2</sub> E/yr	Consumer Cost \$/ MTCO <sub>2</sub> E	Industry Lost Revenue \$ Million/yr
Business As Usual	0.71	NA	NA	NA
Can Ban	0.24	0.47	135	25
Industry Proposal <sup>a</sup>	0.52	0.19	19	0
ARB Proposed Approach <sup>b</sup>	0.49	0.22	9	<1

<sup>a</sup> 75% of cans were returned in a pilot project

<sup>b</sup> Target on 95% of cans are returned

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## Applicability & Exemption

- **Anyone who uses, sells, supplies, offers for sale, advertises, or manufactures for sale small containers of automotive refrigerant in California**
  - Also applies to recycling, reclamation, recovery, importing or exporting
- **Pertains only to refrigerants with GWP > 150**
- **Small Containers of Automotive Refrigerant**
  - > 2 ounces & < 2 lbs.
- **Enforceable on January 1, 2010**

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## Requirements - Small Containers

- **Certified for use by ARB**
  - Requires Executive Order
  - Specified in Certification Procedures
- **Installation of self-sealing valve on each container**
  - Valve automatically closes and seals when not actuated and dispensing refrigerant
- **Labeling Requirements**
  - Improved instructions
  - Warning of environmental impacts (Global Warming)
  - Mandatory recycling of small cans
- **Leak Rate Standards - 3 grams/year**
  - Self-sealing valve closed
  - Applies to new and used, partially-filled containers
  - Applies to containers with separate and integral valve/hose assembly

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## Application for Certification

- **Specified in Certification Procedures**
- **Model number(s) and size(s) of small cans**
- **Engineering drawings for small cans**
  - Includes specific dimensions for each component
- **A sample of the small can**
- **Test data from each of the test procedures**
  - Testing conducted by 3<sup>rd</sup>-party in US
- **Language and Documentation**
  - Container labeling
  - Education Program
  - Operating Instructions

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## Proposed Leak Check Test Procedures

- **Referenced in Certification Procedures**
- **2 Versions:**
  - **Manufacturers**
    - Performed by 3<sup>rd</sup> Party
    - Submitted to CARB
  - **CARB**
    - For enforcement purposes
    - Samples taken from retailers' shelves
    - Performed by Monitoring Lab Division
    - Simpler than manufacturers' procedure
- **Still under development**

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## Container Deposit & Return Program

- **Mandatory program run by Manufacturers**
  - Coordinate collection of used cans from retailers
  - Used cans delivered to registered recovery facilities
    - Recovers remaining refrigerant & recycles metal containers
- **Targeting return rate**
  - 90% for initial period, then 95% beginning 2012 and after
  - 2-year Reporting/Reviewing Period
- **Can return incentive by charging deposit**
  - Initially \$10 per container
    - Subsequent increases will be \$5
    - Deposit Increases until return rate target met
  - Refunded when used can(s) returned
    - Within 90 days of purchase
    - Paid by Retailers or Facilities designated by Manufacturers

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## Reporting/Recordkeeping

- **24 month reporting/reviewing period**
- **Retailers, Manufacturers, and Distributors**
  - # of containers sold
  - # of containers returned
  - Reported by SKU and month
- **Recyclers**
  - Number of recycled containers (by SKU and month)
  - Volume of refrigerant reclaimed (by SKU, manufacturer and month)
- **ARB estimates/publishes annual return rate**
  - Deposit adjusted based on results
- **Records include invoices, books, correspondence, electronic data and other pertinent documents**
  - 5 year retention period

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## Container Labeling Requirements

- **Specified in Certification Procedures**
- **In Spanish and English**
- **Instructions includes:**
  - Safety Precautions
  - Operating parameters - engine, A/C, and ventilation fan
  - Re-charging procedures
- **Label also includes:**
  - Warning of Global Warming Impacts
  - Container Deposit and Mandatory Return
  - Date of manufacture (month & year)
  - California specific code & “Certified for use in California”

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## Education Program

- **Specified in Certification Procedures**
- **Program implemented by Manufacturers**
- **Manufacturers’ requirements**
  - Providing more comprehensive information to the DIY user via signs, brochures, web sites:
    - MVAC system leaks
    - Proper re-charging techniques
    - Global Warming Impacts
    - Risk from DIY servicing
    - Container Deposit and Return Program
- **Retailers’ requirements**
  - Display signs in place of business
  - Distribute brochures to consumers

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## Miscellaneous

- **Sell-through of products**
  - Inventory produced prior to January 1, 2010 can be sold until December 31, 2010
  - Manufacturers notify distributors, retailers of “Sell-Through” deadline

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## Next Steps

- **Review comments from today’s workshop**
- **Continued involvement of stakeholders and interested parties**
- **Develop Initial Statement of Reasons (ISOR)/Technical Support Documents (TSD)**
- **Finalize Regulatory Language**
- **Publish ISOR, TSD, Regulation on 1<sup>st</sup> week of December 2008 for Public Review**
- **Board Hearing on January 22 - 23, 2009 (tentative)**

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## ARB Contacts

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