

**COMMISSION
OF THE
EUROPEAN COMMUNITIES**

Directorate-General for the environment,
consumer protection and nuclear safety

**UNITED NATIONS
ENVIRONMENT PROGRAMME**

**Draft Convention for protection
Of the Ozone Layer**

THIRD REVISED DRAFT PROTOCOL ON CHLOROFLUOROCARBONS

**Some Observations on the Alternative Control Measures
Proposed for Article 2**

27 February 1985

1. THE ALTERNATIVE PROPOSALS

- 1.1. Two proposals have been put forward for the CFC control measures to be provided in Article 2 of the Protocol.

Multi-option proposal : The multi-option concept sponsored by the Toronto group of countries comprises four different sets of measures from which one set can be selected by each contracting party. Three of the sets require substantial reductions -70 to -90 % of CFC usage in aerosols, and one of these three also includes a production capacity limitation. The fourth option requires 20 % reduction in total CFC usage for all applications.

EEC proposal : The second alternative is that proposed by the EEC, and is a simple set of measures including a 30 % reduction of CFC 11 and 12 usage in aerosols, a production capacity limit and cooperation in the development of practicable technologies for the reduction of emissions in the non-aerosol sectors. The principal provisions of these two alternatives are summarised in Table 1.

- 1.2. Following the presentation and discussion of these proposals in Geneva in January 1985, there has been time to reflect on their relative effectiveness for protecting the ozone layer, and also their economic implications and on the problems of implementation and control.

- It is now clear that the multi-option approach is fundamentally unsound because it fails to provide medium or long term safeguards against ozone depletion;
- It is also commercially inequitable, because it would give differing advantages to countries applying the different options afforded to them.

1.3. In the following paragraphs the case against the multi-option approach is developed, and it is demonstrated that only a simple set of measures incorporating a production capacity restriction and adequate flexibility to meet the needs of developing countries can provide a firm basis for achieving the objectives of the Protocol.

In addition various misrepresentations of the EEC position that have appeared recently are corrected.

TABLE 1

Summary of Alternative Provisions for Article 2 of 3rd Draft CFC Protocol

Alternative	Ultimate restriction on annual CFC usage		CFC Production Capacity Limit	Other Provisions	Comment	
	Limit	Period to reach Limit				
I. (Toronto Group multi-option proposal)	Option (1)	20% of total use and exports in aerosols in year of maximum use prior to Protocol entry.	None	None	No restriction on non-aerosol applications	
	or					
	Option (2)	Ban on all use and export in aerosols except for uses considered essential	Within 6 years (in 2 stages)	None	None	No restriction on non-aerosol applications
	or					
Option (3)	30% of total use and exports in aerosols in year of maximum use prior to Protocol entry	Within 6 years (in 3 stages)	Total Capacity at Protocol entry	None	No restriction on import of CFCs	
	or					
Option (4)	80% of CFC usage in year of maximum use prior to Protocol entry	Within 4 years	None	None	No restriction on export of CFCs	
II. (E.E.C. Proposal)	70% of total use of CFC 11 and CFC 12 in aerosols in reference year, (1976 for E.E.C.)	Within 2 years of Protocol entry	Total capacity for CFC 11 and CFC 12 production	a) Relaxation for developing countries to extent deemed vital for needs.	No restriction on import of CFCs	
				b) Right to adopt stricter measures.	Restrictions apply only to CFC 11 and 12	
				c) Co-operation in action to reduce emissions in main non-aerosol uses		

2. DEFECTS OF THE MULTI-OPTION ALTERNATIVE

2.1. It is anomalous and unsatisfactory to offer control options which differ so widely in their consequences.

- Options (1) and (2) restrict usage and export of CFCs in aerosols but place no limits on production, or on use for non-aerosol applications, and the potential results of permitting unrestricted growth in the non-aerosol sectors are illustrated in Figure 1.

- During the period 1976 to 1983, mainly due to action taken by the United States, Canada, the EEC and the Scandinavian countries, the annual sales of CFC 11 and 12 by CMA^(*) reporting companies for aerosols fell from 432 Kt to 212 Kt, a drop of more than 51 %.

- In the same period the demand for non-aerosol uses grew from 318 Kt to 433 Kt, equivalent to an annual compound growth rate of 4.5 %.

- Figure 1 shows what would happen if consumption for aerosols were to remain at the 1983 level and the non-aerosol demand continued to rise by only 3 % annually : the result would be that production would rise to 1800 Kt - three times the 1983 output - before the year 2030.

2.2. - Curve A shows what happens if the production of CMA companies destined both for aerosol and non-aerosol uses increases by 3 % annually.

