MEMORANDUM FOR THE DOMESTIC POLICY COUNCIL

FROM: THE ENERGY, NATURAL RESOURCES & ENVIRONMENT WORKING GROUP

SUBJECT: Stratospheric Ozone Protocol Negotiations

ISSUE - What should the U.S. negotiating position be for elements of the protocol to protect the stratospheric ozone layer by controlling emissions of ozone-depleting substances [chlorofluorocarbons (CFCs) and halons]?

SUPPLEMENTAL BACKGROUND - At the May 20, 1987 Domestic Policy Council meeting on stratospheric ozone, the Council directed the Working Group on Energy, Natural Resources & Environment to address four basic questions relating to the stratospheric ozone issue: (1) what are the climate responses to chlorine emissions; (2) what are the adverse health effects likely to occur as a result of ozone depletion; (3) what are the likely legal and legislative impacts of the ozone protocol; and (4) what are the costs and benefits of controlling emissions of ozone-depleting substances? The Working Group has assembled the existing information and data that responds to these questions.

Climate Responses: Chlorine and bromine emissions in the upper stratosphere cause ozone loss. (More to come from J.R.)

Health Effects: Depletion of the ozone layer would result in increased penetration of biologically damaging ultraviolet radiation (UV-B) to the earth's surface. Based on the research completed to date, greater exposure to UV-B radiation has been linked to increases in the number of skin cancers and cataracts, suppression of the human immune response system, damage to crops and aquatic organisms, increased formation of ground-level ozone (smog), and accelerated degradation of certain plastics.

Based on case control, epidemiological, and ecological studies, dose-response relationshps were developed and reviewed as part of EPA's risk assessment. This analysis suggests that a protocol freeze of CFC 11, 12, and 113 could result in almost 950,000 fewer deaths in the United States for cohorts born before 2075. A 50 percent reduction in the major CFCs would result in almost 1.1 million fewer deaths. This analysis assumes that current trends toward increased explsure to sunlight arehalted, that the average age of the population remains constant, and that no major improvements in treatment of skin cancer occur.

Recent studies have also shown a strong dose-response relationship between UV-B and the incidence of cataracts. Approximately 12.5 million cases in the U.S. could be averted by

Impact of Chlorofluorocarbons (CFCs) on Atmospheric Ozone:

NOT FOR EXTERNAL CIRCULATION

Issue:

Emissions of chemicals containing chlorine (e.g., CFCs) and bromine (Halons) into the atmosphere may be depleting the stratospheric ozone layer, reducing the screen against harmful ulraviolet radiation and altering the Earth's climate system.

Theory and Model Predictions:

Continued growth of CFC and Halon emissions at 3 percent per year, which is consistent with economic projections, is predicted to yield a globally averaged overhead-column ozone depletion of about 6 percent by the year 2040 and more thereafter. In contrast, a true global freeze of the emissions of chlorine and bromine containing chemicals at the present rates is predicted to yield a maximum globally averaged column depletion of less than 0.5 percent by the year 2015 and decreasing thereafter. In both cases, this assumes continued growth in the atmospheric abundances of carbon dioxide and methane, which partially offset the chlorine and bromine effect. It is further predicted that the ozone depletion will be 2-3 times larger at high latitudes than the global average and less near the equator.

Furthermore, even with a true global freeze, it is predicted there will be an eventual 25 percent reduction of ozone in the upper stratosphere leading to a local cooling of about 5 degrees centigrade. The consequences of this cooling to climate at the Earth's surface are currently unclear. The CFCs are greenhouse gases and hence can contribute to a warming of surface temperatures. Current understanding predicts that a true global freeze through 2030 will eventually yield a CFC-induced warming of 0.25-0.8 degrees centigrade, which is comparable to the natural variation observed during the past two centuries.

While these theories indeed simulate much of the present atmosphere fairly well, they are not perfect, which does place factors of two or three uncertainty on their predictive abilities.

Observations:

Ground-based observations show that column ozone generally increased about 3 percent from 1960 to the early 1970's, remained constant throughout the 1970's, and has decreased thereafter by about 4 percent. Recent satellite observations also indicate a decrease in the last several years. In addition, both satellite and ground-based observations have shown that ozone has decreased in the upper stratosphere by about 7 percent during the last decade. Whether the recent decreases in column and upper stratospheric ozone are due to a natural phenomena or in part to CFCs remains an open question.

Observations have demonstrated major (50 percent) column ozone decreases over Antarctica in the spring season since the mid-1970's. Both man-made (CFCs) and natural (solar cycle and climate change) causes have been proposed. None are yet fully confirmed. Therefore global ramifications are currently unknown. However, even if the cause is natural, it would not undermine confidence in global CFC-ozone models.

Implications:

If the goal is to limit predicted global and high-latitude column ozone and the upper stratospheric ozone depletions to less than the decadal natural variability (a few percent), then reductions beyond a true global freeze may be required. It should be noted than even a protocol that reduces emissions as much as 20-50 percent could fall short of a true global freeze since it will not include all chemicals, compliance in developed countries may be less than 100 percent, and substantial growth in CFC usage may occur in developing countries. The long lifetimes of the CFCs and Halons (100 years) imply that if these chemicals cause environmental damage then full recovery would take many decades even with complete termination of emissions. Hence, emission rate reductions done earlier need not be as severe as those done much later.

a protocol freeze for cohorts born by 2075. A 50 percent reduction in the major CFCs would result in approximately 16.3 million cases averted. While laboratory studies link UV-B to suppression of the human response system with possible implications for incresing the incidence of herpes simplex and leishmaniasis, research into possible broader implications has not been undertaken.

Limited studies ahve examined the effects of increased UV-B radiation on plants and aquatic organisms. Five years of field studies of soy beans provide the most extensive data and suggest potentially large losses in yield. Laboratory studies of UV-B effects on aquatic organisms show changes in community composition and reduced breeding season for phytoplankton and loss of larvae for higher order fish. Potential implications for the aquatic food chain have not been studied.

Initial case studies show that increased UV-B radiation will increase background levels of urban groundlevel ozone and will accelerate the breakdown plastics used in outdoor applications.

Legal and Legislative Impact: There is a pending lawsuit against the EPA that was filed to compel the Administrator to promulgate regulations governing stratospheric ozone and to schedule such regulation. So long as international negotiations are continuing, there would seem to be no impact on the current litigation. If the international negotiations result in a scheduled reduction, the EPA would have sound defenses to any attempt by the plaintiff or the court to impose substantive emissions levels through the lawsuit. However, if there is no international agreement, it will be difficult to continue to argue for no domestic regulation, either in the existing lawsuit or in future litigation. EPA will be hard pressed to ask for more time to study the issue, having had at least eight years (by October 1988) since it first began its study.

If the international negotiations for a protocol fail, there will be a strong push for a unilateral domestic reduction on Capitol Hill. Key Senators and Congressmen have been making statements to this effect for months; recent press attention will only heighten that resolve. If the protocol called for a freeze plus a 20 percent reduction, the outcome is less certain. However, Congress would undoubtedly hold additional hearings to determine the need for further domestic reductions. If, on the other hand, the protcol mandated a freeze plus a 50 percent reduction, it seems likely that any pressure for additional regulation domestically would dissipate. Environmental groups, which were initially backing a 95 percent target, have agreed that a freeze plus 50 percent reduction would be a very positive beginning. Therefore, without their pushing additional action, congressional action, at least in the near term, would be unlikely.

Cost Benefit Analysis: A cost benefit analysis has been performed for the projected skin cancer deaths, skin cancer

non-fatal cases, and cataracts health effects projected from increased UV-B radiation occuring at the projected baseline growth of CFC emissions and at the levels of emissions contemplated by a protocol freeze of emissions, a 20 percent reduction thereof, and a further 30 percent reduction thereof. Such analysis involves economic uncertainties and is not being presentd with respect to the benefits derived from reducing the incidence of UV-B on plants, aquatic life, the human immune system, ground level ozone concentrations, polymer degradation, and global temperature because of the lack of sufficient quantitative experimental information. However, the benefits of these non quantifiably evaluated benefits are acknowledged to exist and to be additive to the other benefits which were valued and computed.

A range of assumptions was used in the analysis. The key variations in the assumptions were the valuations of lives saved (two million and four million were used) and the discount rates for the costs and the benefits. Four percent and six percent were used for the benefits and the costs were evaluated at the same rate.

Sensitivity analysis was performed with respect to the economic valuation of lives saved and the growth in their value over time.

The uncertainty in the underlying data from which the individual health effects were calculated was not separately estimated. The central values for health effects from the EPA risk Assessment Analysis were used in the cost benefit analysis. In order to bound the benefit assumptions by the uncertainty in the underlying health effects data, climate models, etc., the calculated benefits should be reduced or multiplied by a significant factor which could be as much as ____ percent reduction of a _____ fold multiplation.

