Ways and Means to Limit Emissions of HFCs

Submission from Norway August 1999

The Conference of the Parties in its decision 13/CP.4 invited Parties to provide information on measures to abate emissions of HFCs and PFCs to the UNFCCC Secretariat. In this submission we only provide information on HFCs, since no analysis regarding ways or means to limit emissions on PFCs or SF_6 has been carried out. Our submission concentrates on technical options to reduce HFC emissions, but there is ongoing work in Norway regarding the means and instruments for reduction of these emissions. Please note that this is preliminary information, and that we will submit the information using the required Internet form as soon as possible.

The Norwegian Pollution Control Authority conducted a study in 1997 on reductions in the use of HFCs, with an analysis of possible measures and their related costs (SFT 97:32, Reductions in the use of HFC. Measures and costs). The measures were directed towards the use of HFCs as refrigerants, foam blowing agents, solvents and fire extinguishing agents. The assessed measures are shown in the table below. Reductions and costs are calculated for 2010, and both investment and maintenance costs are taken in account. The emissions reductions are calculated as CO_2-equivalents, and they are also given as a percentage to the total estimated projection for the use of HFC in 2010 (1799 ktonnes of CO_2-equivalents).

Considerable uncertainty is related to many of the elements in the analysis. The uncertainty related to consumption/reductions and costs are estimated to about 30 %. However, the relative values (%, NOK/tonne) are not very sensitive to errors in the absolute values.

Measures to abate HFC emissions in Norway

	Emission reduction in 2010		Yearly costs	
	%	1000 tonn CO_2	Mill. NOK	NOK/tonne CO_2
Household refrigeration:				
Transition to hydrocarbons as refrigerant in household refrigeration	0.1	1.4	1.6	1100
Commercial refrigeration:				
Reduced leakage of refrigerant from plants	13.5	242	60.8	250
Recovery of refrigerant from condemned small plants	3.2	58	25.9	450
Recovery of refrigerant from condemned medium sized plants	4.7	85	8.8	100
Recovery of refrigerant from condemned large plants	1.8	32	0.8	30
Use of HFC-134a as refrigerant in plants for cooling purposes	13.5	243	0.4	0
Transition to hydrocarbons as refrigerant in small plants	1.7	31	13.3	400
Transition to NH_3 as refrigerant in large plants for cooling purposes	5.6	100	7.4	70
Transition to NH_3 as refrigerant in industrial and commercial freezing-plants	9.1	163	24.0	150
Mobile air conditioning:				
Recovery of refrigerant from air conditioners in cars	1.4	25	10.2	410
Foam blowing:				
Transition to pentane/CO_2 as blowing agent for rigid PUR	3.4	61	1.8	30
Transition to HFC-152a as blowing agent for extruded polystyrene	8.7	156	6.8	40
Solvents:				
Avoid the use of HFC/PFC in vapour cleaning processes	0.6	10	0	0
Fire extinguishing equipment:				
Avoid the use of HFC/PFC as fire extinguishing agent	0.7	12	0	0