99TH CONGRESS
1st Session

SENATE

TREATY DOC.
99-9

VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER

MESSAGE

FROM

THE PRESIDENT OF THE UNITED STATES

TRANSMITTING

THE VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER, DONE AT VIENNA ON MARCH 22, 1985

SEPTEMBER 9, 1985.—Convention was read the first time, and together with the accompanying papers, referred to the Committee on Foreign Relations and ordered to be printed for use of the Senate

---

U.S. GOVERNMENT PRINTING OFFICE
71-118 O WASHINGTON : 1985

★(Star Print)

LETTER OF TRANSMITTAL

THE WHITE HOUSE, *September 4, 1985.*

To the Senate of the United States:

I transmit herewith, for the advice and consent of the Senate to ratification, the Vienna Convention for the Protection of the Ozone Layer. The report of the Department of State, the final act of the conference that adopted the Convention, and an environmental assessment and finding of no significant impact are enclosed for the information of the Senate.

The Convention provides a foundation for global multilateral undertakings to protect the environment and public health from the potential adverse effects of depletion of stratospheric ozone. The Convention addresses this important environmental issue primarily by providing for international cooperation in research and exchange of information. It could also serve as a framework for the negotiation of possible protocols containing harmonized regulatory measures that might in the future be considered necessary to protect this critical global resource.

The Convention, which was negotiated and adopted under the auspices of the United Nations Environment Program (UNEP), will be an important step toward protecting and enhancing public health and the quality of the global environment. The United States played a leading role in the negotiation of the Convention. Expeditious ratification by the United States will demonstrate our continued commitment to progress on this significant environmental issue.

I recommend that the Senate give early and favorable consideration to the Convention and give its advice and consent to ratification.

RONALD REAGAN.

LETTER OF SUBMITTAL

DEPARTMENT OF STATE,
Washington, August 22, 1985.

THE PRESIDENT,
The White House.

THE PRESIDENT: I have the honor to submit to you, with a view to transmittal to the Senate for its advice and consent to ratification, the Vienna Convention for the Protection of the Ozone Layer. The final act of the conference that adopted the Convention and an environmental assessment and finding of no significant impact are also submitted for the information of the Senate.

The Convention is an important instrument for the protection of a critical global environmental resource. The stratospheric ozone layer encircling the entire globe prevents harmful amounts of ultraviolet radiation from reaching the earth. Depletion of stratospheric ozone by atmospheric pollutants could result in significant adverse impacts on human health, including an increase in skin cancer rates and suppression of human immune responses. Environmental effects could include reduced crop yields, adverse effects on aquatic ecosystems, including fisheries, and potentially significant climatic changes.

The Convention is an important step in protecting the environment and preserving public health from the potential effects of ozone depletion. Due to the nature of the ozone layer, a multilateral undertaking such as the Convention is the only way to promote the global coordination and harmonization necessary for protection of stratospheric ozone. Early United States ratification is important to demonstrate to the rest of the world our commitment to protection and preservation of this critical resource and will encourage the wide participation necessary for full realization of the Convention's goals. Ratification of the Convention is consistent with our foreign policy and economic and environmental interests.

The Convention is the product of more than three years of negotiations under the auspices of the United Nations Environment Program (UNEP). The Department of State coordinated with all relevant federal agencies, including the Environmental Protection Agency, the National Aeronautics and Space Administration, and the National Oceanic and Atmospheric Administration, during the negotiations. Those agencies strongly support early ratification of the Convention. Close relations were also maintained with the Congress, industry, and environmental groups throughout the negotiations. All these constituencies are believed to support ratification of the Convention.

Articles 2 through 4 are the most significant, substantive provisions of the Convention. Article 2 sets out the general obligations of parties to the Convention, including a requirement to take appropriate measures for the protection of the ozone layer and the obligation to cooperate in research and information exchange. Article 3 specifies that the parties will cooperate, as appropriate, in conducting research and scientific assessments in a wide variety of areas, including chemical, biological, health, and climatic effects. Article 4 provides for the exchange of socioeconomic, commercial, and legal information. These provisions of the Convention will supplement and regularize existing informal and ad hoc information-exchange mechanisms that have been useful to the United States in the past.

Article 7 of the Convention provides for the establishment of a secretariat to facilitate the purposes of the Convention. Until the Convention enters into force, UNEP will act as temporary secretariat. Thereafter, the first meeting of the contracting parties will designate a permanent secretariat. One possibility is that the World Meteorological Organization (WMO) will be requested to serve as the permanent secretariat. The secretariat will arrange meetings of the parties to the Convention, prepare and transmit reports based on information received from the parties, and perform other coordinating functions necessary for the realization of the aims and purposes of the Convention.

Article 8 of the Convention provides for the possible adoption of future protocols. It is through such protocols that any coordinated regulatory measures which might in the future be considered necessary for the protection of the ozone layer would be implemented. The executive branch would examine the environmental impacts of such measures in connection with the negotiation and conclusion of any future protocols.

Article 11 of the Convention concerns settlement of disputes. The general principle set out in that provision is that disagreements concerning the interpretation of the Convention should be resolved by negotiation. Alternately, with the agreement of all parties concerned, the good offices of, or mediation by, a third party may be sought. Arbitration or reference of a dispute to the International Court of Justice are additional options that apply only to those parties that have affirmatively accepted those mechanisms with respect to the Convention or a particular protocol. The obligations in the Convention are not considered to be of such a nature that the United States should accept either of these binding means of dispute settlement with respect to the Convention at this time.

Various provisions in the Convention, including articles 12 through 15, deal with participation by regional economic integration organizations (REIOs), and in particular the European Economic Community (EEC). During the negotiations, United States delegates successfully sought to ensure that the division between the EEC and its member states of responsibility for implementing the Convention would not impair realization of the Convention's purposes. In particular, the purpose of article 15 is to guarantee that REIOs, none of whose member states are parties to the Convention or relevant protocol, have only one vote. Article 15 also prohibits double voting by REIOs, which may not vote in addition to their member states that are parties to the Convention or relevant protocol, and vice versa.

The two annexes to the Convention delineate areas of cooperative activity and procedures for the exchange of information. Annex I elaborates the major scientific issues and subjects of cooperative research outlined in article 3 of the Convention, including (1) modification of the composition of the stratospheric ozone layer, which could have harmful health and environmental effects; and (2) changes in the vertical distribution of ozone, which could have adverse climatic impacts. The annex identifies chemical substances thought to have the potential to modify the chemical and physical properties of the ozone layer. Annex II describes in greater detail the information identified for collection and exchange in articles 3 and 4.

The Convention does not commit the United States to additional regulatory undertakings. The obligations in the Convention can be satisfied without additional legislation and without additional appropriations in the near term. However, a small annual contribution will eventually be necessary, probably beginning in fiscal year 1988, for the support of the secretariat. As with the Convention, negotiation of any future protocols would be undertaken in consultation with the Congress to ensure appropriate consideration of policy and legal questions.

I recommend that the Vienna Convention for the Protection of the Ozone Layer be transmitted to the Senate as soon as possible for its advice and consent to ratification.

Respectfully submitted,

JOHN C. WHITEHEAD.

71-118 O

FINAL ACT
of the
CONFERENCE OF PLENIPOTENTIARIES
ON THE PROTECTION OF THE OZONE LAYER

UNITED NATIONS
1985

Final Act of the Conference of Plenipotentiaries on the Protection of the Ozone Layer

1. The Conference of Plenipotentiaries on the Protection of the Ozone Layer was convened by the Executive Director of the United Nations Environment Programme (UNEP) pursuant to decision 12/14, section I, paragraph 4, adopted by the Governing Council of UNEP on 28 May 1984.

2. The Conference met at the Vienna International Centre, Vienna, with the kind support of the Government of the Republic of Austria, from 18 to 22 March 1985.

3. All States were invited to participate in the Conference. The following States accepted the invitation and participated in the Conference:

Algeria, Argentina, Australia, Austria, Belgium, Brazil, Byelorussian Soviet Socialist Republic, Canada, Chile, Denmark, Egypt, Finland, France, Germany, Federal Republic of, Greece, Ireland, Italy, Japan, Luxembourg, Mexico, Morocco, Netherlands, New Zealand, Nigeria, Norway, Peru, Philippines, Senegal, Spain, Sweden, Switzerland, Ukrainian Soviet Socialist Republic, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland, United States of America, Venezuela.

4. Observers from the following States attended the proceedings of the Conference:

Bulgaria, China, Ecuador, Indonesia, Tunisia, Uruguay, Yugoslavia.

5. Observers from the following United Nations bodies, specialized agencies, intergovernmental and non-governmental organizations also attended the Conference:

United Nations Industrial Development Organization, World Meteorological Organization, European Economic Community, Organization for Economic Co-operation and Development, European Council of Chemical Manufacturers' Federations, International Chamber of Commerce, Federation of European Aerosol Associations.

6. In the course of the inaugural ceremony, the Conference heard a welcoming address by Dr. Kurt Steyrer, Federal Minister for Health and Environmental Protection on behalf of the Government of the Republic of Austria. The Conference was formally opened by Dr. Mostafa K. Tolba, the Executive Director of UNEP, who served as Secretary-General of the Conference and appointed Mr. Jerry O'Dell as Executive Secretary.