The conclusions of the analysis, which are shown in table form in Appendix _____, are as follows:

--The benefits from a "protcol freeze" of the CFC emissions are substantially more than the costs over all plausible assumptions and ranges of uncertainty.

--The aggregate benefits of a "protocol freeze" plus a 20 percent reduction in CFC emissions are also in almost all plausible cases substantially in excess of the costs.

--However, the benefits of the 20 percent reduction alone are not in all cases in excess of the costs of the 20 percent reduction alone.

--The costs of the further 30 percent reduction appear in many cases to exceed the benefits from the further 30 percent reduction.

QUESTIONS FOR DECISION - DPC guidance is sought on the following six issues involved in the stratospheric ozone negotiations: (1) Whether the U.S. should continue to participate in the international negotiations toward a control protocol; (2) If so, whether the U.S. delegation should continue to negotiate pursuant to the Circular 175 approved by inter-agency review in November 1986; (3) If so, what chemicals should the U.S. seek to include in the protocol; (4) What emissions controls should the U.S. seek to include in the protocol (stringency, timing, future study, implementing mechanism for future controls); (5) What should be the U.S. objective regarding the control formula and the trade provisions; and (6) What should be the U.S. objective regarding participation in the protocol and the voting provisions? The Working Group's analysis and recommendations of these six issues follows.

1. Should the U.S. continue to participate in international negotiations toward a protocol to control emissions of ozone-depleting chemicals?

There is inter-agency agreement that international emissions control action is preferable to unilateral domestic control action for environmental and economic reasons. Unilateral domestic emissions controls are not likely to protect the ozone layer from depletion if other countries continue to emit ozone-depleting substances. In addition, unilateral domestic action would disadvantage U.S. industry in world markets. Moreover, it appears that legislative and judicial pressure may result in unilateral domestic emissions controls in the event negotiations toward an international control protocol fail.

The Working Group recommends that the U.S. continue to participate in international negotiations toward a control protocol.

2. Assuming the U.S. will continue to participate in the international negotiations, should the U.S. delegation continue to negotiate pursuant to the Circular 175?

The November 28, 1986 Circular 175 (approved by inter-agency review) authorizes the U.S. delegation to negotiate a protocol providing for:

I. A near-term freeze on the combined emissions of the most ozone-depleting substances;

II. A long-term scheduled reduction of emissions of these chemicals down to the point of eliminating emissions from all but limited uses for which no substitutes are commercially available (such reduction could be as much as 95 percent);

III. Periodic review of the protocol provisions based upon

regular assessment of the science. The review could remove or add chemicals, or change the schedule or the emission reduction target.

While there has been much discussion about the specific terms of a potential protocol, there is no disagreement with the general framework set out in the Circular 175. The Circular 175, however, allows for various approaches to a control protocol. The remaining issues address the desirability of these various approaches.

The Working Group recommends that the U.S. delegation continue to negotiate pursuant to the Circular 175.

3. Assuming the U.S. delegation will continue to negotiate pursuant to the Circular 175, what chemicals should the U.S. seek to include in the control protocol?

There is inter-agency agreement that a freeze on emissions at 1986 levels should cover all of the important ozone-depleting substances (CFCs 11, 12, 113, 115 and 115, and Halons 1211 and 1301).

There is also inter-agency agreement that any reductions beyond a freeze should not include the Halons because of the lack of scientific data suggesting the need for further reductions of Halons emissions and because of their defense uses.

There is agreement that any reductions beyond a freeze should include CFCs 11, 12, 114 and 115. The Departments of Commerce and Energy question the advisability of requiring further reductions for CFC 113 given its importance to the semi-conductor industry and to defense.

Working Group Recommendation?

4. What emissions controls should the U.S. seek to include in the protocol (stringency, timing, future study, implementing mechanism for future reductions)?

There is inter-agency support, with the possible exception of the Department of the Interior, for a freeze on emissions at 1986 levels for CFCs 11, 12, 113, 114 and 115, and for Halons 1211 and 1301.

There is also inter-agency agreement on the need for frequent future assessments of the science, technology, economic and environmental data, and for any future reductions to be reviewed on the basis of these future assessments.

The important areas of inter-agency disagreement are: the desired extent of emissions reductions beyond a freeze; the

desired timing of these future reductions; the desired mechanisms for implementing these future reductions (i.e. automatic future reductions unless reversed by a vote, versus future reductions implemented only upon positive confirmation vote at future time).

subject to reversal by 2/3 vote

Some agencies would support an automatic future reduction of 20 percent for CFCs 11, 12, 114 and 115, followed by a scheduled 30 percent reduction implemented upon a positive confirmation vote. Some agencies, most notably the Office of Science and Technology Policy, however, do not support scheduling reductions beyond a freeze until there is greater scientific certainty about the likely results of such reductions.

eventual objective 95% p. 3-4

Working Group Recommendation?

5. What should be the U.S. objective regarding the control formula and trade provisions?

ineffective ~~verifiable~~ cld-out

There is inter-agency agreement that the U.S. delegation seek to include in the protocol a ~~verifiable~~ formula to control emissions with accountability, the fewest possible restrictions on the flow of trade and capital among parties, and the most favorable formula for U.S. industry.

verifiability

The Working Group recommends that the U.S. delegation continue to pursue this objective.

6. What should be the U.S. objective regarding participation and voting?

There is inter-agency agreement that there should be the widest possible global participation in the protocol. Limited concessions, such as a grace period for developing countries, may necessary to gain widespread participation.

get back to system

There is also inter-agency agreement that the U.S. delegation should seek to include weighted voting provisions in the protocol which would give due credit to the countries producing and consuming the most controlled substances.

The Working Group recommends that the U.S. delegation continue to negotiate for widespread global participation and weighted voting.

DPC Mtg: May 20

John Rowe

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Ad Hoc Working Group of Legal and Technical Experts for the Prepration of a Protocol on Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer (Vienna Group)

Third Session
Geneva, 27-30 April 1987

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REPORT OF THE AD HOC WORKING GROUP ON THE WORK OF ITS THIRD SESSION

PART I: REPORT OF THE PLENARY SESSIONS

I. INTRODUCTION

1. The third session of the Ad Hoc Working Group on Legal and Technical Experts for the Preparation of a Protocol on Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer (Vienna Group) was held at the Palais des Nations, Geneva, Switzerland from 27 to 30 April 1987. The purpose of the session was to enable the Vienna Group to continue and if possible complete its work, begun at its first session in Geneva, Switzerland, in December 1986 on the elaboration of a Protocol on Chlorofluorocarbons. It was agreed that the Bureau of the previous sessions of the Vienna Group would continue in office, namely: Mr. Winfried Lang (Austria) as Chairman, Mr Essam Hawas (Egypt) and Mr. V. Zakharov (USSR) as Vice Chairman and Mr. Paul Mungai (Kenya) as Rapporteur.

II. ORGANIZATIONAL MATTERS

A Opening of the meeting

2. The third session was opened by the Chairman of the Vienna Group, Dr. Winfried Lang, who emphasized that the aim of the Group was to protect future generations against the adverse effects of ozone depletion. All participants would have to make concessions on questions of substance. They would also have to realise that only a step by step approach was feasible. Their forum could not determine in full detail events that would only occur ten or more years later. It was only realistic that future action should be reviewed or reconfirmed by States parties to the protocol as further

scientific evidence became available. At the end of the previous session he had noted incresed flexibility concering not only readiness to embark on reduction and cuts, but also to include manufactured products in the formulas for adjusted production of chlorofluorocarbons (CFCs). There was growing awareness as well of the need to give developing countries special treatment in view of their specific requirements, and to settle as early as possible the issue of trade, in particular trade with non-parties to the Convention. Dr. Lang welcomed Dr. M.K. Tolba, Executive Director of the United Nations Environment Programme.

3. In his statement Dr. M.K. Tolba stressed that when the meeting in Vienna broke up he had been concerned that the scientific community had appeared divided on the issue of ozone. European and American delegates had left the meeting with quite different predictions about the rate of ozone depletion and different opinions about the regulatory measures to protect human health and the environment. Most of all he had been concerned that scientific debate on those issues might be used as an excuse for doing nothing. He was pleased to see later that a concensus among the scientific community had been confirmed when major ozone modellers had been brought together by UNEP in Wurzburg in the Federal Republic of Germany. Each of them had applied their models to nine different scenarios of CFC control, ranging from moderate limitation to severe restriction and all had obtained results that were very similar. The degree of discrepancy between the models was, for the most part, smaller than the marginal error in each particular model. It was therefore no longer possible to oppose action to regulate CFC release on the ground of scientific dissent. Modellers had communicated the preliminary results of their findings to the Chemical Manufacturers' Association, which had been receptive to their models and hoped for a more detailed analysis of CFC production in the Third World, a question that called for close attention. Dr. Tolba presented for immediate action two proposals: the first to act on what was known; the second to expand knowledge into areas as yet unknown. It was known that the ozone layer was under threat from CFC emissions with consequences that could involve the future of life on earth; it was also known that the risks involved could be reduced by reducing CFC and Halon emissions. The course of action should therefore be clear. UNEP wanted to see an international agreement reached at that meeting whereby rates of production and use in the developed world, and by any major producers or users in the developing countries, would be frozen at current levels and reduced to a very small fraction of the frozen levels within the next decade. In concrete terms, the protocol should be agreed at the Geneva meeting. It should be adopted and signed in the summer or early autumn of 1987 and, hopefully, ratified by the parties to it during 1987 and early 1988, so that it could come into force in 1988. In 1990, two years after the entry into force of the protocol, there should be a complete freeze on production and use at 1986 levels. Thereafter, there should be a 20 per cent cutback in production every two years, reducing it to zero by the year 2000. Every four yers from the date of entry into force of the protocol, there should be a rigorous scientific review, the first in 1992 and the second in 1996, in order to confirm, or otherwise, the need for further reduction. At the same time, the search for substitution and research into recovery technologies and the physics and chemistry of the atmosphere should continue and be accelerated. Dr. Tolba emphasized that the path to regulation was clear and that the time for rational and resposible action had come.