(*) The Chemical Manufacturers Association issues annual statistics on the production of CFCs covering all 20 producers of Western Europe, the Americas (excluding Argentina), Australia and Japan.

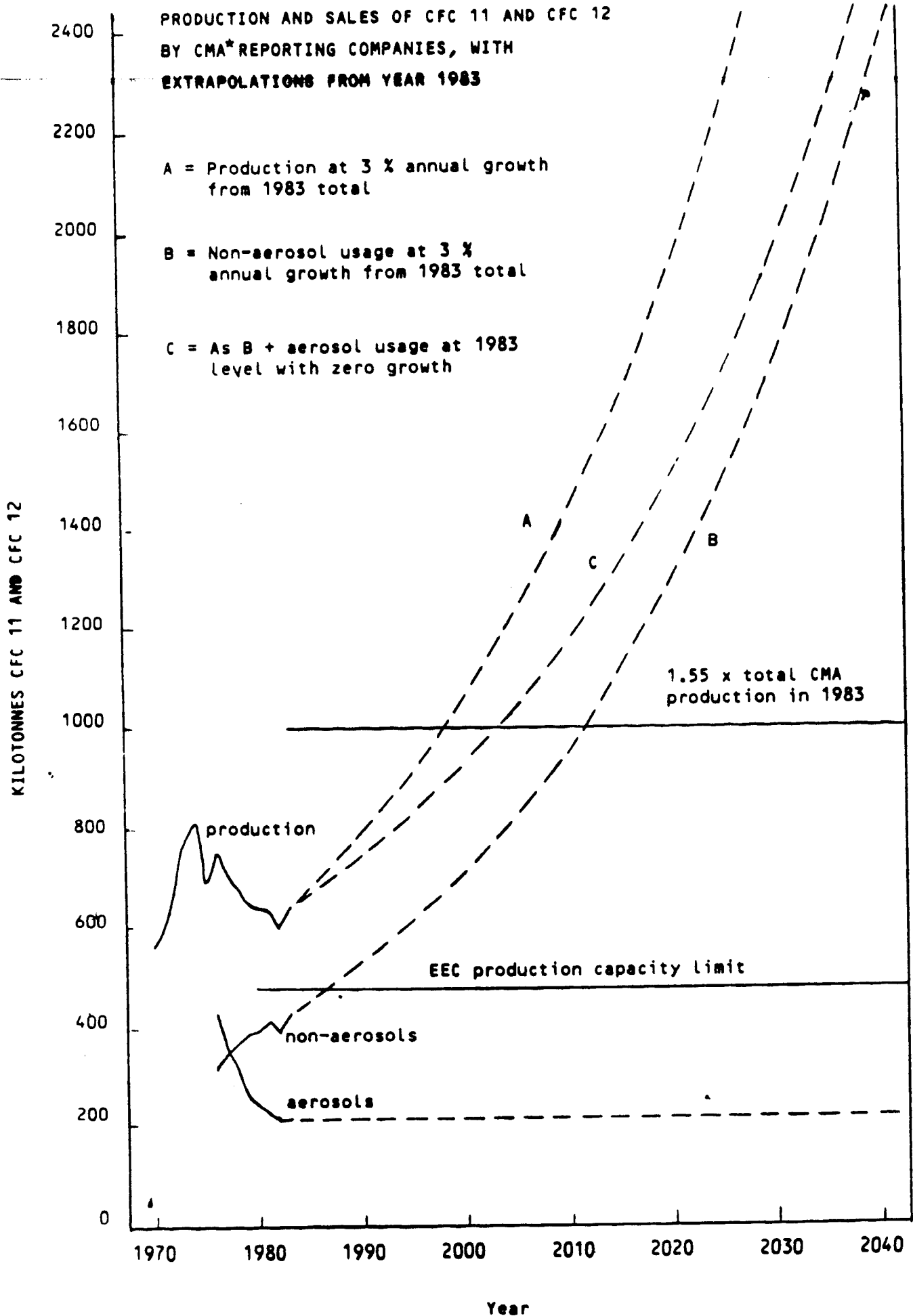
- Curves B and C show the important effect of a 3 % annual growth only of non-aerosol uses.
- The inexorable result is that, if only the non-aerosol demand grows at 3 % it would make little material difference in 50 years time whether the present level of consumption for aerosols has been reduced, frozen, or even allowed to return to the 1976 level before being capped.
- Options (1) and (2) are unsound, therefore, because they would reduce emissions only in the very short term and would allow rapid growth thereafter.

2.3. Option (3) : this effectively caps usage in aerosols and production capacity but does not restrict importation, so a country selecting this set of measures would be free to import CFCs for non-aerosol application from countries which have selected one of the other options.