7. The Conference unanimously elected Dr. Winfried Lang (Austria) as its President.

8. The Conference also elected the following officers:

Vice-Presidents: Mr. Geraldo Zulalio do Nascimento e Silva (Brazil)
Mr. Mohamed El-Taher Shash (Egypt)
Mr. Rune Lidngren (Sweden)
Mr. Yuri Sedunov (Union of Soviet Socialist Republics)

Rapporteur: Mr. Willem Kakebeeke (Netherlands)

9. The Conference adopted the following agenda:

1. Opening of the Conference.

2. Organizational matters:

(a) Adoption of the rules of procedure;
(b) Election of the President;
(c) Election of Vice-Presidents and Rapporteur;
(d) Adoption of the agenda;
(e) Appointment of the Credentials Committee;
(f) Appointment of the Drafting Committee;
(g) Organization of the work of the Conference.

3. Consideration of the draft Convention for the Protection of the Ozone Layer, and its technical annexes.

4. Consideration of the report of the Ad Hoc Working Group of Legal and Technical Experts for the Elaboration of a Global Framework Convention for the Protection of the Ozone Layer, concerning a draft Protocol on Chlorofluorocarbons.

5. Consideration of the report of the Credentials Committee.

6. Adoption of the Convention and other instruments, as appropriate.

7. Adoption of the Final Act of the Conference.

8. Signature of final instruments.

9. Closing of the Conference.

10. The Conference adopted as its rules of procedure document UNEP/IG.53/2 proposed by the secretariat, as amended (UNEP/IG.53/2/Corr.1).

11. In conformity with the rules of procedure, the Conference established the following Committees:

Committee of the Whole

Chairman: The President of the Conference

General Committee

Chairman: The President of the Conference

Members: The Vice-Presidents of the Conference, the Rapporteur and the Chairman of the Drafting Committee

Drafting Committee

Chairman: Mr. Alberto L. Davérède (Argentina)

Members: Mr. Waguih Said Hanafi (Egypt)
Ms. Satu Hurmi (Finland)
Mr. Philippe Seigneurin (France)
Mr. Vadim Sakoumov (USSR)
Mr. Patrick Szell (United Kingdom)
Mr. Scott A. Hajost (USA)

12. The main documents which served as the basis for the deliberations of the Conference were:

- Fifth Revised Draft Convention for the Protection of the Ozone Layer (UNEP/IG.53/3)

- Final Report of the Ad Hoc Working Group of Legal and Technical Experts for the Elaboration of a Global Framework Convention for the Protection of the Ozone Layer (UNEP/IG.53/4).

13. In addition, the Conference had before it a number of other documents that were made available to it by the Secretariat of UNEP. 1/

14. The Conference approved the recommendation of its Credentials Committee that the credentials of the representatives of the participating States as listed in paragraph 3 should be recognized as being in order.

15. On the basis of the deliberations of the Committee of the Whole, the Conference, on 22 March 1985, adopted the Vienna Convention for the Protection of the Ozone Layer. The Convention, which is appended to this Final Act, will be open for signature at the Federal Ministry for Foreign Affairs of the Republic of Austria in Vienna from 22 March 1985 to 21 September 1985, and at the United Nations Headquarters in New York from 22 September 1985 to 21 March 1986.

16. The Conference also adopted the following resolutions which are appended to this Final Act:

1. Resolution on institutional and financial arrangements;

2. Resolution on a protocol concerning chlorofluorocarbons;

3. Tribute to the Government of the Republic of Austria.

17. At the time of the adoption of this Final Act, several States made declarations which are recorded in document UNEP/IG.53/5 appended hereto.

1/ Financial implications of the implementation of the Convention for the Protection of the Ozone Layer: Revised estimates, and comments by WMO (documents UNEP/WG.94/13, UNEP/WG.94/13/Add.1 and UNEP/WG.94/13/Add.2/Rev.1).

IN WITNESS WHEREOF the representatives have signed this Final Act.

DONE at Vienna this twenty second day of March one thousand nine hundred and eighty five in one original in the Arabic, Chinese, English, French, Russian and Spanish languages, each language version being equally authentic. The original text will be deposited with the Secretary-General of the United Nations.

1. Resolution on Institutional and Financial Arrangements

The Conference,

Having adopted the Vienna Convention for the Protection of the Ozone Layer,

Recalling that under the Convention the United Nations Environment Programme (UNEP) is responsible for carrying out the secretariat functions until the completion of the first ordinary meeting of the Conference of the Parties held pursuant to article 6 of the Convention,

Recognising that it is for the Parties to the Convention to finance the costs of the secretariat of the Convention and other administrative costs,

1. Notes the cost estimates for the first two years of the Convention secretariat, as presented by the secretariats of UNEP and the World Meteorological Organization (WMO);

2. Also notes the willingness of the Executive Director of UNEP to contribute towards the costs of the interim secretariat during its initial two to three years of operation, subject to the availability of resources in the Environment Fund;

3. Requests the Executive Director of UNEP, in consultation with the signatories to the Convention and in close co-operation with WMO and other relevant United Nations bodies, to make arrangements required for the interim secretariat in order to achieve the objectives of the Convention;

4. Further notes with appreciation the statements of the Executive Director of UNEP and the WMO Executive Council, offering to serve as the permanent secretariat for the Convention.

2. Resolution on a Protocol Concerning Chlorofluorocarbons

The Conference,

Noting with appreciation that the Convention for the Protection of the Ozone Layer was opened for signature in Vienna on 22 March 1985,

Bearing in mind decision 8/7B adopted on 29 April 1980 by the Governing Council of the United Nations Environment Programme (UNEP),

Considering that the Convention is an important step to protect the ozone layer from modifications due to human activities,

Noting that article 2 of the Convention establishes an obligation to take appropriate measures to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer,

Recognizing the possibility that world-wide emissions and use of fully-halogenated chlorofluorocarbons (CFCs) and other chlorine-containing substances can significantly deplete and otherwise modify the ozone layer, leading to potentially adverse effects on human health, crops, marine life, materials and climate, and recognizing at the same time the need to further assess possible modifications and their potentially adverse effects,

Mindful of the precautionary measures for controlling emissions and use of CFCs that have already been taken at national and regional levels, but recognizing that such measures might not be sufficient for protecting the ozone layer,

Determined therefore to continue negotiations on the development of a protocol to control equitably global production, emissions and use of CFCs,

Mindful that special consideration should be given to the particular situation of developing countries,

Mindful also of the relationship between the level of industrialization of a State and its responsibilities for the protection of the ozone layer,

Noting the considerable progress made by the Ad Hoc Working Group of Legal and Technical Experts for the Elaboration of a Global Framework Convention for the Protection of the Ozone Layer to develop a protocol concerning CFCs, but further noting that the Working Group was not in a position to complete its work on the protocol,

1. Pending the entry into force of the Convention, requests the Executive Director of UNEP, on the basis of the work of the Ad Hoc Working Group, to convene a working group to continue work on a protocol that addresses both short and long term strategies to control equitably global production, emissions and use of CFCs, taking into account the particular situation of developing countries as well as updated scientific and economic research;

2. Urges all interested parties, in order to facilitate work on a protocol, to co-operate in studies leading to a more common understanding of possible scenarios for global production, emissions and use of CFCs and other substances affecting the ozone layer and the costs and effects of various control measures and, to this end, requests such parties to sponsor, under the patronage of UNEP, a workshop on this subject;

3. Requests the working group, in further developing a protocol, to take into account, inter alia, the report of the Co-ordinating Committee on the Ozone Layer on its eighth session as well as the 1985 World Meteorological Organization assessment of the current understanding of the physical and chemical processes which control atmospheric ozone;

4. Authorizes the Executive Director, in consultation with the signatories and pending the entry into force of the Convention, to convene a Diplomatic Conference, if possible in 1987, for the purpose of adopting such a protocol;

5. Appeals to signatories to the Convention and to other interested parties participating in the preparation of a protocol to make available financial means to support activities envisaged under the above paragraphs;

6. Urges all States and regional economic integration organizations, pending entry into force of a protocol, to control their emissions of CFCs, inter alia in aerosols, by any means at their disposal, including controls on production or use, to the maximum extent practicable.

3. Tribute to the Government of the Republic of Austria

The Conference,

Having met in Vienna from 18 to 22 March 1985 at the gracious invitation of the Government of the Republic of Austria,

Convinced that the efforts made by the Government of the Republic of Austria and by the civic authorities of Vienna in providing facilities, premises and other resources contributed significantly to the smooth conduct of its proceedings,

Deeply appreciative of the courtesy and hospitality extended by the Government of the Republic of Austria and the City of Vienna to the members of the delegations, observers and the secretariat attending the Conference,

Expresses its sincere gratitude to the Government of the Republic of Austria, to the authorities of Vienna and, through them, to the Austrian people and in particular to the population of Vienna for the cordial welcome which they accorded to the Conference and to those associated with its work and for their contribution to the success of the Conference.

ENVIRONMENTAL ASSESSMENT OF THE VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER

Proposed Action:

The proposed action is to ratify the Vienna Convention for the Protection of the Ozone Layer. Following its adoption at a Diplomatic Conference held in Vienna, Austria in March 1985, this Convention was signed by twenty-one nations, including the United States. It will enter into force following ratification, acceptance, approval, or accession by twenty states. The Convention creates a framework for international cooperation on research, monitoring, and information exchange with respect to the ozone layer, potential modification of the ozone layer, and the potentially adverse health, environmental, and climatic effects of such modification. The Convention also provides procedures for formulating control measures if needed.

The Vienna Convention was developed in response to international scientific concern that the ozone layer was being modified and possibly depleted, due to emissions of certain trace gases into the atmosphere: including chlorofluorocarbons (CFCs), carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Because of the key role played by the ozone layer in shielding out solar UV and in controlling the atmospheric heat gradient, a depletion or modification of the ozone layer could result in significant adverse health, environmental, and climatic impacts.

