

MACSW/USEPA Webinar
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New California Rules on Mobile Air Conditioning and Their Implication to Service Industry

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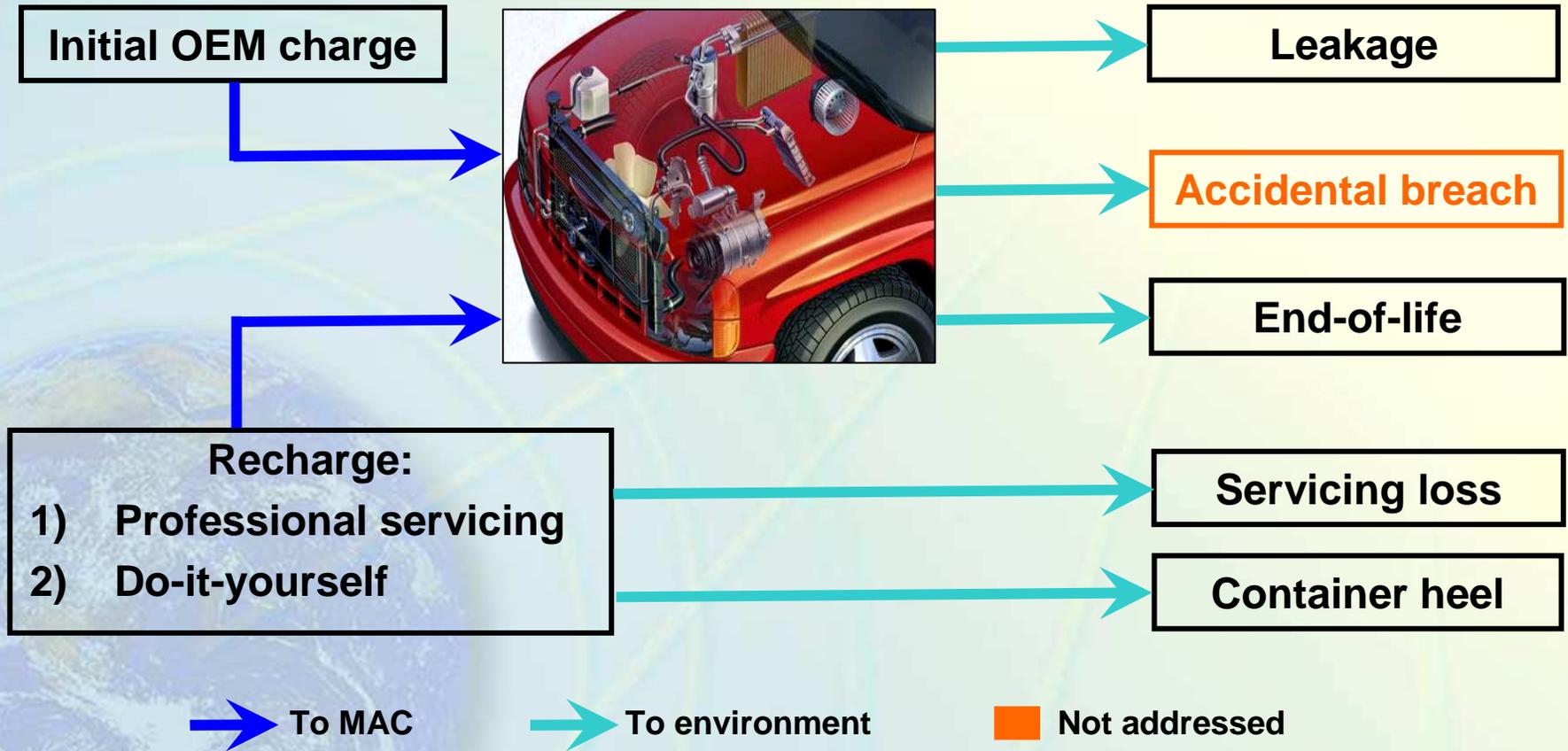


Overview

- **Background**
- **Proposed MAC requirements for California Low-Emission Vehicle standards (LEV III)**
- **Regulation on Small Containers of Automotive Refrigerant**
- **Summary**