4. Mr. Peter Usher of the UNEP secretariat informed the Vienna Group that the purpose of a scientific meeting was mainly to make available to the Vienna Group: (i) assessment of the implications for the atmosphere of a range of CFC control strategies based upon the sixth revised draft protocol on the control of CFCs; (ii) assessments based on analysis by different models

employing identical scenarios of emission controls; (iii) evaluation of the differences, similarities and reliability of model results through intercomparison by experts. He advised the Group of conclusions reached by the scientists participating in the meeting, the most important of which he summarised as follows: the ozone layer could be protected by regulatory measures applied to CFCs; a true global freeze of fully halogenated CFC emissions was predicted to contain ozone depletion to less than 2 per cent by the year 2050; it appeared not sufficient to regulate CFC 11 and 12 alone. Other substances should also be considered as candidates for regulation; if CFCs continued to be emitted, there were prospects for adverse environmental impacts irrespective of whether or not the ozone layer was depleted. The meeting had confirmed that within the limits of models accurately simulating the real stratosphere all models predicted within acceptable limits similar ozone depletions for given CFC control strategies. Therefore Mr. Usher concluded, it was possible to use a representative one to examine any proposed control strategy and estimate ozone change.

B. Attendance

5. The third session of the Vienna Group was attended by experts from Argentina, Australia, Austria, Canada, Colombia, Denmark, Egypt, Finland, France, Germany, Federal Republic of, Ghana, Hungary, Italy, Japan, Kenya, Malaysia, Mexico, Netherlands, New Zealand, Nigeria, Norway, Poland, Sweden, Switzerland, Union of Soviet Socialist Republics, United Kingdom, United States of America and Venezuela. Representatives were also present from the World Meteorological Organization, European Economic Community, Economic Commission for Europe, European Federations of Chemical Industry Associations, Federal of European Aerosol Associations, International Chamber of Commerce, International Organization of Motor Vehicles Manufacturers, Institue for European Environmental Policy, Natural Resources Defense Council, USA House of Representatives, USA Senate and the World Resources Institute.

III. ADOPTION OF THE AGENDA

6. The Working Group adopted the following agenda:

1. Opening of the session.
2. Adoption of the agenda.
3. Review of progress made at the second session.
4. Consideration and finalization of the sixth revised draft protocol on chlorofluorocarbons.
5. Adoption of the report.
6. Other matters.
7. Closure of the session.

IV. CONSIDERATION AND FINALIZATION OF THE SIXTH REVISED DRAFT PROTOCOL ON CHLOROFLUOROCARBONS

7. The Chairman turned to the organization of work of the session. He suggested that a brief plenary session be held in order to discuss developments since the holding of the second session of the Vienna Group in February 1986 in Vienna, which might contribute to the solution of outstanding matters, to be followed by the establishment of sub-working groups to address unresolved major issues. He proposed that for the first two working days three sub-working groups be constituted:

(a) an Ad Hoc Scientific Working Group;

(b an Ad Hoc Working Group on formula and trade issues;

(c) an Ad Hoc Working Group on control measures to continue dialogue on Article II regulatory measures, of the protocol on chlorofluorocarbons (Chairman's consultations).

(d) an Ad Hoc Working Group on the Special Situation of the Developing Countries held meeting on the 3rd day.

8. Participants endorsed the Chairman's proposals for the organization of work and praised him for his clear assessment of the issues before the Group.

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PART I: REPORT OF THE PLENARY SESSIONS

9. The United States representative said that in Washington, although analyses and discussions had revealed that many aspects of the protocol, including the difficult issue of defining an emissions formula, and questions of trade and enforcement, were even more complex than was originally thought, it was also believed that the general principles and approach consistently advanced by the United States remained valid in the face of the risks from ultraviolet radiation: first, a freeze at 1986 levels of all fully halogenated substances (including halons), weighted collectively according to the ozone-depleting capacity of each individual compound; second, scheduled reductions of those chemicals, step-by-step, down to the point of eliminating emission from all but limited uses for which no substitutes were commercially available - that schedule being linked with; third, frequent reviews of the science, economics, and technology to enable the parties to rationally implement the scheduled reductions. The United States Government remained determined to arrive at an international protocol which would protect the ozone layer, including the maximum possible number of participating states, and also make it unprofitable for those countries which did not accept their share of resposibility.

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10. Statement made by the representative of Argentina is awaiting translation.

11. The representative of Japan emphasized that Japan hopes that an agreement could be reached on an interational protocol for the effective control of chlorofluorocarbons as early as possible. The protocol must be a realistic one, acceptable to as many countries as possible. If it provides for strict measures, it could not be supported by many countries. Various factors must be taken into consideration in determining the regulatory measures, such as the scientific uncertainty concerning the ozone depletion process, the social and economic impact of the implementation of the control measures and the availability of alternative substances for CFCs. As was suggested by many

countries and in the Chairman's draft article II, a phased approach was necessary. In that context, it was very important that contracting parties to the protocol should have common access to technological information on the substitute chemicals and recycling technology. A system of international cooperation should be established with a view to making technological information available to all contracting states, thus avoiding the monopoly of that information by specific countries. It was also important that under international cooperation, a system should be established to promote scientific research and exchange of information among scientists. Finally, it was regrettable that Japan had not been invited to the Ad Hoc scientific meeting at Wurzburg. The report of the meeting would have to be carefuly examined by their expert.

12. The representative of Egypt welcomed the spirit of flexibility which was shown by some preceeding speakers. Referring to the outcome from the Working Group on the siutation in developing countries, he said that there was consensus in the working group on solutions concerning assistance to be allocated for developing countries and that this was reflected in specific amendments and new additions to the draft protocol. Such outcome should be taken care of when finalising the draft. He emphasized that the case for developing countries should be taken in a flexible and fair way. Room to be left for exemption from control measures will not by itself increase dramatically the emission of CFCs. At the final analysis the real incentive would be finding substitutes and making them available at economic cost as well as assisting in implementing new technologies.

13. The representative of Switzerland informed the meeting of his position with respect to the proposal for Article II made by the Chairman at the end of the second session of the Working Group in Vienna. He supported the basic strategy, i.e. immediate freeze, reduction schedule and periodic reviews. He expressed his preference for the adjusted production formula and proposed with respect to paragraph 3 a 50 percent reduction within 5 years. He maintained the basic ideas of both options of paragraph 4 and particularly stressed the need of adding a list of substances not contained in Annex A but being candidates for further regulation.

14. The Austrian representative stated that a rapid and efficient reduction of CFC-consumption is one of the priorities of the national environmental policy. Therefore a further reduction, on a voluntary basis, of the use as propellant by about 25 per cent of whole aerosol consumption during the forthcoming 12 months is envisaged.

15. The representative of the Federal Republic of Germany said that his country is keenly aware of the potentially harmful and dangerous impact on human health and the environment caused by the emission of CFCs with the resulting modification of the ozone layer. Dr. Tolba this morning expressed this danger in a very impressive way. The Federal Republic is determined to take its obligations under the Vienna Convention for the Protection of the Ozone Layer quite seriously and consider and implement the necessary measures to protect human health. While the Government of the Federal Republic acknowledges that a strict causal relationship connecting CFC emissions and human health effects has not yet been scientifically establshed it also recognizes that due to the large time constants involved, such a causal link will in all probability be proven only when it is too late for efficient counter-measures. Precautionary action therefore is urgently needed. It is the considered opinion of the Federal Government that sufficient proof for the CFC involvement in ozone layer modification has been accumulated by the joint efforts of the international scientific community to justify immediate and world-wide action to severely restrict emissions of all CFCs. In the Federal

Republic of Germany, the legal basis is such that it would be possible to achieve a reduction in use, or even a partial or total ban on the use of CFCs. It was of great interest for me to notice the position of Switzerland and Austria as far as the amount of the reduction percentage and its timing ~~is~~ concerned impressed by the initiative. I am

16. The representative of the USSR urged that the approach towards the development of a protocol should not be made over-complicated. What was needed, was to make and consider concrete proposals for regulations using scientific knowledge or assessment as the basis. To agree to a freeze, it was first necessary to suggest a scientifically based list of chemicals for regulation then would determine future restrictions. It was important to make a start on a process agreeable to the majority even if the start had to be made at modest levels.