Description of the Affected Environment:

Approximately 95 percent of atmospheric ozone is found in the stratosphere, extending from about 16 kilometers (km) to 50 km at low latitudes, and from about 8 km to 50 km at high latitudes. Ozone (O_3) is photochemically created from diatomic oxygen (O_2) and destroyed by several complex series of chemical reactions involving oxygen, hydrogen, nitrogen, chlorine (NAS 1984), and bromine species (Prather et al. 1984). The total concentration and vertical distribution of atmospheric ozone is determined by the net result of these various chemical and dynamic processes, which create or remove ozone at different rates and at different altitudes.

Ozone molecules absorb ultraviolet radiation in the 280 - 320 nm wavelength range (UV-B). Because of this property, the ozone layer prevents most of the solar UV-B hitting the atmosphere from reaching the earth's surface. Ozone molecules also absorb varying amounts of infrared radiation (IR), depending on temperature and pressure. Because of its capacity to absorb both IR and UV radiation, the distribution of atmospheric ozone is a principal determinant of the temperature structure of the atmosphere.

Need for Proposed Action:

(1) Ozone depletion: Estimates of depletion of the ozone layer are derived from one and two dimensional photo-

chemical models of the atmosphere, which simulate many aspects of the physical and chemical processes that determine the structure and composition of the stratosphere. Model results are quite sensitive to the particular emissions scenarios assumed for CFCs, CO_2, methane, and N_2O. For example, a scenario which assumes no growth in emissions of these gases (and does not include all types of CFCs) yields 2-4 percent depletion of total column ozone at "steady-state", reached sometime in the next century (NAS 1984). By contrast, an emissions scenario which assumes a 3 percent growth rate for CFCs yields depletion estimates in excess of ten percent, for a variety of growth rates of the other gases, by mid-next century (NAS 1984; Prather et al., 1984). Growth in CFC use is considered likely, due to their economic importance as refrigerants, foam-blowing agents, solvents, etc. (Rand 1980).

A net depletion of total column ozone would allow more UV-B radiation to reach the earth's surface, which would result in significant adverse effects on human health and the environment: e.g., increased skin cancer incidence (2-4 percent increase in non-melanoma for every one percent depletion of ozone, and possible increases in melanoma); suppression of human immune response; possible decreases in the productivity of commercially important crops; possible increases in mortality of commercially or ecologically important aquatic life (NAS 1984); and degradation of paints, plastics, and other materials (CIAP 1975).

(2) Ozone layer modification: Current atmospheric models also predict a change in the vertical distribution of ozone, for virtually all emissions scenarios, with a relative increase in ozone concentration in the lower stratosphere and upper troposphere and a decrease in the upper stratosphere. (NAS 1984). Because of ozone's infrared-absorbing capacity, this vertical redistribution would change the vertical heat gradient of the atmosphere, which would affect atmospheric circulation patterns (NAS 1984). The increased tropospheric ozone concentration would also augment the predicted rise in global average equilibrium surface temperature due to the increasing atmospheric concentration of carbon dioxide and other infrared-absorbing gases; e.g., CFCs, methane, and N_2O (NAS 1984). This global warming trend could significantly modify climate patterns and possibly raise the sea level by up to two meters in the next century (NAS 1983; Barth and Titus ed. 1984).

Probable Impact of the Proposed Action on the Environment:

The substantive provisions of the Convention are contained in articles 2 through 5. Article 2 establishes general obligations for protecting the ozone layer; Articles 3 and 4 establish obligations for international cooperation on systematic observations (monitoring), and scientific and technical research; and Article 5 provides for transmission of information. The remaining articles are generic treaty procedures on, e.g., amendments, signature, ratification, entry in force, etc.

(1) Direct effects: The only provision in the Convention which obligates a Party to take actions in or on the environment is the provision for systematic observations (Article 3, paragraph 2). Current monitoring techniques include: (a) in situ sampling from balloons or aircraft; (b) remote sensing via balloon, satellite, and space shuttle; and (c) ground-based monitoring. Of these, no environmental impact would occur from either balloon launchings or ground-based monitoring. Moreover, the frequency of aircraft flights for monitoring purposes, or of satellite or shuttle launchings, would not be increased substantially by the U.S. in order to fulfill its obligations under this Convention. Therefore, any environmental impact from these activities should be insignificant.

(2) Indirect effects: An international agreement could also have an "indirect" environmental impact, by setting into motion a process that leads to actions having an impact in or on the environment in the future. In this Convention there are procedures for the adoption of protocols (Article 9); protocols could contain control measures, which could have an environmental impact. However, this process is not mandatory; i.e., there is no requirement to adopt any protocols. Furthermore, the obligation under the Convention to take appropriate measures specifies that the purpose of such measures be "to protect human health and the environment against adverse effects" (Article 2, paragraph 1). In addition, a primary objective of

the Convention is to increase scientific understanding of the ozone layer and the potential risks of modifying it. Thus, adherence to the Convention could actually reduce the likelihood of control measures being taken that would have an adverse environmental impact.

Alternatives to the Proposed Action:

(1) No Action: Under this alternative, the U.S. would not ratify the Convention, but would continue its existing ad hoc arrangements for cooperation on scientific research, monitoring, and information exchange. No immediate environmental impact would result from this alternative. However, U.S. non-ratification could reduce the participation of other countries in the Convention, since it might be perceived that the U.S. did not take the potential threat to the ozone layer seriously.

The extent of participation in the Convention worldwide is likely to effect the degree of protection of the ozone layer in the long run. Wider participation should help to increase the scientific and economic data base for decision-making, and will help to ensure a more common understanding of the problem internationally. Failure of the U.S. to ratify could inhibit scientific progress, thereby reducing the knowledge base for decision-making.

Furthermore, if emissions controls are needed in the future, they will be much more effective if adhered to by as many countries as possible, since emissions of the relevant gases by any one

country can modify the ozone layer for all countries. Failure by the U.S. to ratify the Convention would reduce the likelihood and extent of international cooperation on any control measures that are needed.

(2) Bilateral Agreements: Under this alternative, the U.S. would establish bilateral agreements covering the same areas as the Convention with other interested countries. The U.S. has in the past used bilateral arrangements for specific research projects related to the ozone layer and the effects of ozone layer modification.

However, it would be quite difficult, and costly, to negotiate 20-30 bilateral agreements of the same scope as the Convention, which includes not only scientific research, but technical cooperation and development of control measures. Also, the general principles for protecting the ozone layer stated in the Convention would not have the same universal status if contained only in bilateral agreements.

Furthermore, bilateral agreements in lieu of the Convention would not be as effective in assisting the development of a common international understanding of the science. Finally, a proliferation of bilateral control regimes could actually impede the development of an international consensus on what steps may be needed for protecting the ozone layer.

Conclusion:

The proposed action -- ratification of the Convention -- would not have a significant adverse environmental impact, and could be environmentally beneficial in the longer term. The impacts of the alternatives to the proposed action -- taking no action or developing bilateral agreements -- could be negative: they could lead to a divergence of understanding, rather than a consensus on the nature of the problem, and thus could delay the development of an international strategy for protecting the ozone layer. Therefore, the potential environmental benefits of U.S. ratification are likely to be greater than either of the alternatives.

REFERENCES

Barth, M.C. and Titus, J.G., ed. (1984); Greenhouse Effect and Sea Level Rise. New York: Van Nostrand Reinhold Co.

National Academy of Sciences/National Research Council (1984); Causes and Effects of Changes in Stratospheric Ozone: Update 1983. Washington, D.C.: National Academy Press.

National Academy of Sciences/National Research Council (1983); Changing Climate. Washington, D.C.: National Academy Press.

Palmer, A.R., W.E. Mooz, T.H. Quinn, K.A. Wolf (1980); Economic Implications of Regulating Chlorofluorocarbon Emissions from Nonaerosol Applications. Santa Monica: The Rand Corporation, R-2524-EPA, (June 1980).

Prather, M.J., M.B. McElroy, and S. Wofsy (1984); "Reductions in Ozone at High Concentrations of Stratospheric Halogens"; Nature 312: 227-231 (November 15, 1984).

Shultz, A.R., D.A. Gordon, W.L. Hawkins (1975); "Materials Weather"; Economic and Social Measurements of Biologic and Climate Change. U.S. Dept. of Transportation, Climate Impact Assessment Program (CIAP), Monograph no. 6 (September 1975).

Drafted by: James Losey
EPA/OIA (382-4894)
7/19/85

Reviewed by:

William Mansfield	EPA/OIA
John Hoffman	EPA/OAR
Stephen Weil	EPA/OPPE
William Keith	EPA/ORD
Herbert Wiser	EPA/ORD
Dorothy Patton	EPA/OGC
Judith Troast	EPA/OFA
Robert Coe	State/OES
Paul Glasoe	State/OES
David Wirth	State/L
Robert Watson	NASA
James Angell	NOAA

United States Department of State

Washington, D.C. 20520

BUREAU OF OCEANS AND INTERNATIONAL
ENVIRONMENTAL AND SCIENTIFIC AFFAIRS

MEMORANDUM FOR THE FILES August 15, 1985

Subject: Finding of No Significant Impact

Pursuant to the National Environmental Policy Act (NEPA) and Executive Order No. 12114, and in accordance with implementing regulations and procedures of the Council on Environmental Quality and the Department of State, an environmental assessment has been prepared concerning the ratification of the Vienna Convention for the Protection of the Ozone Layer. Twenty-one signatories, including the United States, signed the Convention in Vienna, Austria, on March 22, 1985. The Convention creates a framework for international cooperation on research, monitoring, and information exchange with respect to the ozone layer, its potential modification, and the effects of such modification. The Convention also provides procedures for formulating possible control measures as they may in the future be needed.

