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### California to limit HFCs in cars & commercial refrigeration

**Restrictions for the use of high global warming refrigerants in Mobile Air Conditioning and Commercial Refrigeration are gradually taking place in California. Two public workshops in February mentioned CO<sub>2</sub> as a viable alternative to replace HFCs in both sectors.**

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With two public workshops held on 5 and 15 February, the California Air Resources Board (CARB) initiated the process of setting legal requirements for high-Global Warming Potential (GWP) refrigerants used in Mobile Air Conditioning and Commercial Refrigeration:

#### Mobile Air Conditioning

The first public workshop in California to discuss the reduction of the high global warming refrigerant HFC-134a in car air conditioning focused mainly on the ban of do-it-yourself servicing. However, the workshop on 5 February also addressed other strategies to mitigate the environmental impact of Mobile Air Conditioning (MAC), including the future phase-out of HFC-134a and its replacement with low-GWP refrigerants, such as R744 (CO<sub>2</sub>). The workshop showed that California is set to limit the use of HFC-134a in a "cradle-to-grave approach", taking into account the complete environmental impact during a car's life cycle.



More specifically, stakeholders discussed the following:

- **New MAC refrigerants:** CARB staff insisted on a future phase-out of R134a in all vehicle types, including light-duty, heavy-duty, on-road, and off-road vehicles, thus aligning its strategies with the international push towards low-GWP refrigerants, such as the EU MAC Directive. In particular, CARB mentioned the decision of German carmakers for R744 (CO<sub>2</sub>) as a way to comply with upcoming European legislation. As a final step, a Board Hearing in 2010 will decide about new MAC refrigerant measures.
- **HFC-134a small can ban:** California will eliminate Do-it-yourself practice for MAC to allow only for professional servicing. It estimates that today 1/3 of the content of cans filled with R134a is released through unprofessional refilling of MAC systems which amounts to 0.85 million tonnes CO<sub>2</sub> equivalents. The future ban will increase the cost of servicing for drivers substantially, according to CARB.
- **"Cradle-to-grave" approach:** CARB will restrict the use of HFC-134a during all life phases, starting with greenhouse gas emission standards for new vehicles that will account for all direct and indirect emissions from MAC. During use, HFC-134a will be subject to leak check and repair requirements, while strict end-of-life rules will make the disposal of R134a MAC and the refrigerant recovery mandatory. By the end of 2008, the first research phase regarding recovery strategies for HFC-134a will be finalized, with a view to discuss it further in 2009.

So far, Mobile Air Conditioning (MAC) is the largest end user of HFC-134a in California. If all measures are implemented, CARB estimates an emission reduction potential of 5 MMTCO<sub>2</sub> equivalents in 2020.

#### Commercial Refrigeration

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California targets emissions reductions from the commercial refrigeration sector from three different angles: leak tightness of supermarket equipment, an advanced design requirements for new refrigeration systems, and energy efficiency standards for new and existing installations. CARB estimates that this integrated approach, taking into account the whole lifetime of refrigeration equipment, will achieve the highest reduction of indirect and direct GHG emissions. In a kick-off meeting on 15 February, CARB and stakeholders discussed the following:

- **Inventory of Refrigeration equipment:** As a first step towards developing emission reductions strategies, CARB has initiated a process of data gathering to quantify the number of installations and related GHG emissions. First results show that around 500,000 refrigerated vending machines are used in California today. Leak rates are about 30% per year, or 2.7 MMTCO<sub>2</sub> equivalents, while the indirect emissions amount to an additional 2.3 MMTCO<sub>2</sub> equivalents.
- **Alternative refrigerants:** As one of the most effective ways to reduce direct emissions, CARB mentioned the replacement of current ozone-depleting and high global warming substances with more sustainable refrigerants, including CO<sub>2</sub>.

CARB will now launch a stakeholder consultation to discuss control strategies and other options.

**More information:**

[HFC Emission Reduction Measures MAC- CARB website](#)

[CARB presentation: Reducing HFC-134a impact from MAC, 5 Feb](#)

[Commercial Refrigeration Specification – CARB website](#)

[CARB presentation: Specifications for Commercial Refrigeration, 15 Feb](#)

[For more details and documents, see the latest article on California's MAC strategy](#)

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