17. The Head of the Swedish experts said that there were great expectations in his country that a powerful UNEP instrument be created very soon to relief the CFC threat ~~at~~ the ozone layer. The instrument to be agreed upon should be simple and effective. Moreover, it should give clear signals to producers to look for good alternatives to CFCs. Equally important was, he said, that the instrument involved elements adressing the responsibility for every country to decrease the use of CFCs and shift to other products and methods. The Swedish expert said he was most encouraged by the intervention of Dr Tolba and recommended that it should be looked upon as a declaration of intent for actions to be taken. The outline comprised an effective plan for the phasing out of CFCs if necessary, but it also contained timely control stations which held the way open for other future solutions if warranted.

18. The representative of Italy remarked that in spite of persisting differences of views an agreement would and should be possible if from all sides a contructive attitude is going to be taken. As to the position of Italy, it was fully reflected in the EEC proposal which has the advantage of being feasible and practical, since no verification measures are foreseen in this scheme of the protocol concerning CFC controls. The Community suggestions, he said, appear also preferable because they would leave no loopholes in the implementation of measures limiting the production and uses of CFCs. Futhermore, Mr. Tozzoli supported the Japanese proposal for an international cooperation in the search for substitutes which would permit a gradual reduction in the use of fully halogenated hydrocarbons.

19. The representative of the Government of Norway said that the ozone depletion will have greater effects at higher latitudes unless significant measures on an international level are taken. From our viewpoint up north, Norway welcome Dr. Toba's proposal. We are of the opinion that the chairman's proposal at this stage is too weak. This proposal should be strengthened so that all major ozone depleting substances are included and that the automatic stepwise reductions should be tied up with the total ozone depletion potential these substances represent. In order to obtain an appropriate protocol we will cooperate with you in a flexible way.

20. In accordance with plans for the organization of work (noted earlier in the report) sub-working groups met to discuss particular issues related to the development of a protocol. The reports and/or results of the sub-working groups submitted to the Plenary Session of the Vienna Group follow in Part II.

PART I. OF THE REPORT OF THE WORKING GROUP

(to be inserted between paragraphs 9 and 10)

9.bis. The representative of the Commission of the European Community said that the Community had re-examined its position since the second session of the Vienna Group. It was greatly helped in this task by the existence of the draft Article II on Control Measures produced by the Chairman in the light of the discussions in Vienna, and concluded that there was a good prospect of reaching agreement on this central aspect of the Protocol, with a text based on the Chairman's ideas. The Community agreed that the control measures should be applied in three stages. The first stage should be a freeze of CFCs at 1986 levels, to take effect within two years of the protocol coming into force. At the same time there should be a ban on CFC imports from those countries which have not signed or implemented the Protocol. The Community continued to regard control of production as the measure which provided the best safeguard for the ozone layer. What was not produced, could not be emitted, and the stratosphere took no notice of the different sources of CFCs, whether by country or by end use.

First, in both the national and the international context, regulations which restricted supply acted through the market to provide an incentive for all end users to move into substitute products. Second, the right to use CFCs should be seen as a scarce and diminishing natural resource, for which the most efficient allocation between competing demands was through market forces. Third, the restrictions must be capable of easy enforcement by all parties. For all these reasons restrictions on production were preferable to restrictions on use, both domestically and internationally. The Community was attempting to find a possible compromise fomula by agreeing that all countries should control both imports and production, although this element of the proposal was still subject to further examination of its legal and administrative implications. In any case, the Community must be treated as a single unit. The delegate of the Commission hoped that all participants would recognise this movement in the Community position and the extreme difficulty it would have in moving any further towards consumption control.

The second stage of the control measures should be an automatic reduction in CFC production and imports by 20 per cent of 1986 levels, after the initial freeze. This was the Community's assessment of the strictest level of control which could be agreed to by the largest possible number of countries. It would be pointless to go further, if the possible benefits of doing so were negated by the refusal of significant CFC producers and consumers to sign the protocol.

The third stage of the control measures should be the establishment of a regular review procedure every four years, whereby the latest scientific, technical and economic data was examined, and as a result decisions taken as to the extent and timing of any further reductions which might be needed. The Community's proposal was designed to attract the widest possible support from all sides of the discussion, in the belief that our greatest priority must be the early adoption of a protocol which all can sign, and which is straightforward enough to permit early and enforceable implementation.

9205C

PART II: REPORTS OF THE WORKING GROUPS

Report of the Working Group on Formula and Trade

1. The Group had several meetings and had extensive discussions in a spirit of cooperation and compromise. Informal smaller group meetings also were held, where different formulas were thoroughly examined. The outcome is as follows:

A. The Formula

2. On that topic the paper UNEP/WG.172/CRP.7/Rev.1 based upon CRPs 3, 4 and 6 represent the outcome of the Working Group's deliberations on this subject. It also enjoys wide acceptability and therefore represents to a large extent a common ground on which final decision could be built upon after referring back to the Capitals. The Working Group recommends that the paper UNEP/WG.172/CRP.7/Rev.1 be forwarded to the final session of the "Vienna Group" which preceeds immediately the diplomatic conference.

B. Trade

3. The Group had before it the report on trade issues included in document UNEP/WG.167/2. The Group had the opportunity of listening to the views of the legal experts from GATT on the compatibility of an article on control of trade with the provisions of GATT. The GATT legal expert gave the opinion that such an article on control of trade would be in order in accordance with article 20 paragraph (b) of the GATT concerning the protection of human, animal or plant

life or health. The members had discussions with the GATT expert where he noted that the greater commodities that are controlled the larger the chances in practice there could be a challenge from some GATT members. He made it clear that this view is based on practical rather than legal considerations.

4. The Group discussed the article on control of trade and UNEP/WG.172/CRP.12 represents the ~~outcome~~ focus of the deliberations. There are a few points which have been bracketted for further consideration. Meanwhile it was felt that paragraphs 2, 5 and 6 of this article were not discussed enough and would need further discussions in the future. The Group recommends also that this paper be forwarded to the next Vienna Group meeting mentioned above.

Report of the Working Group on the Special Situation of Developing Countries

5. The Working Group held one meeting on 30th April where it had as the basic document the report of that Group included in UNEP/WG.167/2 on its work at the second session. The Group had also a proposal presented by Canada on an article on low consuming countries. Discussions took place in a spirit of cooperation and understanding of the special situation of developing countries on the one hand, and of the common objective to protect the ozone shared by all participants.

6. The Group took note that consideration of the topics concerning assistance to be received by developing countries and financial questions has reached agreed conclusions, during the second session, which has to be taken account of in finalising the protocol.

7. On the room to be allowed for developing countries in respect of activities controlled by this protocol the document UNEP/WG.172/CRP.10 represents the outcome of the Group's deliberations. It was suggested that it could be useful to consider in the future the idea of a periodic revision. It was also suggested that it might be advisable to consider in the future the idea of having a level above which exemption will not be authorized. It was also felt by some that the word consumption used in the first paragraph of the proposed article will have to be better identified.

8. The Group recommends that UNEP/WG.172/CRP.10 be forwarded to the meeting of the Vienna Group preceeding immediately the diplomatic conference.

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on Chlorofluorocarbons to the
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the Ozone Layer (Vienna Group)

Third Session
Geneva, 27-30 April 1987

Revised proposal for reduction formula

The following represents the results of working group discussions (to serve as a basis for future consideration in capitals).

1. Each party shall ensure that within (x) years after the entry into force of this Protocol, its production of the substances referred to in Annex A does not exceed the level of production in 1986.

2. Each party shall ensure that within (x) years after the entry into force of this Protocol, its imports of the substances referred to in Annex A do not exceed the level of imports in 1986. This provision shall remain in force until (y) years after entry into force of this Protocol.

of paragraph 1?

3. Each party shall ensure that within (y) years after the entry into force of this Protocol, its production of the substances referred to in Annex A minus quantities destroyed by the techniques to be agreed by the parties does not exceed (z) % of the level of production in 1986.

4. Each party shall ensure that within (y) years after the entry into force of this Protocol, its consumption of the substances referred to in Annex A does not exceed (z) % of the level of consumption in [1986] [1990].

5. Consumption shall be measured as production, plus imports, minus exports and minus quantities of the substances destroyed by techniques approved by the Parties.

The parties shall decide - within ( ) years of entry into force of this Protocol - [how to count products containing or manufactured using the substances referred to in Annex A and] how to count exports to countries not party to the Protocol.