The environmental assessment (attached) concludes that the Convention would have no significant adverse environmental impacts. On the contrary, ratification of the Convention could be environmentally beneficial in the long run as it would help stimulate other nations also to ratify the Convention, thus contributing to an expansion of the scientific data base, particularly emissions data, and helping ensure a common understanding of the nature of the issues. The Convention should also increase the prospects that any future national control measures will be harmonized internationally. The assessment reviews the alternatives to ratification of the Convention - no action, or a series of bilateral agreements - and concludes that they could be nagative from an environmental standpoint.

Accordingly, I have made a finding of no significant environmental impact with regard to the proposal to seek ratification of the Vienna Convention for the Protection of the Ozone Layer.

Clifton G. Metzner, Jr.
Director,
Office of Environment
and Health

VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER

UNITED NATIONS
1985

VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER

Preamble

The Parties to this Convention,

Aware of the potentially harmful impact on human health and the environment through modification of the ozone layer,

Recalling the pertinent provisions of the Declaration of the United Nations Conference on the Human Environment, and in particular principle 21, which provides that "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction",

Taking into account the circumstances and particular requirements of developing countries,

Mindful of the work and studies proceeding within both international and national organizations and, in particular, of the World Plan of Action on the Ozone Layer of the United Nations Environment Programme,

Mindful also of the precautionary measures for the protection of the ozone layer which have already been taken at the national and international levels,

Aware that measures to protect the ozone layer from modifications due to human activities require international co-operation and action, and should be based on relevant scientific and technical considerations,

Aware also of the need for further research and systematic observations to further develop scientific knowledge of the ozone layer and possible adverse effects resulting from its modification,

Determined to protect human health and the environment against adverse effects resulting from modifications of the ozone layer,

HAVE AGREED AS FOLLOWS:

Article 1
DEFINITIONS

For the purposes of this Convention:

1. "The ozone layer" means the layer of atmospheric ozone above the planetary boundary layer.

2. "Adverse effects" means changes in the physical environment or biota, including changes in climate, which have significant deleterious effects on human health or on the composition, resilience and productivity of natural and managed ecosystems, or on materials useful to mankind.

3. "Alternative technologies or equipment" means technologies or equipment the use of which makes it possible to reduce or effectively eliminate emissions of substances which have or are likely to have adverse effects on the ozone layer.

4. "Alternative substances" means substances which reduce, eliminate or avoid adverse effects on the ozone layer.

5. "Parties" means, unless the text otherwise indicates, Parties to this Convention.

6. "Regional economic integration organization" means an organization constituted by sovereign States of a given region which has competence in respect of matters governed by this Convention or its protocols and has been duly authorized, in accordance with its internal procedures, to sign, ratify, accept, approve or accede to the instruments concerned.

7. "Protocols" means protocols to this Convention.

Article 2
GENERAL OBLIGATIONS

1. The Parties shall take appropriate measures in accordance with the provisions of this Convention and of those protocols in force to which they are party to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer.

2. To this end the Parties shall, in accordance with the means at their disposal and their capabilities:

(a) Co-operate by means of systematic observations, research and information exchange in order to better understand and assess the effects of human activities on the ozone layer and the effects on human health and the environment from modification of the ozone layer;

(b) Adopt appropriate legislative or administrative measures and co-operate in harmonizing appropriate policies to control, limit, reduce or prevent human activities under their jurisdiction or control should it be found that these activities have or are likely to have adverse effects resulting from modification or likely modification of the ozone layer;

(c) Co-operate in the formulation of agreed measures, procedures and standards for the implementation of this Convention, with a view to the adoption of protocols and annexes;

(d) Co-operate with competent international bodies to implement effectively this Convention and protocols to which they are party.

3. The provisions of this Convention shall in no way affect the right of Parties to adopt, in accordance with international law, domestic measures additional to those referred to in paragraphs 1 and 2 above, nor shall they affect additional domestic measures already taken by a Party, provided that these measures are not incompatible with their obligations under this Convention.

4. The application of this article shall be based on relevant scientific and technical considerations.

Article 3

RESEARCH AND SYSTEMATIC OBSERVATIONS

1. The Parties undertake, as appropriate, to initiate and co-operate in, directly or through competent international bodies, the conduct of research and scientific assessments on:

(a) The physical and chemical processes that may affect the ozone layer;

(b) The human health and other biological effects deriving from any modifications of the ozone layer, particularly those resulting from changes in ultra-violet solar radiation having biological effects (UV-B);

(c) Climatic effects deriving from any modifications of the ozone layer;

(d) Effects deriving from any modifications of the ozone layer and any consequent change in UV-B radiation on natural and synthetic materials useful to mankind;

(e) Substances, practices, processes and activities that may affect the ozone layer, and their cumulative effects;

(f) Alternative substances and technologies;

(g) Related socio-economic matters;

and as further elaborated in annexes I and II.

2. The Parties undertake to promote or establish, as appropriate, directly or through competent international bodies and taking fully into account national legislation and relevant ongoing activities at both the national and international levels, joint or complementary programmes for systematic observation of the state of the ozone layer and other relevant parameters, as elaborated in annex I.

3. The Parties undertake to co-operate, directly or through competent international bodies, in ensuring the collection, validation and transmission of research and observational data through appropriate world data centres in a regular and timely fashion.

Article 4

CO-OPERATION IN THE LEGAL, SCIENTIFIC AND TECHNICAL FIELDS

1. The Parties shall facilitate and encourage the exchange of scientific, technical, socio-economic, commercial and legal information relevant to this Convention as further elaborated in annex II. Such information shall be supplied to bodies agreed upon by the Parties. Any such body receiving information regarded as confidential by the supplying Party shall ensure that such information is not disclosed and shall aggregate it to protect its confidentiality before it is made available to all Parties.

2. The Parties shall co-operate, consistent with their national laws, regulations and practices and taking into account in particular the needs of the developing countries, in promoting, directly or through competent international bodies, the development and transfer of technology and knowledge. Such co-operation shall be carried out particularly through:

(a) Facilitation of the acquisition of alternative technologies by other Parties;

(b) Provision of information on alternative technologies and equipment, and supply of special manuals or guides to them;

(c) The supply of necessary equipment and facilities for research and systematic observations;

(d) Appropriate training of scientific and technical personnel.

Article 5

TRANSMISSION OF INFORMATION

The Parties shall transmit, through the secretariat, to the Conference of the Parties established under article 6 information on the measures adopted by them in implementation of this Convention and of protocols to which they are party in such form and at such intervals as the meetings of the parties to the relevant instruments may determine.

Article 6

CONFERENCE OF THE PARTIES

1. A Conference of the Parties is hereby established. The first meeting of the Conference of the Parties shall be convened by the secretariat designated on an interim basis under article 7 not later than one year after entry into force of this Convention. Thereafter, ordinary meetings of the Conference of the Parties shall be held at regular intervals to be determined by the Conference at its first meeting.

2. Extraordinary meetings of the Conference of the Parties shall be held at such other times as may be deemed necessary by the Conference, or at the written request of any Party, provided that, within six months of the request being communicated to them by the secretariat, it is supported by at least one third of the Parties.

3. The Conference of the Parties shall by consensus agree upon and adopt rules of procedure and financial rules for itself and for any subsidiary bodies it may establish, as well as financial provisions governing the functioning of the secretariat.

4. The Conference of the Parties shall keep under continuous review the implementation of this Convention, and, in addition, shall:

(a) Establish the form and the intervals for transmitting the information to be submitted in accordance with article 5 and consider such information as well as reports submitted by any subsidiary body;

(b) Review the scientific information on the ozone layer, on its possible modification and on possible effects of any such modification;

(c) Promote, in accordance with article 2, the harmonization of appropriate policies, strategies and measures for minimizing the release of substances causing or likely to cause modification of the ozone layer, and make recommendations on any other measures relating to this Convention;

(d) Adopt, in accordance with articles 3 and 4, programmes for research, systematic observations, scientific and technological co-operation, the exchange of information and the transfer of technology and knowledge;

(e) Consider and adopt, as required, in accordance with articles 9 and 10, amendments to this Convention and its annexes;

(f) Consider amendments to any protocol, as well as to any annexes thereto, and, if so decided, recommend their adoption to the parties to the protocol concerned;

(g) Consider and adopt, as required, in accordance with article 10, additional annexes to this Convention;

(h) Consider and adopt, as required, protocols in accordance with article 8;

(i) Establish such subsidiary bodies as are deemed necessary for the implementation of this Convention;

(j) Seek, where appropriate, the services of competent international bodies and scientific committees, in particular the World Meteorological Organization and the World Health Organization, as well as the Co-ordinating Committee on the Ozone Layer, in scientific research, systematic observations and other activities pertinent to the objectives of this Convention, and make use as appropriate of information from these bodies and committees;

(k) Consider and undertake any additional action that may be required for the achievement of the purposes of this Convention.

3. The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State not party to this Convention, may be represented at meetings of the Conference of the Parties by observers. Any body or agency, whether national or international, governmental or non-governmental, qualified in fields relating to the protection of the ozone layer which has informed the secretariat of its wish to be represented at a meeting of the Conference of the Parties as an observer may be admitted unless at least one-third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure adopted by the Conference of the Parties.

Article 7
SECRETARIAT

1. The functions of the secretariat shall be:

(a) To arrange for and service meetings provided for in articles 6, 8, 9 and 10;

(b) To prepare and transmit reports based upon information received in accordance with articles 4 and 5, as well as upon information derived from meetings of subsidiary bodies established under article 6;

(c) To perform the functions assigned to it by any protocol;

(d) To prepare reports on its activities carried out in implementation of its functions under this Convention and present them to the Conference of the Parties;

(e) To ensure the necessary co-ordination with other relevant international bodies, and in particular to enter into such administrative and contractual arrangements as may be required for the effective discharge of its functions;

(f) To perform such other functions as may be determined by the Conference of the Parties.

