



# EFCTC NEWSLETTER

## An update on fluorocarbons and sulfur hexafluoride

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### Mobile air conditioning climate protection partnership to improve existing HFC-134a technology

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The Mobile Air Conditioning Summit held in Washington on April 15, 2004 ended on an agreement by the Mobile Air Conditioning Climate Protection Partnership to improve existing HFC-134a technology. This ambitious collaborative effort should reduce fuel consumption from the operation of vehicle A/C by at least 30 percent, and refrigerant emissions by 50 percent.

The cumulative reduction in fuel use and refrigerant emissions will avoid more than 35 billion kilograms of equivalent CO<sub>2</sub>-emissions. This project will identify technologies with the potential to reduce by 50 percent the equivalent CO<sub>2</sub>-emissions from the operation of air conditioning on new vehicles.

All vehicles currently use HFC-134a. [EU regulation in preparation](#) could phase out HFC-134a for car air-conditioning in the coming years, but it is not yet clear whether replacement technology will better protect the climate.

By improving HFC-134a technology, this project will raise the bar that competing technology will need to clear in order to capture global markets.

The [US EPA](#), the [SAE](#) and the [MACS](#) (Mobile Air Conditioning Society Worldwide) support this project.

Source: <http://www.sae.org/news/releases/mobileac.htm>

### Report confirms effectiveness of HFC emissions reduction measures

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Some months ago, the UK DEFRA (Department for Environment, Food and Rural Affairs) published a report on Emissions and Projections of F-gases, which was welcomed by ACRIB, the UK Air Conditioning and Refrigeration Industry Board (<http://www.acrib.org.uk>).

Taking into consideration a broad consultation with the Refrigeration and Air Conditioning industry, the Report clearly shows how considerable improvement has been achieved, and will be achieved in the future, in reducing HFC emissions from the wide range of systems that are used in society today to deliver high quality chilled and frozen food and air conditioning for offices, hospitals and restaurants.

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A mandatory registration scheme for refrigerant handlers will further reduce HFC emissions rates in future and result in lower overall emissions in 2010 than in 2000 even though use of HFCs is expanding and the use of refrigeration and air conditioning is growing.

Overall emissions of F-gases are forecast to reduce by 25% by 2010 compared to 1995 levels (the reference year for these gases under the Kyoto Protocol), and emissions are forecast to continue decreasing through to 2025.

Full copies of the report (Emissions and Projections of HFCs, PFCs and SF<sub>6</sub> for the UK and Constituent Countries – July 2003), prepared by AEA Technology, can be obtained from [stephanie.godliman@DEFRA.GSI.GOV.UK](mailto:stephanie.godliman@DEFRA.GSI.GOV.UK)

Source : [http://www.acrib.org.uk/emissions\\_report.htm](http://www.acrib.org.uk/emissions_report.htm)

### **Why HFCs are needed in fire fighting**

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Not all fire fighting systems need HFCs. There are other systems available including sprinklers, foam, water mist, carbon dioxide and inert gases. However, each fire risk is different and it is the task of a qualified fire engineer, not of the authorities, to determine which system is more appropriate in each case depending on the individual fire risk.

Only HFCs have the unique and cost effective combination of speed, space and safety required to deal with certain fire risks.

**Speed:** HFCs reach extinguishing concentrations in under ten seconds, instead of alternative systems which require one or even several minutes. A slower extinguishing agent puts human life at risk and could have valuable property destroyed.

**Space:** HFCs need far less space, and can be fitted into vulnerable areas where space and weight are crucial factors.

**Safety:** HFCs are safe to breathe for long periods, are non-toxic at extinguishing levels – unlike CO<sub>2</sub>.

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The use of HFCs in fire fighting is essentially non emissive, since emissions only occur in the rare event of a fire. Otherwise the HFC is stored in the system for an average of 15 years until, at the end of its life, it is either recycled or properly destroyed. Emissions from HFCs in fire fighting have therefore an insignificant impact, and restricting or prohibiting their use would have very poor cost effectiveness.

Given the extremely low level of emissions, it is unnecessary to establish an arbitrary GWP limit, or to put together a sort of "critical list"; such measures would only increase the risk to people, property and the environment from fire.

Source: ASSURE, the European Association for Responsible Use of HFCs in Fire Fighting

### **CO<sub>2</sub> (Carbon Dioxide) toxicity**

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Considering CO<sub>2</sub> new developments in refrigeration technology, it is important to know that this gas has some toxic effects, which were recently documented at the 2004 MAC Summit.

Limits for passenger exposure

- 4% limit for sustained exposure (~one hour)
- 6% limit for brief exposure (minutes)

Human Exposure Data

- Functional impairment (5% for about an hour)
- Dizziness, muscle twitching unconsciousness (7-10% exposure for a few minutes)
- Unconsciousness / Death (18% for less than 1 minute)

Conclusion from the Presentation ([US EPA](#)): "*Proposed charge of CO<sub>2</sub> could expose occupants to unacceptable risk unless mitigated. CO<sub>2</sub> acceptable if engineering solutions limit potential passenger compartment concentrations to safe levels*"

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### Selected References:

- IDLH Documentation for Carbon Dioxide, U.S. Center for Disease Control  
<http://www.cdc.gov/niosh/idlh/124389.html>
- Carbon Dioxide as a Fire Suppressant: Examining the Risks.  
<http://www.epa.gov/ozone/snap/fire/co2/co2report.pdf>

Source: "[Risk Assessment of HFC 152a and Carbon Dioxide Mobile Air Conditioning Carbon Dioxide Mobile Air Conditioning Systems Systems](#)" by Neal Blackwell, US Army CERDEC, Lisa Bendixen, ICF Consulting, Erin Birgfeld, US EPA

### NEW ON OUR SITE

#### NEW IN THE LIBRARY

**Handbook for the International Treaties for the Protection of the Ozone Layer (5th Edition)**  
in [English](#), [French](#) and [Spanish](#)

#### NEW LINKS ADDED

##### Governmental Institutions Links

<http://www.dti.gov.uk/sustainability/fgases.htm>

##### **UK Fluorinated Greenhouse Gases Webpage**

A new page on the UK DTI website containing updated information about the [EU proposed Regulation](#) on Fluorinated Greenhouse Gases (UK Consultation, F-gas industry stakeholders meetings, Timetable, etc.)

##### Refrigeration Links

**ACRIB** (UK Air Conditioning and Refrigeration Industry Board)  
<http://www.acrib.org.uk/>

**MACS (Mobile Air Conditioning Society Worldwide)**  
<http://www.macsw.org/>