2.4. Option (4) limits total CFC usage for all applications but, does not restrict production, so the countries choosing this course would be free to produce CFCs in unlimited quantities for export to countries which have selected options (1), (2) or (3), for unrestricted use in the non-aerosol sectors.

2.5. The overall outcome of the multi-option approach, assuming that all options are chosen, would be to allow unlimited growth in demand for non-aerosol uses, and unlimited expansion of production capacity in certain countries to meet this demand. These results would be coupled with considerable commercial inequalities, because of the variety of trading restrictions and freedoms which would operate among the Protocol parties.

2.6. The possible climatic effects that would result from a redistribution of the ozone profile would of course be aggravated by a corresponding degree from the uncontrolled emissions of CFCs.



(*) The Chemical Manufacturers Association issues annual statistics on the production of CFCs covering 20 producers of Western Europe, the Americas (excluding Argentina), Australia and Japan.

3. IMPORTANCE AND ADVANTAGES OF A PRODUCTION CAPACITY LIMITATION

3.1. In the most recent assessment by the CCOL⁽¹⁾ it is concluded that there is little reason to expect a significant change in total ozone over the next few decades unless there is sustained growth in CFCs leading to a several-fold increase in production. This would be the result of the so-called "chlorine catastrophe" case that could be caused by the great increase of chlorine in the stratosphere. According to current scientific thinking⁽²⁾ one way this could be reached is by a continuing with a 3 % annual increase the production of CFCs.

- Figure 1 shows that this situation could be reached in the first half of the next century unless steps are taken to halt usage in all application sectors, and action against aerosols alone would do no more than postpone the situation for a few years.

3.2. The advantages of placing a limit on production capacity, as distinct from controls on application sectors are that it is :

- the most certain method of preventing continuing growth in CFC usage and emission,
- the best way of ensuring that CFC recycling substitution and alternative technologies develop in the most cost effective directions,

(1) Executive Summary of the October 1984 meeting of the Coordinating Committee on the Ozone Layer of UNEP

(2) M.J. Prather, M.B. Mc Elbroy & S.C. Wofsy, Nature Vol. 312 p. 227, 15 November 1984

- the most easily implemented and monitored means of control because there are relatively few producers as opposed to the many thousand of users of CFCs.

4. MERITS OF THE EEC PROPOSAL

Production capacity limitation

- 4.1. - The alternative single set of measures proposed by the EEC includes a limit of production capacity.
- Assuming that CMA reporting company production accounts for about 90 % of existing world capacity, the current scientific assessment indicates that world capacity could safely be allowed to rise by the same extent as in the ratio of present EEC capacity to current EEC production, e.g. a factor of 1.55 times. The result is indicated in Figure 1 : 1000 Kt would be the result of multiplying the CMA production of 1983 by this factor of 1.55. This ceiling is certainly a long way from the exponential curves obtained with the uncontrolled growth of CFCs.
 - In comparison the EEC production capacity limitation places the EEC at the 480 Kt ceiling indicated in Figure 1.
 - Although EEC production is currently running at about 65 % of installed capacity, if the growth in the non-aerosol sectors continued at the same average rate as has obtained in the period 1976 to 1983, with aerosol and export sales remaining constant, the limit could be reached by year 2000. Any increases in exports would shorten this time period.
- 4.2. As mentioned in para 3.2, a production capacity limit is comparatively easy to implement and monitor and encourages the allocation of resources for effecting technological adaptation to the most cost effective channels.
- The EEC has not encountered any particular problem in instituting and implementing the production capacity limitation.

4.3. Concerns of the developing countries

- Developing countries could be concerned that by agreeing to a production capacity limitation they would not be able to produce and use CFCs for their needs.
- The EEC proposal, while preventing unrestricted growth of production, it includes provision for sufficient relaxation to meet the vital needs of the developing countries.

Aerosol reduction measure

- 4.4. The limitation imposed on aerosols means of course that there will be no increase of CFC use in that area in the EEC beyond the levels of use of 1981.
- 4.5. By setting the minimum reduction for aerosols at 30 % the proposal gives the aerosol industry adequate time to achieve the technological adjustments required, while maintaining quality and safety standards.
- 4.6. The proposal leaves individual contracting parties to impose stricter limits should they so desire.

Non-aerosol measures

- 4.7. - There is a provision for cooperation in research, information exchange and positive action to reduce emissions in the main non-aerosol applications.
- The codes of practice for the unnecessary losses of CFCs in refrigeration, solvents and foam plastics were published recently by the EEC.

5. CONCLUSIONS

IN SHORT :

Toronto Group

The multi-option approach of the Toronto Group is a multi-option to disaster according to the latest scientific information

EEC approach

The EEC proposal is the most appropriate response to this possible long-term problem according to the latest scientific information.