2. The secretariat functions will be carried out on an interim basis by the United Nations Environment Programme until the completion of the first ordinary meeting of the Conference of the Parties held pursuant to article 6. At its first ordinary meeting, the Conference of the Parties shall designate the secretariat from amongst those existing competent international organizations which have signified their willingness to carry out the secretariat functions under this Convention.

Article 8
ADOPTION OF PROTOCOLS

1. The Conference of the Parties may at a meeting adopt protocols pursuant to article 2.

2. The text of any proposed protocol shall be communicated to the Parties by the secretariat at least six months before such a meeting.

Article 9
AMENDMENT OF THE CONVENTION OR PROTOCOLS

1. Any Party may propose amendments to this Convention or to any protocol. Such amendments shall take due account, inter alia, of relevant scientific and technical considerations.

2. Amendments to this Convention shall be adopted at a meeting of the Conference of the Parties. Amendments to any protocol shall be adopted at a meeting of the Parties to the protocol in question. The text of any proposed amendment to this Convention or to any protocol, except as may otherwise be provided in such protocol, shall be communicated to the Parties by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate proposed amendments to the signatories to this Convention for information.

3. The Parties shall make every effort to reach agreement on any proposed amendment to this Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting, and shall be submitted by the Depositary to all Parties for ratification, approval or acceptance.

4. The procedure mentioned in paragraph 3 above shall apply to amendments to any protocol, except that a two-thirds majority of the parties to that protocol present and voting at the meeting shall suffice for their adoption.

5. Ratification, approval or acceptance of amendments shall be notified to the Depositary in writing. Amendments adopted in accordance with paragraphs 3 or 4 above shall enter into force between parties having accepted them on the ninetieth day after the receipt by the Depositary of notification of their ratification, approval or acceptance by at least three-fourths of the Parties to this Convention or by at least two-thirds of the parties to the protocol concerned, except as may otherwise be provided in such protocol. Thereafter the amendments shall enter into force for any other Party on the ninetieth day after that Party deposits its instrument of ratification, approval or acceptance of the amendments.

6. For the purposes of this article, "Parties present and voting" means Parties present and casting an affirmative or negative vote.

Article 10

ADOPTION AND AMENDMENT OF ANNEXES

1. The annexes to this Convention or to any protocol shall form an integral part of this Convention or of such protocol, as the case may be, and, unless expressly provided otherwise, a reference to this Convention or its protocols constitutes at the same time a reference to any annexes thereto. Such annexes shall be restricted to scientific, technical and administrative matters.

2. Except as may be otherwise provided in any protocol with respect to its annexes, the following procedure shall apply to the proposal, adoption and entry into force of additional annexes to this Convention or of annexes to a protocol:

(a) Annexes to this Convention shall be proposed and adopted according to the procedure laid down in article 9, paragraphs 2 and 3, while annexes to any protocol shall be proposed and adopted according to the procedure laid down in article 9, paragraphs 2 and 4;

(b) Any party that is unable to approve an additional annex to this Convention or an annex to any protocol to which it is party shall so notify the Depositary, in writing, within six months from the date of the communication of the adoption by the Depositary. The Depositary shall without delay notify all Parties of any such notification received. A Party may at any time substitute an acceptance for a previous declaration of objection and the annexes shall thereupon enter into force for that Party;

(c) On the expiry of six months from the date of the circulation of the communication by the Depositary, the annex shall become effective for all Parties to this Convention or to any protocol concerned which have not submitted a notification in accordance with the provision of subparagraph (b) above.

3. The proposal, adoption and entry into force of amendments to annexes to this Convention or to any protocol shall be subject to the same procedure as for the proposal, adoption and entry into force of annexes to the Convention or annexes to a protocol. Annexes and amendments thereto shall take due account, inter alia, of relevant scientific and technical considerations.

4. If an additional annex or an amendment to an annex involves an amendment to this Convention or to any protocol, the additional annex or amended annex shall not enter into force until such time as the amendment to this Convention or to the protocol concerned enters into force.

Article 11

SETTLEMENT OF DISPUTES

1. In the event of a dispute between Parties concerning the interpretation or application of this Convention, the parties concerned shall seek solution by negotiation.

2. If the parties concerned cannot reach agreement by negotiation, they may jointly seek the good offices of, or request mediation by, a third party.

3. When ratifying, accepting, approving or acceding to this Convention, or at any time thereafter, a State or regional economic integration organization may declare in writing to the Depositary that for a dispute not resolved in accordance with paragraph 1 or paragraph 2 above, it accepts one or both of the following means of dispute settlement as compulsory:

(a) Arbitration in accordance with procedures to be adopted by the Conference of the Parties at its first ordinary meeting;

(b) Submission of the dispute to the International Court of Justice.

4. If the parties have not, in accordance with paragraph 3 above, accepted the same or any procedure, the dispute shall be submitted to conciliation in accordance with paragraph 5 below unless the parties otherwise agree.

5. A conciliation commission shall be created upon the request of one of the parties to the dispute. The commission shall be composed of an equal number of members appointed by each party concerned and a chairman chosen jointly by the members appointed by each party. The commission shall render a final and recommendatory award, which the parties shall consider in good faith.

6. The provisions of this article shall apply with respect to any protocol except as otherwise provided in the protocol concerned.

Article 12

SIGNATURE

This Convention shall be open for signature by States and by regional economic integration organizations at the Federal Ministry for Foreign Affairs of the Republic of Austria in Vienna from 22 March 1985 to 21 September 1985, and at United Nations Headquarters in New York from 22 September 1985 to 21 March 1986.

Article 13

RATIFICATION, ACCEPTANCE OR APPROVAL

1. This Convention and any protocol shall be subject to ratification, acceptance or approval by States and by regional economic integration organizations. Instruments of ratification, acceptance or approval shall be deposited with the Depositary.

2. Any organization referred to in paragraph 1 above which becomes a Party to this Convention or any protocol without any of its member States being a Party shall be bound by all the obligations under the Convention or the protocol, as the case may be. In the case of such organizations, one or more of whose member States is a Party to the Convention or relevant protocol, the organization and its member States shall decide on their respective responsibilities for the performance of their obligation under the Convention or protocol, as the case may be. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention or relevant protocol concurrently.

3. In their instruments of ratification, acceptance or approval, the organizations referred to in paragraph 1 above shall declare the extent of their competence with respect to the matters governed by the Convention or the relevant protocol. These organizations shall also inform the Depositary of any substantial modification in the extent of their competence.

Article 14

ACCESSION

1. This Convention and any protocol shall be open for accession by States and by regional economic integration organizations from the date on which the Convention or the protocol concerned is closed for signature. The instruments of accession shall be deposited with the Depositary.

2. In their instruments of accession, the organizations referred to in paragraph 1 above shall declare the extent of their competence with respect to the matters governed by the Convention or the relevant protocol. These organizations shall also inform the Depositary of any substantial modification in the extent of their competence.

3. The provisions of article 13, paragraph 2, shall apply to regional economic integration organizations which accede to this Convention or any protocol.

Article 15

RIGHT TO VOTE

1. Each Party to this Convention or to any protocol shall have one vote.

2. Except as provided for in paragraph 1 above, regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States which are Parties to the Convention or the relevant protocol. Such organizations shall not exercise their right to vote if their member States exercise theirs, and vice versa.

Article 16

RELATIONSHIP BETWEEN THE CONVENTION AND ITS PROTOCOLS

1. A State or a regional economic integration organization may not become a party to a protocol unless it is, or becomes at the same time, a Party to the Convention.

2. Decisions concerning any protocol shall be taken only by the parties to the protocol concerned.

Article 17

ENTRY INTO FORCE

1. This Convention shall enter into force on the ninetieth day after the date of deposit of the twentieth instrument of ratification, acceptance, approval or accession.

2. Any protocol, except as otherwise provided in such protocol, shall enter into force on the ninetieth day after the date of deposit of the eleventh instrument of ratification, acceptance or approval of such protocol or accession thereto.

3. For each Party which ratifies, accepts or approves this Convention or accedes thereto after the deposit of the twentieth instrument of ratification, acceptance, approval or accession, it shall enter into force on the ninetieth day after the date of deposit by such Party of its instrument of ratification, acceptance, approval or accession.

4. Any protocol, except as otherwise provided in such protocol, shall enter into force for a party that ratifies, accepts or approves that protocol or accedes thereto after its entry into force pursuant to paragraph 2 above, on the ninetieth day after the date on which that party deposits its instrument of ratification, acceptance, approval or accession, or on the date on which the Convention enters into force for that Party, whichever shall be the later.

5. For the purposes of paragraphs 1 and 2 above, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by member States of such organization.

Article 18

RESERVATIONS

No reservations may be made to this Convention.

Article 19

WITHDRAWAL

1. At any time after four years from the date on which this Convention has entered into force for a Party, that Party may withdraw from the Convention by giving written notification to the Depositary.

2. Except as may be provided in any protocol, at any time after four years from the date on which such protocol has entered into force for a party, that party may withdraw from the protocol by giving written notification to the Depositary.

3. Any such withdrawal shall take effect upon expiry of one year after the date of its receipt by the Depositary, or on such later date as may be specified in the notification of the withdrawal.

4. Any Party which withdraws from this Convention shall be considered as also having withdrawn from any protocol to which it is party.

Article 20

DEPOSITARY

1. The Secretary-General of the United Nations shall assume the functions of depositary of this Convention and any protocols.

