Ways and means of limiting emissions of HFCs, PFCs and SF6

pursuant decision 13/CP.4

Contributed by

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Ways and Means

Title: HFC Reduction Options for A-C & Heat Pumps

Type (select from below): Technology, substitution of gas and equipment

Category (select from below): Refrigeration, air conditioning and heat pumps (air-cooled)

Gases affected (reduced, recovered, destroyed, replaced, avoided) (select from below):
Elimination of HCFC-22, reduction in the use of HFC's R-32 & R-125.

General description:
Global warming emissions reduction strategies for Air Conditioners and Heat Pumps include (1) minimization of refrigerant emissions throughout the product lifecycle; (2) choice of refrigerant such as HFC, hydrocarbon and so on; (3) choice of refrigeration cycle or technology; (4) minimization of indirect CO2 emissions (maximization of energy efficiency). In this paper we discuss all four of these options in relation to replacements for HCFC-22 in Air Conditioning and Heat Pump Systems. HCFC-22 is the most widely used fluorocarbon refrigerant in the world and is due for phase out according to stratospheric ozone depletion regulations in Article 2 countries early in the next century.

Impacts on ozone depletion:
Replacement for HCFC-22. Eliminates this ODS.

Impacts on global warming:
In order to reduce the global warming influence of future air conditioning and heat pump systems increasing the energy efficiency of these systems will provide the greatest impact. Optimized design will also reduce the required refrigerant charge by 25 to 30% thereby reducing the direct effect as well.

Other environmental impacts:
R-410A is of low toxicity and is non-flammable

Economic impact (cost):
It was shown that using R-410A would allow for a more cost-effective approach when designing high efficiency air conditioners and heat pumps. It would reduce the size increase of heat exchangers needed for high efficiency equipment.

Timing issues:
The HFC replacements are currently available.

Examples of application:
Air conditioners and heat pumps are currently manufactured with this refrigerant in the U.S., Japan, and EU.

Regional availability or applicability:
EU, North America, Asia

Other remarks:

Sources of additional information (what and where):
IPPC TEAP paper presented in 1999 entitled "Environmental and Safety Impacts of HFC Emission Reduction Options for Air Conditioning and Heat Pump Systems" Authored by: William M. Corcoran, George Rusch, Mark W. Spatz, and Tim Vink. This paper is attached to this e-mail

Link to more information: http://

E-mail this file to wam@unfccc.de