6. Each party shall submit to the secretariat each year its figures [or estimates where actual data are not available.] for the production, import and export of the ~~regulated substances~~ substances referred to in Annex A starting with the figures of 1986.

7. Alternative 1:

[Any [developing] country, or group of [developing] countries, not producing CFC's at the time of signing of the Protocol shall be permitted to produce or have produced for it by any party to the Protocol, ~~chlorofluorocarbons~~ to a level not exceeding its/their controlled level of imports/ aggregated level of imports, as the case may be. The level of production and imports at any one time will not be permitted to exceed the controlled level of imports.]

Alternative 2:

[Productions are permitted to transfer from one country to another if these transmissions are certain not to cause an increase of production.]

8. The provisions contained in this Article do not prevent Parties from taking more stringent measures than those set out in this Article.

Annex to the Working Group on Formula and Trade

ARTICLE ON CONTROL OF TRADE

1. Within ( ) years after entry into force of this Protocol each Party shall ban the import (and exports) of the controlled substances in bulk from any state not party to this protocol.

2. Within ( ) years after entry into force of this Protocol, each Party shall (restrict) (ban) imports of products identified in Annex ( ) containing substances controlled by this Protocol from any state not party to this Protocol. The Parties shall periodically review, and if necessary, amend Annex ( ).

3. Within ( ) years after entry into force of this Protocol, the Parties shall determine the feasibility of restricting or banning imports of products produced with substances controlled by this Protocol from any state not party to this Protocol. If determined feasible, the Parties shall ban or restrict such products and elaborate in an annex a list of the products to be banned and standards for applying such measures uniformly by all Parties.

(4. Each Party shall discourage the export of technologies (to non-parties) for the production and use of the controlled substances).

5. Except as provided in Article ( ), the Parties shall not provide (to non-parties) bilateral or multilateral subsidies, aid, credits, guarantees, or insurance programmes for the export of products, equipment, plants, or technology for the production (or use) of the controlled substances).

.../

(6. The provisions of paragraphs 4 and 5 shall not apply to products, equipment, plants or technologies which improve the containment, recovery, re-cycling, or destruction of the controlled substances, or otherwise contribute to the reduction of emissions of these substances).]

(7. Nothwithstanding the provisions of this Aritcle, imports referred to in paragraph(s) may be permitted from any State not party to this protocol for a period not to - exceed ___ years from entry into force of the Protocol if that State is in full compliance with Article ( ) and this Article and has submitted information to that effect, as specified in Article ( ).

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ARTICLE ON THE SPECIAL SITUATION OF LOW CONSUMING COUNTRIES

1. States signing the protocol whose per capita consumption in (1986) was less than (0.1 kg/capita/yr) (0.20 kg/capita/yr) will be exempt from controls for a period of (5) (10) yrs after the coming into force of this Protocol.

2. Following the (5) (10) yrs exemption period, those countries exempted by paragraph 1 will be subject to controls in a manner parallel to other memebers of the Protocol.

3. Protocol members will make all possible efforts to assist those countries exempted to make expeditions use of environmentally safe alternative chemicals and technologies.

II. REPORT OF THE AD HOC SUB-WORKING GROUP ON CONTROL MEASURES

(Japan, Nordics, EC, USSR, Canada, US, Exec Director)

Dr. Mostafa K. Tolba reported on his informal consultations with heads of delegations on possible CFC control measures to protect the ozone layer. He noted a desire among delegations to reach a compromise which would result in a meaningful protocol. He informed of the requirement upon certain delegations to seek advice from their Capitals before agreeing resolutions of the Working Group and stressed that such a requirement did not detract in any way from the general desire for cooperation and a search for a solution agreeable by all. Dr. Tolba noted the new areas of agreement reached which included broad general concensus on the need to freeze CFCs 11, 12 and 113 (reservation by Japan) and also, should scientific evidence confirm the need, to include possibly CFCs 114 and should scientific evidence confirm the need also CFCs 115 to be included in the list of potential ozone depleting substances to be regulated.

With respect to CFCs 114 and CFCs 115 some delegations said they required additional information before deciding whether or not to include them in the list of substances to be considered for regulation. Others felt that there is enough information now to require their regulation. Dr. Tolba referred to the report of the scientific group which recommended that CFC 114 and 115 be considered for inclusion in the regulatory list and hoped that the report would be of assistance to delegations in making that decision.

With regard to the Bromine containing Halons, Dr. Tolba acknowledged further discussion was necessary before a decision on whether or not to include them in an initial list of substances to be regulated could be made. One major advance said Dr. Tolba, was a decision to consider substances in combination in any regulatory measure and the term combined would be attached to the agreed formula for regulation.

Another major breakthrough reported by the Executive Director was the agreement among States to effect a 20% reduction in production two to four years after a freeze applied to the production of ozone depleting substances. Still under discussion, he said, was a proposal to further reduce CFC production by 30%, six years after the coming into force of a protocol. He said that the EEC had proposed the adoption of a production reduction with

time without specifying, at this stage, the specific figures to be incorporated in the regulation. However, this ~~automatic~~ move towards reduction would be effected on a simple majority vote and on the basis of the science. The consideration of including other potential ozone depleting substances in the protocol would be taken on a majority vote within a four year period after adoption of the protocol.

Another important agreement was the undertaking of regular review of the control measures in 1990 and every four years thereafter based on scientific, technical, economic and environmental assessment, each to be carried one year in advance of the respective review.

Many delegations welcomed the report of the informal discussions but some complained that negotiations had not advanced sufficiently due to the adoption of fixed positions by some. The representative of the European Economic Community cautioned that the proposals made on behalf of its members applied only to CFCs 11 and 12. The broadening of the terms of the Protocol to include control of other substances would depend upon consideration of scientific information.

One delegation warned that the Vienna Group was bound by UNEP Governing Council decisions regarding the development of a protocol and as a consequence was restricted to considering only the fully halogenated CFCs for regulation. The delegate said that other substances could be considered only on the decision of a subsequent Governing Council. Dr. Tolba agreed to seek a decision from the Council expanding the mandate of the Working Group to consider the Halons.

Delegations noted that the control proposals ~~provided~~ contained in [illegible] were issued by the Exec Director after the consultations. (the current draft text of [illegible] Article II.)

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Third Session
Geneva, 27-30 April 1987

( ) : [ ]

TEXT PREPARED BY A SMALL SUB-WORKING GROUP OF
HEAD OF DELEGATIONS

Timing

ARTICLE II: CONTROL MEASURES

88-90 1. Each party, under the jurisdiction of which CFC 11, CFC 12, CFC 113, (CFC 114, CFC 115) are produced shall ensure that within (2) years after the entry into force of this Protocol the (combined annual production and imports) (combined adjusted annual production) of these substances do not exceed their [1986] level.

90-92 2. Each party, under the jurisdiction of which substances referred to in paragraph 1 are not produced at the time of the entry into force of this Protocol, shall ensure that within (2) years from the entry into force of this Protocol (its combined annual production and imports) (its combined adjusted annual production) do not exceed the levels of imports in [1986.]

92-94 3. Each party shall ensure, that within (4) years after the entry into force of this Protocol levels of substances referred to in paragraph 1 attained in accordance with paragraphs 1 and 2 will be reduced by 20 per cent.

94-96 ~ 96-98 4. Each party shall ensure that within (6) (a), (8) (b) years after the entry into force of this Protocol, the 1986 levels of substances referred to in paragraphs 1 and 2 will be further reduced (by 30 per cent), (a) (if the majority of the parties so decide,) (b) (unless parties by a two-third majority otherwise decide), in the light of assessments referred to in Article III,

90-92 92-94 such decision should be taken not later than (2) (4)* years after entry into force. (a) (6)

(in II 4 these are getting a and b)

* group considered that the industry deserves at least a 4 yr warning.

5. Parties shall decide by (two-third majority) (a majority vote)
   - whether substances should be added to or removed from the reduction schedule
   - whether further reductions of 1986 levels should be undertaken (with the objective of eventual elimination of these substances).

These decisions shall be based on the assessments referred to in Article III.

Note: A second paragraph reading as follows has to be added to Article III. Beginning 1990, every four years thereafter the parties shall review the control measures provided for in Article II. At least one year before each of these reviews, the parties shall convene a panel of scientific experts, with composition and terms of reference determined by the parties, to review advances in scientific understanding of modification of the ozone layer, and the potential health, environmental and climatic effects of such modification.

Tolba expects formal comments on this paper from the Capitals.

Tolba proposes a limited group consultation near end of June (29-30) in Brussels -- with Capitals' cmts by 19 June.

Small legal groups to put protocol in format July 6-8

Diplomatic conference (Montreal)
8-11 Sept for working groups
14-16 Sept for ministerial conference (Plenipotentiary)

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CONCLUSIONS OF THE SCIENTIFIC WORKING GROUP

1. Both the total column content and the vertical, latitudinal, and seasonal distribution of atmospheric ozone respond to the total chlorine and total bromine loadings of the stratosphere.