2. The Depositary shall inform the Parties, in particular, of:

(a) The signature of this Convention and of any protocol, and the deposit of instruments of ratification, acceptance, approval or accession in accordance with articles 13 and 14;

(b) The date on which the Convention and any protocol will come into force in accordance with article 17;

(c) Notifications of withdrawal made in accordance with article 19;

(d) Amendments adopted with respect to the Convention and any protocol, their acceptance by the parties and their date of entry into force in accordance with article 9;

(e) All communications relating to the adoption and approval of annexes and to the amendment of annexes in accordance with article 10;

(f) Notifications by regional economic integration organizations of the extent of their competence with respect to matters governed by this Convention and any protocols, and of any modifications thereof.

(g) Declarations made in accordance with article 11, paragraph 3.

Article 21

AUTHENTIC TEXTS

The original of this Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

IN WITNESS WHEREOF the undersigned, being duly authorized to that effect, have signed this Convention.

Done at Vienna on the 22nd day of March 1985

Annex I

RESEARCH AND SYSTEMATIC OBSERVATIONS

1. The Parties to the Convention recognize that the major scientific issues are:

(a) Modification of the ozone layer which would result in a change in the amount of solar ultra-violet radiation having biological effects (UV-B) that reaches the Earth's surface and the potential consequences for human health, for organisms, ecosystems and materials useful to mankind;

(b) Modification of the vertical distribution of ozone, which could change the temperature structure of the atmosphere and the potential consequences for weather and climate.

2. The Parties to the Convention, in accordance with article 3, shall co-operate in conducting research and systematic observations and in formulating recommendations for future research and observation in such areas as:

(a) Research into the physics and chemistry of the atmosphere

(i) Comprehensive theoretical models: further development of models which consider the interaction between radiative, dynamic and chemical processes; studies of the simultaneous effects of various man-made and naturally occurring species upon atmospheric ozone; interpretation of satellite and non-satellite measurement data sets; evaluation of trends in atmospheric and geophysical parameters, and the development of methods for attributing changes in these parameters to specific causes;

(ii) Laboratory studies of: rate coefficients, absorption cross-sections and mechanisms of tropospheric and stratospheric chemical and photochemical processes; spectroscopic data to support field measurements in all relevant spectral regions;

(iii) Field measurements: the concentration and fluxes of key source gases of both natural and anthropogenic origin; atmospheric dynamics studies; simultaneous measurements of photochemically-related species down to the

planetary boundary layer, using in situ and remote sensing instruments; intercomparison of different sensors, including co-ordinated correlative measurements for satellite instrumentation; three-dimensional fields of key atmospheric trace constituents, solar spectral flux and meteorological parameters;

(iv) Instrument development, including satellite and non-satellite sensors for atmospheric trace constituents, solar flux and meteorological parameters;

(b) Research into health, biological and photodegradation effects

(i) The relationship between human exposure to visible and ultra-violet solar radiation and (a) the development of both non-melanoma and melanoma skin cancer and (b) the effects on the immunological system;

(ii) Effects of UV-B radiation, including the wavelength dependence, upon (a) agricultural crops, forests and other terrestial ecosystems and (b) the aquatic food web and fisheries, as well as possible inhibition of oxygen production by marine phytoplankton;

(iii) The mechanisms by which UV-B radiation acts on biological materials, species and ecosystems, including: the relationship between dose, dose rate, and response; photorepair, adaptation, and protection;

(iv) Studies of biological action spectra and the spectral response using polychromatic radiation in order to include possible interactions of the various wavelength regions;

(v) The influence of UV-B radiation on: the sensitivities and activities of biological species important to the biospheric balance; primary processes such as photosynthesis and biosynthesis;

(vi) The influence of UV-B radiation on the photodegradation of pollutants, agricultural chemicals and other materials;

(c) Research on effects on climate

(i) Theoretical and observational studies of the radiative effects of ozone and other trace species and the impact on climate parameters, such as land and ocean surface temperatures, precipitation patterns, the exchange between the troposphere and stratosphere;

(ii) The investigation of the effects of such climate impacts on various aspects of human activity;

(d) Systematic observations on:

(i) The status of the ozone layer (i.e. the spatial and temporal variability of the total column content and vertical distribution) by making the Global Ozone Observing System, based on the integration of satellite and ground-based systems, fully operational;

(ii) The tropospheric and stratospheric concentrations of source gases for the NO_x, HO_x, ClO_x and carbon families;

(iii) The temperature from the ground to the mesosphere, utilizing both ground-based and satellite systems;

(iv) Wavelength-resolved solar flux reaching, and thermal radiation leaving, the Earth's atmosphere, utilizing satellite measurements;

(v) Wavelength-resolved solar flux reaching the Earth's surface in the ultra-violet range having biological effects (UV-B);

(vi) Aerosol properties and distribution from the ground to the mesosphere, utilizing ground-based, airborne and satellite systems;

(vii) Climatically important variables by the maintenance of programmes of high-quality meteorological surface measurements;

(viii) Trace species, temperatures, solar flux and aerosols utilizing improved methods for analysing global data.

3. The Parties to the Convention shall co-operate, taking into account the particular needs of the developing countries, in promoting the appropriate scientific and technical training required to participate in the research and systematic observations outlined in this annex. Particular emphasis should be given to the intercalibration of observational instrumentation and methods with a view to generating comparable or standardized scientific data sets.

4. The following chemical substances of natural and anthropogenic origin, not listed in order of priority, are thought to have the potential to modify the chemical and physical properties of the ozone layer.

(a) Carbon substances

(i) Carbon monoxide (CO)

Carbon monoxide has significant natural and anthropogenic sources, and is thought to play a major direct role in tropospheric photochemistry, and an indirect role in stratospheric photochemistry.

(ii) Carbon dioxide (CO_2)

Carbon dioxide has significant natural and anthropogenic sources, and affects stratospheric ozone by influencing the thermal structure of the atmosphere.

(iii) Methane (CH_4)

Methane has both natural and anthropogenic sources, and affects both tropospheric and stratospheric ozone.

(iv) Non-methane hydrocarbon species

Non-methane hydrocarbon species, which consist of a large number of chemical substances, have both natural and anthropogenic sources, and play a direct role in tropospheric photochemistry and an indirect role in stratospheric photochemistry.

(b) Nitrogen substances

(i) Nitrous oxide (N_2O)

The dominant sources of N_2O are natural, but anthropogenic contributions are becoming increasingly important. Nitrous oxide is the primary source of stratospheric NO_x, which play a vital role in controlling the abundance of stratospheric ozone.

(ii) Nitrogen oxides (NO_x)

Ground-level sources of NO_x play a major direct role only in tropospheric photochemical processes and an indirect role in stratosphere photochemistry, whereas injection of NO_x close to the tropopause may lead directly to a change in upper tropospheric and stratospheric ozone.

(c) Chlorine substances

(i) Fully halogenated alkanes, e.g. CCl_4, $CFCl_3$ (CFC-11), CF_2Cl_2 (CFC-12), $C_2F_3Cl_3$ (CFC-113), $C_2F_4Cl_2$ (CFC-114)

Fully halogenated alkanes are anthropogenic and act as a source of ClO_x, which plays a vital role in ozone photochemistry, especially in the 30-50 km altitude region.

(ii) Partially halogenated alkanes, e.g. CH_3Cl, CHF_2Cl (CFC-22), CH_3CCl_3, $CHFCl_2$ (CFC-21)

The sources of CH_3Cl are natural, whereas the other partially halogenated alkanes mentioned above are anthropogenic in origin. These gases also act as a source of stratospheric ClO_x.

(d) Bromine substances

Fully halogenated alkanes, e.g. CF_3Br

These gases are anthropogenic and act as a source of BrO_x, which behaves in a manner similar to ClO_x.

(e) Hydrogen substances

(i) Hydrogen (H_2)

Hydrogen, the source of which is natural and anthropogenic, plays a minor role in stratospheric photochemistry.

(ii) Water (H_2O)

Water, the source of which is natural, plays a vital role in both tropospheric and stratospheric photochemistry. Local sources of water vapour in the stratosphere include the oxidation of methane and, to a lesser extent, of hydrogen.

Annex II

INFORMATION EXCHANGE

1. The Parties to the Convention recognize that the collection and sharing of information is an important means of implementing the objectives of this Convention and of assuring that any actions that may be taken are appropriate and equitable. Therefore, Parties shall exchange scientific, technical, socio-economic, business, commercial and legal information.

2. The Parties to the Convention, in deciding what information is to be collected and exchanged, should take into account the usefulness of the information and the costs of obtaining it. The Parties further recognize that co-operation under this annex has to be consistent with national laws, regulations and practices regarding patents, trade secrets, and protection of confidential and proprietary information.

3. Scientific information

This includes information on:

(a) Planned and ongoing research, both governmental and private, to facilitate the co-ordination of research programmes so as to make the most effective use of available national and international resources;

(b) The emission data needed for research;

(c) Scientific results published in peer-reviewed literature on the understanding of the physics and chemistry of the Earth's atmosphere and of its susceptibility to change, in particular on the state of the ozone layer and effects on human health, environment and climate which would result from changes on all time-scales in either the total column content or the vertical distribution of ozone;

(d) The assessment of research results and the recommendations for future research.

4. Technical information

This includes information on:

(a) The availability and cost of chemical substitutes and of alternative technologies to reduce the emissions of ozone-modifying substances and related planned and ongoing research;

(b) The limitations and any risks involved in using chemical or other substitutes and alternative technologies.

5. Socio-economic and commercial information on the substances referred to in annex I

This includes information on:

(a) Production and production capacity;

(b) Use and use patterns;

(c) Imports/exports;

(d) The costs, risks and benefits of human activities which may indirectly modify the ozone layer and of the impacts of regulatory actions taken or being considered to control these activities.