MAC Refrigerant Mass Balance

Mass in = Mass out



California Strategies to Reduce MAC GHG Emissions

New vehicles	In-Use Fleet	End-of-Life
<p>Vehicle GHG Emissions Standard (AB 1493) (2004)</p>	<p>Regulation on small cans of HFC-134a (2009)</p>	<p>Enforce federal “no venting” rule for HFCs</p>
<p>Environmental Performance Label (2007)</p>	<p>Include AC leak test & repair in Smog Check Program</p>	<p>Decommissioned refrigerated shipping containers</p>
<p>Low-Emission Vehicle Standard, LEV III (2010)</p>	<p>Requirements for professional servicing</p>	
<p>HD and off-road fleet (Under development by US EPA)</p>		
<p>Adopted</p>	<p>Proposed</p>	<p>Planned</p>

Evolution of Vehicle GHG Regulations



Proposed LEV III MAC Requirement 1: GWP \leq 150 (100% for 2017 MY)

- **Provides a nearly 90% direct emission reduction**
- **Industry can choose from 3 EPA SNAP approved refrigerants (HFC-152a, CO₂, and HFO-1234yf)**
- **New refrigerant may need new service equipment, procedures and certification**

GWP: Global Warming Potential

SNAP: Significant New Alternatives Policy

Proposed LEV III AC Requirement 2: Fleet Average Leak Rate ≤ 9 g/yr

- **Low leak rate requirement will help maintain efficiency and reduce maintenance needs**
- **Potential requirement to ensure adequate lubrication during winter could also reduce maintenance needs**
 - Seeking comments: does AC universally operate while defrosting/dehumidifying, thus provide lubrication during winter?
- **Low leak rate requirement will accelerate technological transition**
 - For AC with belt-driven compressor, 9 g/yr is only achievable by using premium technologies for refrigerant containment (e.g. seal washer as opposed to single o-ring)
 - Electric compressor will likely gain more market share (with growth of hybrid/electric vehicles)

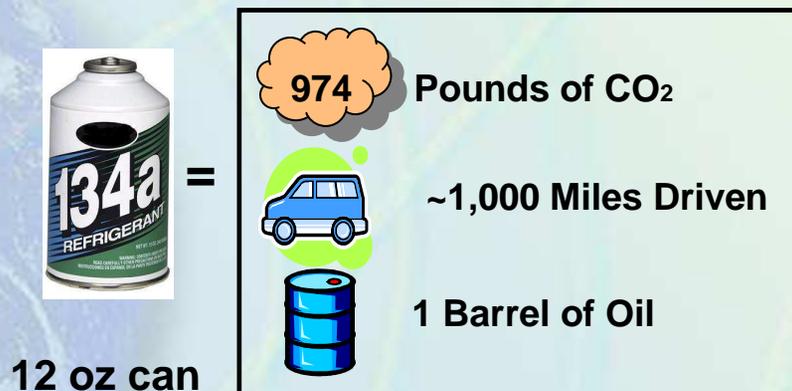
Proposed LEV III MAC Requirement 3: Indirect Emissions Standard

- **ARB is proposing to develop a fleet average AC indirect emissions standard**
- **Stringent indirect emissions standard will accelerate transition to energy saving and efficiency improving technologies (e.g. passive or active parked-car ventilation, variable displacement compressor with external control)**

Indirect emissions: tailpipe CO₂ emissions due to mass and operation of AC

Small Containers of Automotive Refrigerant (Small Can) in California

- **Annual sales for 2006 in California**
 - 2 million cans of HFC-134a sold
 - Equivalent to 0.85 MMTCO₂E/year
 - Price of a typical 12-ounce can is ~\$10
- **Estimate of small-can use**
 - 95% to consumers (equivalent to 0.81 MMTCO₂E)
 - 5% to professional shops (equivalent to 0.04 MMTCO₂E)



Three Components of Small Can Regulation

Self-sealing Valve and Improved Labeling



Education Program



Deposit/Return/Recycling Program

- **Generally affects containers with less than 2 lbs**
- **Regulation is effective as of 01/01/2010**
 - New cans are going through certification, probably available this summer
 - Old cans have 1-yr sell-through period

Summary

- **California's suite of strategies address GHG emissions from MAC's life span**
- **California's next vehicle GHG emission standard for 2017 MY and beyond (part of LEV III) will require new refrigerant, leak rate limit and indirect emissions standard**
 - New technical challenges and business opportunities
- **New regulation on small cans of automotive refrigerant applies to all end users**
 - New cans have self-sealing valves, and improved labels/instructions
 - User pays a deposit upfront, and collects it upon return of used cans

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More about the topic:
<http://www.arb.ca.gov/cc/hfc-mac/hfc-mac.htm>