2. Factors governing the relative efficiency of the compounds to deplete ozone are recognized to be:

(1) Rate of release of the compound into the atmosphere;
(2) Rate of removal of the compound in the troposphere and its persistence in the stratosphere;
(3) Efficiency of the compound in destroying ozone in the stratosphere.

Combining factors (2) and (3) results in a quantity known as the Ozone Depleting Potential (ODP).

3. There are four classes of ozone-depleting substances. Table I lists the specific chemicals included in each class, recommended values for the ozone-depleting potential of each chemical, and their approximate 1985 global production rates. Group (a) contains fully halogenated chlorine compounds with an ODP value near unity; group (b) consists of fully halogenated bromine compounds with an ODP value greater than unity; group (c) contains partially halogenated chlorine compounds with ODP values substantially less than unity that were in widespread commercial use in 1985; group (d) contains partially halogenated compounds not produced in commercial quantities in 1985 but which have potentially large applications in the future as substitutes for group (a) because they have ODP values significantly less than unity.

TABLE I

Group	Chemical	Recommended ODP	Approximate 1985 Global Production Rates** (Million Kg/Yr)
(a)	CFC-11	1.0	340
	CFC-12	1.0	440
	CFC-113+	0.8	160
	CFC-114*	1.0	very low
	CFC-115*	0.6	very low
(b)	Halon-1301*	10	~10
	Halon-1211*	3	~10
(c)	CFC-22+	0.05	210
	Methyl Chloroform	0.1	550
(d)	CFC-123*	<0.05	0
	CFC-132b*	<0.05	0
	CFC-134a	0	0

\+ Some chemicals, notably CFC-22 and to a lesser extent CFC-113, are also used as chemical intermediates. Therefore, not all of these chemicals produced are released to the atmosphere.

* ODP values are preliminary estimates subject to further scientific review.

** Approximate global production rates include estimates of production for the CMA-reporting companies [for CFC-11 and 12 only], the USSR, and some developing countries. Note that total production of each compound is not emitted in the year of production.

4. Inspection of Table I, in agreement with the priorities established in Vienna at the Second Session of the Vienna Group, 23-27 February 1987, shows that at present CFCs 11 and 12 combined are the largest contributors to the predicted depletion of ozone (i.e.~70%). This Table also indicates that current production of CFC-113 contributes about 12% to the predicted depletion of ozone. It is clear that a protocol which allowed substitution of CFCs 11 and 12 by other fully halogenated CFCs, e.g. CFC-114 or CFC-115, would not protect ozone due to the large ODP values and long lifetimes of these substances. Although at current levels of production, a percentage reduction of CFC-11 and CFC-12 will reduce the risk of ozone depletion more than an equivalent percentage reduction in the production of the other compounds listed in Table I, the high growth rates in production of these other compounds will be a source of concern if these growth rates continue over long periods of time. Therefore, from a scientific perspective, the Protocol should consider all of the fully halogenated chemicals which are very long-lived, as a group for the purposes of regulation.

5. Chemical compounds that have low ODP values, such as those in class (d) of paragraph 3 and CFC-22, have significant value as substitutes. A special case is CFC-115 which is used in CFC-502 as an azeotropic mixture with CFC-22. CFC-502 has an ODP value of 0.3.

6. The ODP values for Halons 1211 and 1301, CFC-114, and CFC-115 are not as well established as the values for the other chemical compounds in Table 1. Hence, the recommended ODP values for these chemical compounds should be considered provisional. The Scientific Working Group requests that UNEP arrange expeditiously for improved calculations of these ODP values. In addition, UNEP should quantify the ODP values of alternative CFC formulations for judging their acceptibility.

7. The ODP values for the Halons pose a special case because they depend synergistically upon the stratospheric chlorine abundance. The values recommended in Table 1 are based on estimated 1987 abundances of stratospheric chlorine (~2.5 ppbv). Higher stratospheric chlorine abundances would result in higher values for the ODP values of Halons 1211 and 1301.

8. An additional atmospheric property of the CFCs is their potential to contribute to the greenhouse warming. The Scientific Working Group requests that UNEP quantify this property as a guide for judging the acceptability of alternative CFC formulations. For example, CFC-22 not only has a low ODP value relative to that of CFC-11 and CFC-12, but also has a limited greenhouse effect. In contrast, the greenhouse potential of CFC-115 is greater than that of CFC-11 and CFC-12.

9. The Scientific Working Group underscores not only the importance of considering predicted total column ozone changes in selecting a control strategy, but also the changes in the vertical and latitudinal distribution of ozone. Current theory predicts that even when there are only small changes in column ozone, there is still significant change in the vertical distribution of ozone, which would modify the atmospheric temperature profile. Similarly, while a calculated global average ozone depletion is a useful initial guide for policy considerations, analyses with two-dimensional models indicate that column ozone depletions greater than the global average will occur at high latitudes and that smaller rates of depletion will occur close to the equator. These analyses also suggest significant seasonal changes in levels of depletion.

10. The Scientific Working Group reviewed the UNEP Report of the Ad Hoc Meeting to Compare Model Assessments of the Ozone Layer held in Würzburg, FRG, on 9-10 April 1987. In general, the Scientific Working Group endorsed the conclusions of that report. During the discussion of the appropriateness of the CFC scenarios used at the Wurzburg meeting, a representative of the US EPA described the rationale for the choices. In addition, the US EPA representative stated that, in his opinion, the future growth rates of the Halons and the growth rates of all chemicals in the developing countries were probably underestimated. Representatives of the European CFC Industry questioned both the projected growth rates and the fraction of current production consumed in developing countries. The predicted ozone response to CFC's is sensitive to the scenario assumptions adopted for carbon dioxide, methane, and nitrous oxide. Those adopted at the Wurzburg meeting are simply the current rates of growth of these gases. If the growth rates of CH_4 or CO_2 are lower than assumed the predicted depletion of total ozone by CFCs would be greater. On the other hand, if the growth rates of CH_4 or CO_2 are higher than assumed, the predicted depletion of total ozone by CFCs would be lower. In all of the scenarios examined at this meeting, including a true global freeze of the emissions of all chlorine and bromine containing chemicals, all models examined predicted a depletion of at least 1 percent in global column ozone.

11. The recommendations made by the Scientific Working Group at the Second Session of the Vienna Group were endorsed, principally the need for continued scientific research, long-term measurements, and major scientific assessments every four years. The Vienna Convention provides a mechanism for initiating interim reviews as dictated by major changes in scientific knowledge. The most recent major review was published by WMO and UNEP in early 1986. Therefore, the Scientific Working Group recommends that the next major scientific review be published in early 1990.

OZONE STOPS AIDS

OZONE BLOOD TREATMENT CURES AIDS VICTIMS IN GERMANY.
NO MENTION IN US MEDIA

Dr Horst Keif is curing AIDS victims in the Munich area of West Germany, by hyper-oxygenating their blood with ozone, which destroys the AIDS virus on contact. The same basic process appears to be also effective against hepatitis, herpes, the Epstein Barr Virus and the cytomegalovirus, as well as providing a simple method of purifying stored blood and blood components, and pre-oxygenating blood to be transfused. Some of the medical uses of ozone have been appreciated for years in Europe and elsewhere, but it's still relatively unknown in the US.

The treatment itself is remarkably simple. The ozone is produced by forcing oxygen through a metal tube carrying a 300-volt charge. A pint of blood is drawn from the patient and placed in an infusion bottle. The ozone is then forced into the bottle and thoroughly mixed in by shaking gently, whereupon the blood turns bright cardinal red. As the ozone molecules dissolve into the blood they give up their third oxygen atom, releasing considerable energy which inactivates all lipid-envelope virus while leaving blood cells unharmed.

Ozone overcomes AIDS virus by a fundamentally different process than usually attempted with drugs. Instead of burdening the liver and immune system with more elaborate toxic substances, ozone simply oxidizes the molecules in the shell of the virus, rendering it incapable of spreading.

It also oxygenates the blood to a greater degree than is usually reached, what with poor air and sluggish breathing habits. The treated blood is then given back to the patient. This treatment is given from twice a week to twice a day, depending on how advanced the disease is. The strengthened blood confers some of its virucidal properties to the rest of the patient's blood as it disperses.

The disease will not return, as long as the patient maintains his blood in an oxygen-positive state, through proper breathing, exercise, and clean diet.

The major US news sources and most of the medical establishment seems to be ignoring this line of research. Meanwhile hundreds of millions are being spent to "try and find a cure", which supposedly won't be available for years, if ever. Once AIDS is diagnosed, "it means death." insists AMA president Dr. John J. Coury. "There is no cure...and no immunization." (Mtry Herald 2/27/87) He also mentioned that each case brings the medical industry another $40,000 to $150,000, or 40 to 150 million bucks off every thousand victims. Of course, that's totally unconnected with the AMA's silence about the AIDS cases cured with ozone.