6. Legal information

This includes information on:

(a) National laws, administrative measures and legal research relevant to the protection of the ozone layer;

(b) International agreements, including bilateral agreements, relevant to the protection of the ozone layer;

(c) Methods and terms of licensing and availability of patents relevant to the protection of the ozone layer.

I hereby certify that the foregoing text is a true copy of the Final Act, adopted by the Conference of Plenipotentiaries which took place at Vienna from 18 to 22 March 1985 and of the Vienna Convention for the Protection of the Ozone Layer adopted by the said Conference on 22 March 1985, as the said Convention was opened for signature. The original of the Final Act and of the Convention are deposited with the Secretary-General of the United Nations.

For the Secretary-General,
The Legal Counsel:

Carl-August Fleischhauer

United Nations, New York
2 May 1985

Je certifie que le texte qui précède est une copie conforme de l'Acte final, adopté par la Conférence de plénipotentiaires qui s'est tenue à Vienne du 18 au 22 mars 1985 et de la Convention de Vienne pour la protection de la couche d'ozone adoptée par ladite Conférence le 22 mars 1985, telle que ladite Convention a été ouverte à la signature. L'original de l'Acte final et de la Convention sont déposés auprès du Secrétaire général de l'Organisation des Nations Unies.

Pour le Secrétaire général,
Le Conseiller juridique :

Carl-August Fleischhauer

Organisation des Nations Unies
New York, le 2 mai 1985

O

OPTIONS FOR AN INTERNATIONAL PROTOCOL ON PROTECTING THE STRATOSPHERE

Prepared by
Office of Air and Radiation
U.S. Environmental Protection Agency

October 14, 1986

- **Clean Air Act requirements**
- **Science needed to understand control options**
- **Description and analysis of protocol options**
- **Assessing how options would operate**
- **Other issues**

PRINCIPLE

Protect Environment Consistent with Science

UNCERTAINTIES IN MODEL PREDICTIONS

- **Inputs**
- **Missing factors**
- **Consistency with apparent measurements**

UNCERTAINTY CAUSED BY INCONSISTENCY WITH APPARENT OBSERVATIONS

- **Models reproduce most observations of current atmosphere well**
- **Models fit upper atmosphere depletion measured by ground–based instruments (1970–1980)**
- **Models reproduce some observations of current atmosphere poorly**
- **Models *do not* fit observed Antarctic and *alleged* Arctic holes**
- **Inconsistencies lower our confidence that models will not under– or over–predict depletion**

ANTARCTIC HOLE: 1978–1985

- 50% depletion in center
- 16% depletion from 80° South latitude to pole
- Causes uncertain: hypotheses center on missing factors
  - chemical reactions in gas phase
  - heterogenous reactions
  - transport
  - solar cycle

Implications for rest of world: unclear

PROBABLE EFFECTS

of increased UV-B

- **Basal cell skin cancer** — agreed
- **Squamous cell skin cancer** — high degree of certainty in UV-B link here
- **Melanoma skin cancer** — highly likely link
- **Immune suppression** — link
- **Materials degradation** — polymer degradation (can be controlled w/ stabilizers) - agreed
- **Tropospheric oxidants** — some evidence to link to surface ozone also strongly related to H_2O_2
- **Global warming**
- **Crops** - 2/3 cultivars sensitive - soybeans - 1% increase = 1% decrease in yield
- **Natural ecosystems** -
- **Aquatic organisms** -

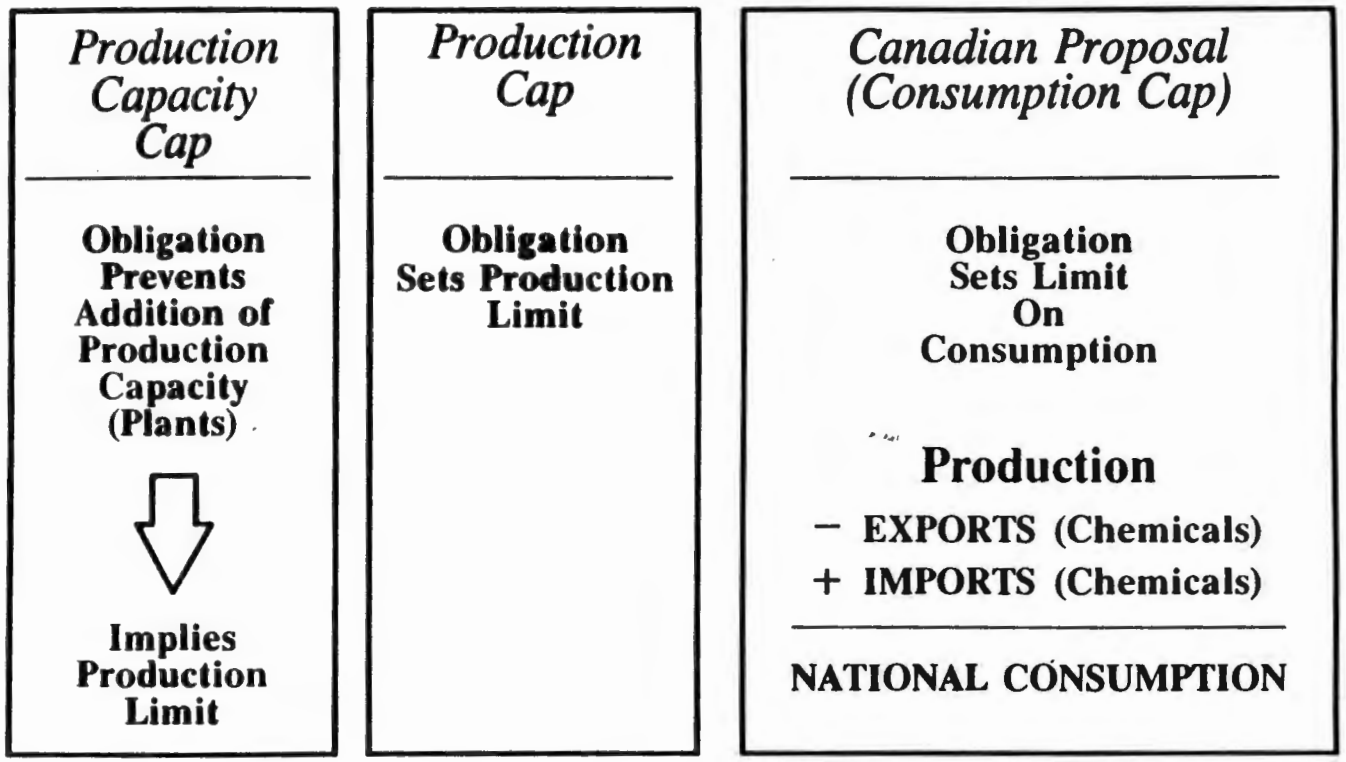
1% depletion = 2-4% increase in cancers

DESCRIPTION AND ANALYSIS OF SOME PROTOCOL OPTIONS

THREE OPTIONS FOR CONTROL SYSTEM

- **Production capacity cap** -EC
- **Production cap**
- **Canadian proposal (global emissions ceiling)**
  - **implemented by national consumption limit**

THREE OPTIONS FOR CONTROL SYSTEM



CONSUMPTION CAP PROPOSAL
Illustrated for CFC–11 and CFC–12

	EC [a]	US [b]
Production	322.2	201.7
– Exports*	103.4	11.4
+ Imports*	(included in production)	7.1
= Consumption	218.8	197.4

a Estimates for 1984. Source: "Chlorofluorocarbons in the Environment: Updating the Situation," Commission of the European Communities, Brussels, November 19, 1985.

b Preliminary estimates for 1985. Source: *Synthetic Organic Chemicals*, U.S. International Trade Commission. Exports estimated assuming that 85 percent of fluorinated hydrocarbon exports are accounted for by CFC–11 and CFC–12.

* Bulk chemicals. As now stated, Canadian proposal only allows exports and imports between protocol signers.

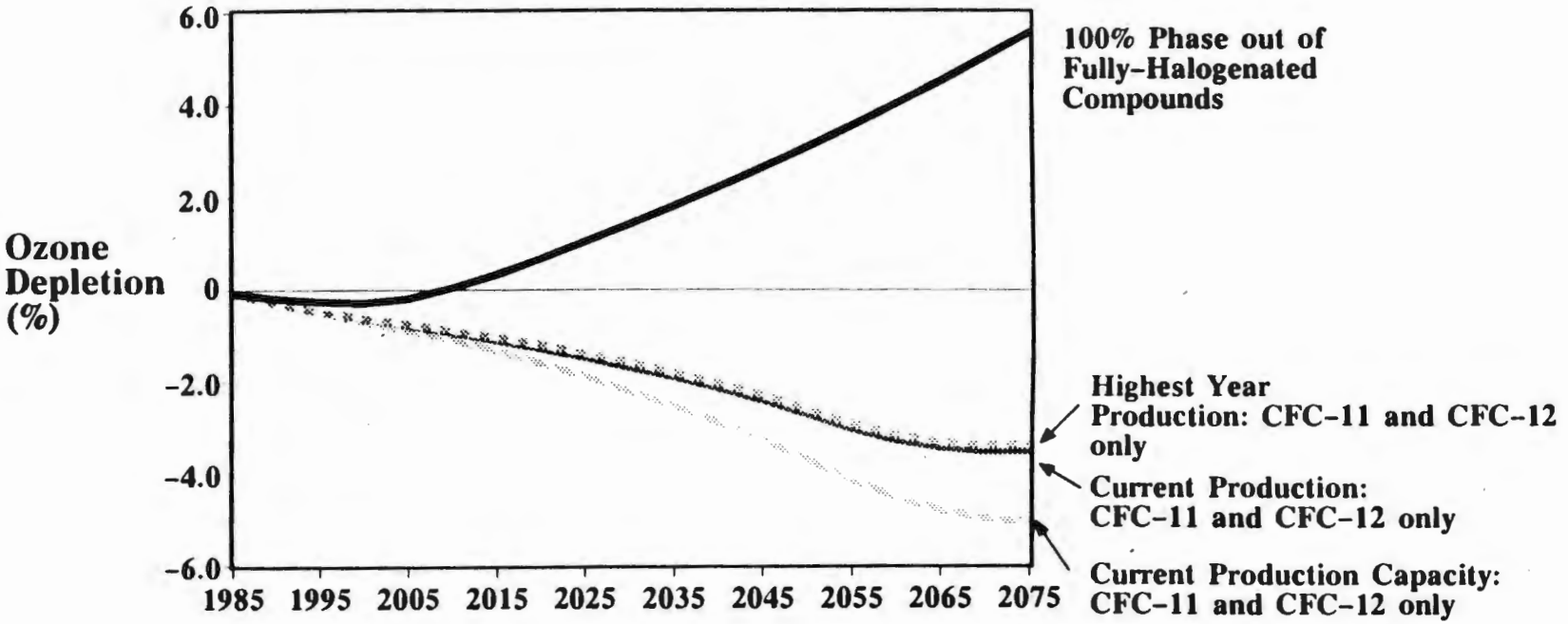
SHOULD THE PROTOCOL EXPLICITLY INCLUDE AN OZONE DEPLETION LIMIT?

