



MEMORANDUM

TO: Dr. M.D. Gwynne
Director, GEMS/PAC

REFERENCE: FP/4102-77-03

THROUGH:

FROM: P. Usher *P. Usher*
Senior Programme Officer, GEMS/PAC

DATE: 11.3.87 *file*

SUBJECT: Model intercomparison of impact of strategies to control CFCs

At the Second Vienna Group meeting to develop a protocol for the control of CFCs a paper was presented by the United States of America containing an analysis of the implications of alternative international control strategies for global ozone depletion and the risk of skin cancer in the United States. The paper, which indicated serious implications for the ozone layer even under conditions of an immediate freeze on CFC production and a major phase out over time, was not accepted by the EEC. Results from the European atmospheric models using similar scenarios but with different assumptions did not, according to the EEC, show serious consequences under conditions of stringently applied regulations.

In order to obtain scientific consensus on the matter so as to aid the Vienna Group in its deliberations it is considered useful to call an ad hoc meeting of atmospheric modellers prior to the third meeting of the Vienna Group to analyse the impact of an agreed set of control strategies.

... Attached to this memo is a sample set of twenty-five scenarios based on Article II of the Sixth revised draft protocol for the control of CFCs as presented to the Second Session of the Vienna Group by its Chairman Dr. Wilfred Lang.

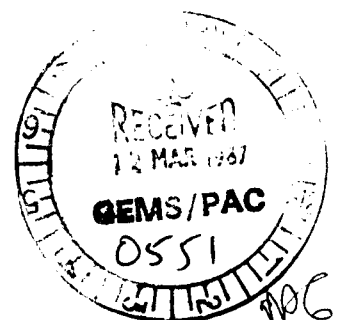
It is proposed that from these scenarios a sample set of six to ten be chosen and run through the European and the United States computer models in order to obtain impact analyses. At the same time the full twenty-five scenarios would be run through the US EPA Parameterization Model. (Atmospheric Models of the type currently in operation need 1 to 2 days to run a single scenario and the Parameterization Model needs only hours to run several dozen scenarios).

Comparative analysis of the results from all models would be undertaken with a view to the verification of the Parameterization Model. Once verified, this model could rapidly provide analyses of any number of control options.

.. /2

→ CB

I have no problem with this meeting provided the financial resources are really available. I imagine we will have to support the USSR & the rest of the world. Can you get Reisman to check these details with PA. *Just AZ*



12 March 87 *PAC*

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The comparative analysis would be undertaken by an ad hoc meeting of experts.

Currently, the following Scientists have been asked their willingness to undertake computer runs and take part in the expert group meeting: R. Watson (USA); D. Weubles (USA); N. Sze (USA); I. Isaksen (Norway); G. Brasseur (Belgium) and V. Khattatov (USSR). In addition the U.K. and the EEC have been asked whether they wished to submit control scenarios for analysis and/or nominate experts to participate in the meeting.

If it is possible to organize this project in the short time available then the 2 days meeting of experts will take place sometime between 27 March and 10 April 1987, probably on 6/7 April in Wun~~st~~tzburg or Maintz in W. Germany (several of the experts will be in the FRG for another meeting at that time).

A report will be prepared at the meeting and submitted to the Vienna Group for its information. It would also be submitted to the CCOL for its endorsement but this could not be obtained before the third session of the Vienna Group.

Copy: Dr. M.K. Tolba
Mr. W. Mansfield
Mr. G.N. Golubev
Ms. I. Rummel-Bulska

Assumptions used in scenario development based on Protocol control strategies contained in Article II of the Sixth revised draft protocol for the control of CFCs.

Protocol in effect 1990

1. Freeze to take effect 1992 (2 years)
2. Reductions to take effect 2 years 10%
3. 25% 4 years
4. 50% 6 years

Chemicals: (A) 11, 12
(B) 11, 12, 113
(C) 11, 12, 113, Halons 1211 1301

Developing nations

I	.2 kg limit per capita	I (a)	20%	I(b)	40%
II	.5 kg limit per capita	II (a)	20%	II(b)	40%

Developed nations

(a)	non-joiners or non compliers	20%
(b)	(sensitivity run)	0%

α Baseline growth for non joiners 2½%
sensitivity runs β (1%) and γ (4%)

Methane (i) 1% linear
(ii) 1% compound
(iii) sensitivity run stop growth year 2000

Model runs

	<u>Sringency</u>	Chemical	Developing Nations	Developed Nations	Baseline Growth	Methane
*	1	A	IIa	a	α	i
*	1	B	IIa	a	α	i
	1	C	IIa	a	α	i
	1	A	IIa	a	α	i
	1	A	IIa	a	α	i
	1	A	IIb	a	α	i
	1	A	Ia	a	α	i
	1	A	Ib	a	α	i
	2	A	IIa	a	α	i
	2	B	IIa	a	α	i
	2	C	IIa	a	α	i
	1	A	IIa	b	α	i
	1	A	IIa	b	β	i
	1	A	IIa	b	γ	i
	1	A	IIa	b	α	i
	1	A	IIa	b	α	ii
*	1	A	IIa	b	α	iii

Strigency	Chemical	Developing Nations	Developed Nations	Baseline Growth	Methane
3	A	I Ib	a	α	i
3	B	I Ib	a	α	i
3	C	I Ib	a	α	i
4	A	I Ib	a	α	i
4	B	I Ib	a	α	i
4	C	I Ib	a	α	i
* 4	B	I b	b	β	i