Apparently the lone exception to the medical establishment's overall disinterest in this promising breakthrough, is the FDA approval of the Medizone Company's tests on ozone blood treatment. The NY-based company obtained an IND (Investigative New Drug) Approval for ozone, which falls under the heading of drugs even though it isn't. Their recently completed animal tests have demonstrated no indication of toxicity, at ten times the equivalent amount that is proposed for human treatment.

Medizone was granted US Patent # 4,632,980 on December 30, 1986, on "inactivating lipid-envelope viruses in blood that is returned to a mammilian host." In humans, this includes AIDS, herpes, hepatitis, Epstein Barr virus, and cytomegalovirus. Medizone now has FDA approval to begin human testing around the end of April 1987.

All this has been with virtually no publicity, because the accepted procedure for publishing medical breakthroughs is to complete all the tests first, even though victims may die waiting for the cautious, methodical testing procedure to run its course. No one in the industry wants to raise false hopes, let alone repeat the medical disasters that have resulted in the past, from rushing approval on new treatments.

On the other hand, the drug AZT was widely publicized for many months before it was approved in the US, as is ongoing research into possible AIDS vaccines. The difference is that ozone offers an actual cure, and it's cheap. AZT does not cure but only buys time, and is expected to cost $10,000 per patient per year, bringing the Burroughs-Wellcome Company up to $300 million, from the 30,000 reported AIDS cases.

Only a few independent physicians in the US are already applying this discovery to their patients. Most hesitate to publicize their work because of the FDA's track record of attacking anyone promoting treatments that haven't been approved, or that don't profit the existing medical industries.

Early reports suggest that drinking and bathing in a diluted hydrogen peroxide solution can produce results similar to ozone blood treatment. The principle is the same; peroxide is just water molecules with extra oxygen atoms, and it kills the virus by oxidation as it spreads through the patient's tissues. This offers a possible home treatment, as no blood needs to be drawn, and hydrogen peroxide is cheap and plentiful. Keep it diluted though; in high concentrations it can irritate sensitive skin and induce vomiting when ingested. The proper dosage has not yet been established, so do-it-yourselfers are advised to proceed cautiously and with the assistance of a freethinking physician.

This is as good a place as any for the FDA-required disclaimer: "Information given here is for research and educational purposes only and is not intended to prescribe treatment."

Dr Terry McGrath at Medizone confirmed that hydrogen peroxide would in principle act much like ozone in destroying the AIDS virus, but pointed out that it's never likely to be tested and proven in the laboratory. There's simply no economic incentive, since it's an unpatentable process and offers no more commercial returns than most other natural remedies.

So it's up to individual patients and concerned citizens to push these options out into the open, immediately, before various companies get too financially committed to the assumption that AIDS will continue to spread and to be incurable.

Further information sources:

Rex Research (PO Box 1258, Berkeley, CA 94701) has five folios on Ozone Therapy: #4 ($2, 10pp) is specifically on ozone treatment of AIDS; see also #1, ozone vs a wide variety of conditions ($6, 55pp); #2, ozone vs herpes, hepatitis, rheumatic diseases, also dental use ($4, 29pp); #3, cardiovascular, ozone enrichment of blood prior to transfusion ($4, 23pp) and Ozone vs Cancer ($6, 55pp).

The International Ozone Association (83 Oakwood Ave, Norwalk, CT 06850; 203-847-8169) publishes extensive material on medical uses of ozone.

Hansler ozone generators will be available to licensed physicians through Medizone International, 123 East 54th St, Suite 2B, NY, NY 10022; (212) 421-0303. Biozon Technik Co. in Bad Hersfeld, Federal Republic of Germany, also makes ozone generators for medical use.

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CONFIDENTIAL

Domestic Policy Council

Proposed Guidance for Ozone Protocol Negotiations

1. Issue: Chemical Coverage in Protocol

Background: Scientific consensus is that the most important ozone-depleting substances are CFC 11, 12, 113, 114, 115, and Halons 1201 and 1311. European Community (EC) and, most recently, Japan, have accepted 11, 12 and 113 in Chairman's text and probably will go along with the other chemicals. We expect that the USSR will also accept all, although they raised questions about halons. Because of defense uses of Halons, we do not want to go beyond a freeze on them.

Recommendation: U.S. delegation should press for ~~CFCs to be on reduction schedule with Halons only frozen.~~ broad chemical coverage, with Halons treated separately (i.e. freeze only).

2. Issue: Control Article

Background: "Chairman's text" gained general acceptance last month in Geneva as useful structure, based on the original U.S. proposal in December. If U.S. were now to propose general aerosol ban (which was U.S. position in failed negotiations 1983-1985), it would risk re-opening equity or market allocation proposals, in which U.S. has most to lose.

Option A

--U.S. should negotiate within structure of "Chairman's text."

Option B

--Same as A, but attempt to add voluntary provision for aerosol ban.

Option C

--U.S. should insist on general aerosol ban before any consideration of freeze/reduction of CFCs.

CONFIDENTIAL

3. Issue: Freeze

all controlled substances

Background: There is broad consensus that should be frozen at 1986 levels soon after entry into force (EIF). U.S. industry favors freeze as early as possible

Recommendation: U.S. should endorse freeze at 1-2 years after EIF.

4. Issue: 20 Percent Reduction

Background: European Community (EC) has formally proposed 20% semi-automatic reduction four years after EIF, consistent with original U.S. proposal. This could be reversed by 2/3 vote, based on scientific, economic and technological assessment. Many parties--Nordics, Austria, Switzerland, Canada, Egypt, Argentina, Japan, and others--have informally accepted this ~~and referendum~~ approach. USSR did not oppose in Geneva. U.S. industry officially opposes reduction, although informal contacts indicate they could live with it.

In the Chairman's Text.

Option A:

--U.S. should accept ~~EC proposal~~ Chairman's text on this point.

Option B:

--U.S. should propose that 20% reduction be subject to vote of approval.

5. Issue: 30 Percent Additional Reduction

Background: "Chairman's text" provides for two options, both based on scientific/economic/technological assessment:

(1) reduction 6 years after EIF if majority of parties approve.

OR (2) reduction 8 years after EIF unless 2/3 majority of parties reverses decision.

Both options would follow, and be based upon, scientific/economic/technological assessment. Pending Congressional legislation and environmental groups very strongly favor semi-automatic reduction. Key policy questions are (1) whether the semi-automatic feature, providing greater certainty for industrial planning, will be a greater stimulus for R & D of substitute products; (2) whether 8 years after EIF (i.e., about 10 years from now) will provide adequate time for industry to bring substitutes on line; and (3) whether domestic interests (Congress

and environmental groups) will force unilateral mandatory US reduction if this is not in the international protocol.

Option A

--U.S. should accept majority vote to approve 30 percent cut (favored by European Community and Japan)

Option B

--U.S. should advocate semi-automatic reduction (favored by Canada, Sweden, Norway, Finland, Austria, Switzerland, New Zealand; USSR was leaning toward this.)

Option C

--U.S. should attempt to remove this second phase reduction.

6. Issue: Further Reductions

Background: The original U.S. proposal included an ultimate objective of a "long-term scheduled reduction of emissions of these [ozone-depleting] chemicals down to the point of eliminating emissions from all but limited uses for which no substitutes are available (such reduction could be as much as 95%), subject to [the review process described in 7, below]." The current Chairman's text includes a paragraph saying that Parties should decide at some point in the future, by majority or two-thirds majority vote, "whether further reductions of 1986 levels should be undertaken with the objective of eventual elimination of these substances." There were no objections to this clause at the Geneva meeting. Pending Congressional legislation calls for domestic U.S. reductions of 85 to 95% of 1986 levels.

Option A

--U.S. should seek to remove this paragraph in Chairman's text.

Option B

--U.S. should attempt to include some target percentage reduction (85-95%), subject to future affirmative vote by Parties based on scientific/economic/technological assessments.

Option ~~C~~ B

--U.S. should accept existing or similar language in Chairman's text.

7. Issue: Assessment Process

Background: There is broad consensus for original U.S. proposal of regularly scheduled scientific/economic/technological assessments to guide future actions of Parties in adding or subtracting chemicals to the control list, or modifying the schedule for reductions.

Recommendation: U.S. should ensure that final text adequately provides for these reviews, with sufficient lead-time before the decision-points on reductions.

8. Issue: Trade and Treatment of Developing Countries

Background: There is general recognition of the desirability of attracting into the protocol as many less developed countries (LDC's) as possible, to prevent future "pollution-havens". However, it is also recognized that these countries will require, as an incentive to join, some kind of ~~interim exemption~~ grace period from the reduction schedule, in order to increase somewhat their currently very low consumption of CFCs while substitutes are being developed.

Recommendation: The U.S. should work toward effective trade and developing country provisions which will ~~promote free trade~~ prevent trade distortions among Parties, penalize countries which do not join by restricting their future access to our markets, and provide some incentive for LDC's to join the Protocol without significantly offsetting the reduced CFC production from industrialized countries.