- No, assume implicit goal
- Yes, goal should be no depletion anywhere
- Yes, a limit at a particular latitude

QUESTIONS IN STRUCTURING CONTROL SYSTEM

- **Stringency of controls**
- **Chemical coverage**
- **Allocation method**
- **Timing of controls**

GLOBAL STRINGENCY



Growth Rates

CFCs: 2.5%	N_2O: 0.25%
CH_4 : 1%	CO_2: 0.6%

** PRELIMINARY ESTIMATE -- DO NOT CITE OR QUOTE **

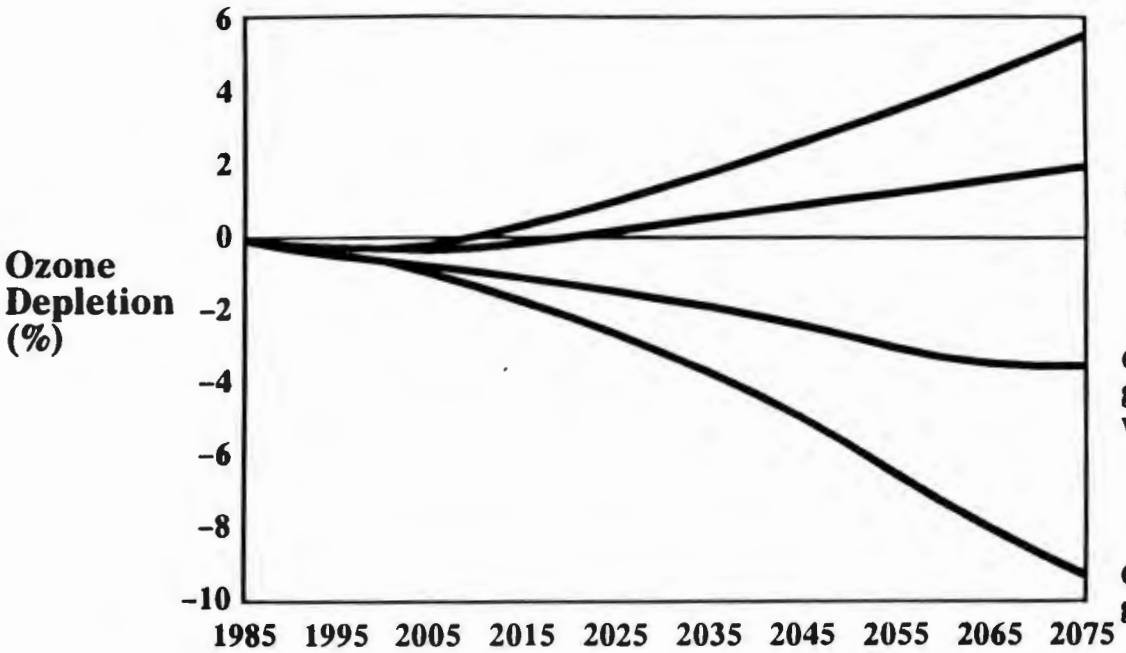
STRINGENCY

- Options that have been suggested
  - based on ozone depletion limit (a tradeoff still exists between immediate stringency versus long term stringency)
  - highest year for CFCs (1974)
  - current level
  - 1.5 times current level
  - phase out fully–halogenated substances in ten years
- What should be assumed about future decision–maker's view of greenhouse effect?
  - no limit
  - limit to 3°F
  - limit to 5°F
  - other

STRINGENCY (continued)

- **What should be assumed about free–riders (non–joiners)?**
  - **assume 100% participation**
  - **assume 75% or other value**

EFFECTS OF ASSUMPTIONS ABOUT GREENHOUSE GASES



100% Phase out of Fully-Halogenated Compounds with no limit on greenhouse warming: Estimated warming is 8.3° F

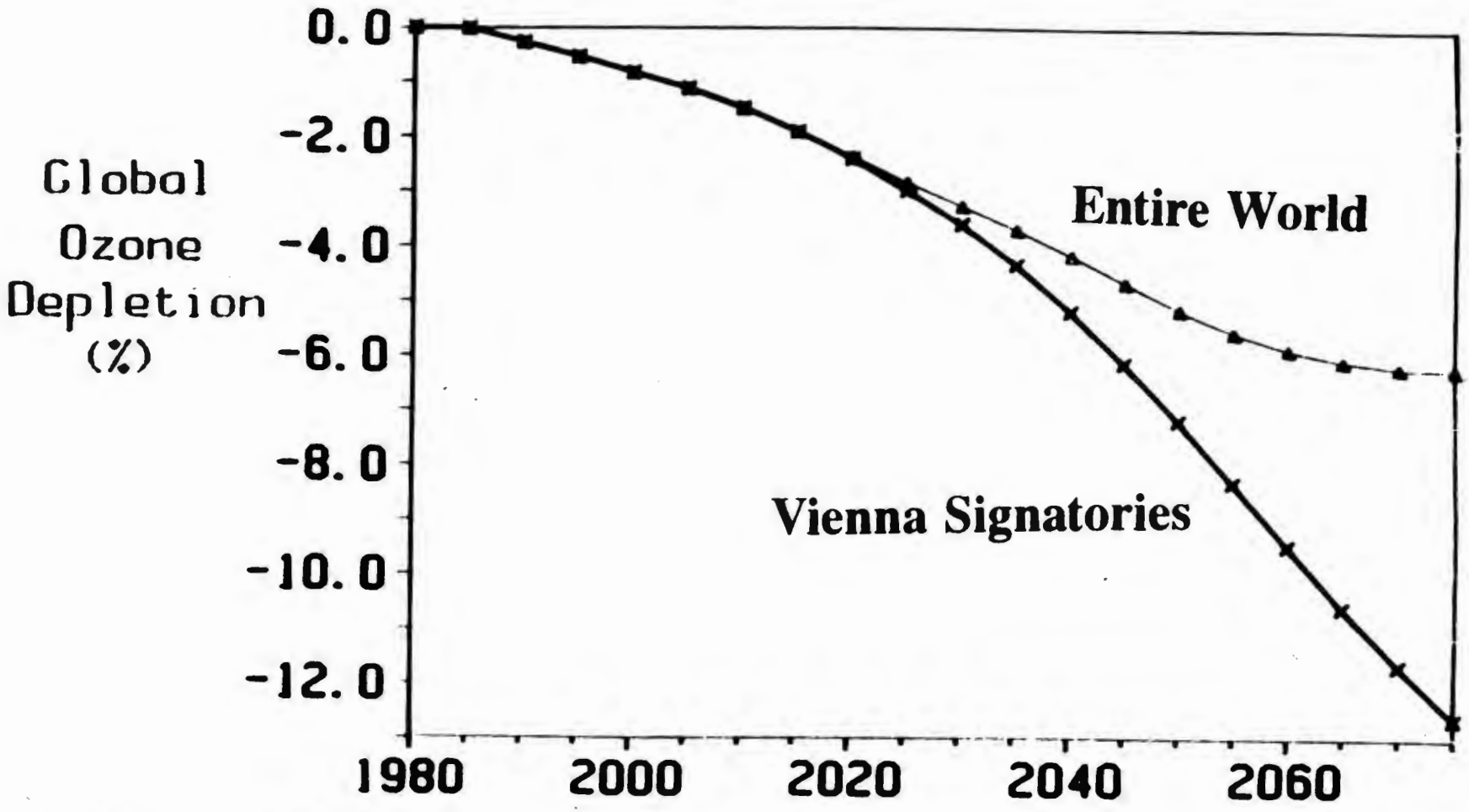
100% Phase out of Fully-Halogenated Compounds with greenhouse warming limited to 5° F

Current Production with no limit on greenhouse warming: Estimated warming is 9.1° F

Current Production with greenhouse warming limited to 5° F

Due to uncertainties in warming associated with greenhouse gases, warming estimates could be 50% larger or smaller.

PARTICIPATION



Policy: All CFCs -- limit at twice current production

Growth Rates: CFCs 2.5%; CH4 1.0%; CO2 0.6%; N2O 0.25%

Source: Gibbs(1986), "Analysis of the Importance of Various Design Factors in Determining the Effectiveness of Control Strategy Options," UNEP Workshop