9. Issue: Voting

Background: The Vienna Convention provides that each country has one vote; "weighted voting," as such, would therefore be inadmissable. The question of voting has not been considered to date during the Protocol negotiations. There is consensus among agencies that if the U.S. and EC, which together account for approximately 75% of current world production/consumption, together can agree on future decisions, it would be undesirable for them to be outvoted by many small countries.

Recommendation: The U.S. should press for some system of voting on future control decisions which would give due weight to the currently significant producing and consuming countries (as an example: "a majority of Parties which together comprise 50% -- or two-thirds -- of 1986 production plus import levels").

10. Issues: Verification of Control Measures

Background: Traditionally, international treaties (outside of the Arms Control area) rely on sovereign states to honor their obligations. A system of on-site inspections for the presence of new or expanded CFC-producing facilities would be expensive and probably ineffective because of the large land areas involved. Trade provisions could at least prevent entry of such production into international trade.

Recommendation: U.S. should press for strong monitoring and reporting provisions. U.S. should also explore feasibility and cost effectiveness of establishing ad hoc inspection teams to investigate any alleged violations of protocol.

COUNTRY PARTICIPATION

KEY:

1. Signed Vienna Convention
2. 1st UNEP Technical Workshop (Rome)
3. 2nd UNEP Technical Workshop (Leesburg)
4. 1st Negotiating Session
5. 2nd Negotiating Session
6. 3rd Negotiating Session

COUNTRY PARTICIPATION

	1	2	3	4	5	6
Argentina	X			X	X	X
Australia			X	X	X	X
Austria	X	X	X	X	X	X
Belgium	X	X	X	X	X	X
Birkina Faso	X					
Brazil			X	X	X	
Byelorussian SSR	X					
Canada	X	X	X	X	X	X
China		X	X			
Chile	X					
Colombia					X	X
Denmark	X	X	X	X	X	X
Egypt	X	X	X	X	X	X
Finland	X	X	X	X	X	X
France	X	X	X	X	X	
FRG	X	X	X	X	X	
Ghana						X
Greece	X					
Hungary			X	X		X
Italy	X	X	X	X	X	X
Japan		X	X	X	X	X
Kenya		X	X		X	X
Kuwait		X	X			
Luxembourg	X					X
Malawi		X				
Malaysia			X		X	X
Mexico	X			X	X	X

	1	2	3	4	5	6
Morocco	X					
Mozambique			X			
Netherlands	X	X	X	X	X	X
New Zealand	X				X	X
Nigeria		X	X		X	X
Norway	X	X	X	X	X	X
Peru	X					
Philippines				X	X	
Poland					X	X
Portugal				X		
Spain					X	
Sweden	X	X	X	X	X	X
Switzerland	X			X	X	X
Thailand					X	
Turkey		X				
Ukranian SSR	X					
USSR	X	X	X	X	X	X
U.S.	X	X	X	X	X	X
UK	X	X	X	X	X	X
Venezuela						X
Yugoslavia		X	X		X	

Total countries participating: 48

SUMMARY OF NEGOTIATION ISSUES

SUBJECT: Stratospheric Ozone Protocol Negotiations

The U.S. negotiating team is seeking DPC guidance on the following issues:

Chemical Coverage

- o Should the U.S. objectives in the negotiations be to achieve the broadest possible coverage of major ozone depleters on a weighted basis, including fully halogenated CFC's and Halons?

  Yes_____ No_____

- o Should fully halogenated chemicals and Halons be excluded from reduction targets for national security reasons?

  Yes_____ No_____

Stringency and Timing

- o Should the freeze at 1986 levels proposed in the "Chairman's text" be accepted?

  Yes_____ No_____

- o Should the freeze take effect two years after entry into force (EIF) of the protocol or earlier?

  2 Years After EIF_____ 1 Year After EIF_____

  Later Than 2 Years After EIF_____

- o Should the U.S. agree to a specified scheduled reduction prior to the next major science review, which is now planned for 1990?

  Yes_____ No_____

- o If the foregoing answer is yes, should the first reduction be 20% in accordance with the "Chairman's Text" (automatic and 4 years after EIF)?

  Yes_____ No_____

o Should an additional 30% reduction be scheduled?

Yes_____ No_____

o Should reductions beyond 20% be subject to positive confirmation, by a majority vote, or should additional reductions take effect unless reversed by a 2/3 vote?

Positive Confirmation by a Majority Vote_____

Reversed by 2/3 Vote_____

o Should confirmation/reversal of additional reductions be based on a majority, a two-thirds vote, or other procedures?

Confirmation: Majority_____ Two-thirds_____ Other_____

Reversal: Majority_____ Two-thirds_____ Other_____

o Should the team support the Chairman's text provisions for further reductions beyond 50%?

Yes_____ No_____

o Should the team press for a process for adopting future emissions reductions beyond those provided in the initial protocol?

Yes_____ No_____

Control Formula and Trade Provisions

o Should the team pursue a formula regulating trade among parties based on the following objectives: effective control of emissions with accountability; fewest restrictions on the flow of trade and capital among parties; and most favorable treatment for U.S. industry?

Yes_____ No_____

o Should the team pursue regulation of trade with non-parties consistent with GATT to encourage adherence to the protocol and to avoid benefits to non-parties at the expense of parties?

Yes_____ No_____

Participation

- Should concessions being considered in the "Chairman's text" for less developed countries (LDCs) be accepted, or should LDCs be exempted from controls only for a limited period followed by adherence to the protocol?

  Accept Concessions_____ Limited Exemption Only_____

- Should participating parties have an equal vote or should the U.S. team press for weighted voting based on historic use and production levels?

  Equal Vote_____ Weighted Vote_____

Next Step

Once the DPC has addressed the issues listed above, the Working Group could be tasked with developing a U.S. alternative to the "Chairman's text" for review by the DPC. If approved, this alternative text could serve as guidance to the U.S. negotiating team for the next session.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

May 29, 1987

MEMORANDUM FOR BOB SWEET

FROM: BEVERLY BERGER BB

SUBJECT: COMMENTS ON SUMMARY OF NEGOTIATION ISSUES

Attached are our comments on the draft Summary of Negotiation Issues.

Attachment

OSTP Comments
5/29/87

SUMMARY OF NEGOTIATION ISSUES

SUBJECT: Stratospheric Ozone Protocol Negotiations

The U.S. negotiating team is seeking DPC guidance on the following issues:

Insert Attachment A

Chemical Coverage

o Provided there are effective, acceptable, and verifiable international controls,
o Should the team press for a freeze with the broadest attainable chemical coverage?

Yes_____ No_____

o Given their defense uses, should Halon chemicals be excluded from reduction targets?

Yes_____ No_____

Stringency and Timing

o Should the freeze at 1986 levels proposed in the "Chairman's text" be accepted.

Yes_____ No_____

o Should the freeze take effect two years after entry into force (EIF) of the protocol or earlier?

After Two Years_____ Earlier_____

Replace with Attachment B

o Should an automatic 20% reduction take place four years after EIF or should a positive vote be required after science, technology, environmental, and economic (STEE) elements are reviewed?

Automatic Reduction_____ Require Positive Vote_____

o Should an additional 30% reduction be scheduled?

Yes_____ No_____

o Should reductions beyond 20% be subject to positive confirmation following STEE reassessment, or should additional reductions automatically take effect unless reversed?

Positive Confirmation_____ Automatic Unless Reversed_____

o Should confirmation/reversal of additional reductions be based on a majority, ~~or~~ a two-thirds vote?, or other procedures?

Confirmation: Majority_____ Two-thirds_____ Other_____

Reversal: Majority_____ Two-thirds_____ Other _____

o Should the team press for further scheduled reductions beyond 50%?

Yes_____ No_____

Control Formula and Trade Provisions

o Should the team pursue a formula regulating trade among parties based on the following objectives: effective control of emissions with accountability; fewest restrictions on the flow of trade and capital among parties; and most favorable treatment for U.S. industry?

Yes_____ No_____

o Should the team pursue regulation of trade with non-parties consistent with GATT to encourage adherence to the protocol and to avoid benefits to non-parties at the expense of parties?

Yes_____ No_____

Participation

o Should concessions being considered in the "Chairman's text" for less developed countries (LDCs) be accepted, or should LDCs be exempted from controls only for a limited period followed by adherence to the protocol?

Accept Concessions_____ Limited Exemption Only_____

o Should participating parties have an equal vote or should the U.S. team press for weighted voting based on historic use and production levels?

Equal Vote_____ Weighted Vote_____

ATTACHMENT A

- Should the team press for the elimination of CFC's in aerosol spray cans?

ATTACHMENT B

- Should the U.S. agree to a specified scheduled reduction prior to the next major science review, which is now planned for 1990?

_____ Yes _____ No

- If the foregoing answer is yes, should the first reduction be 20% in accordance with the "Chairman's Text" (automatic and 4 years after EIF)?

_____ Yes _____ No