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*Last Updated: 04/10/2024*

Ralph

The attached memo was signed by Nancy last night (I have indicated the charges from the drafts you saw). Clean copies of the memo are on my and Fran's desks.

Also attached is the State Dept fact sheet. Nancy asked for, and I gave her, a copy of it.

Bob

THE WHITE HOUSE

WASHINGTON

September 16, 1987

MEMORANDUM FOR THE PRESIDENT

FROM: NANCY J. RISQUE

SUBJECT: International Protocol on Chlorofluorocarbons

On behalf of the U.S., EPA Administrator Lee Thomas today signed an international protocol aimed at protecting the stratospheric ozone layer by limiting the future world-wide emissions of chlorofluorocarbons (CFCs) and halons. Joining the United States in signing the protocol, among others, were members of the European Community, Japan and the Soviet Union - ensuring that the protocol will enter into force after next year. } Added

The U.S. delegation in Montreal and an interagency team in Washington worked together to insure that your instructions were carried out. The protocol requires Senate ratification.

Outlined below are some of the major issues that arose during the negotiations of which you should be aware:

o Entry Into Force. The delegation was able to obtain in the protocol a provision that it shall enter into force on January 1, 1989, provided that it is ratified by least eleven parties representing two-thirds of 1986 estimated global consumption of the controlled substances. These parties would represent countries that now produce over 80% of the CFCs and halons.

o Soviet Allowance. Throughout the negotiations the Soviets wanted reductions based upon 1990 production levels, because of their current five year plan. The U.S. delegation and the other negotiating parties were unanimously opposed to changing the base year from 1986 levels. The Soviets were isolated but firm. A compromise was worked out that allows any party with production facilities under construction or planned for completion prior to the end of 1990 to increase their annual per capita consumption of CFCs and halons up to 0.5 kilograms. We agreed to this because now the Soviets have agreed (as did others) to report their production and consumption levels of CFCs and halons - something they had opposed earlier - and are committed to limit their CFC and halon production. Neither would have been achieved without the compromise.

o European Community. The European Community (EC) proposed that any regional economic integration organization should be allowed to jointly fulfill their obligations. This would, in effect,

allow the EC an advantage in world trade markets, by permitting reductions by one member country to offset increases in production by another member country as long as the EC totals were reduced. The compromise was that the EC could jointly meet consumption reductions, but each country would be required to individually meet reduced production levels for CFCs and halons. It was also agreed that all the member countries must join in the protocol for this to be permitted.

o Timing. Some timing changes were also accepted to get more desirable features in the protocol. The freeze on halons will take effect at the end of three years, instead of the "one or two years" contained in your instructions. This was needed to get the EC to agree to include halons in the controlled substances listing. Also, a ten year period for the 50% reduction of CFCs was agreed to, instead of the "about eight years" contained in your instructions. The first phase of a 20% reduction of CFCs will occur during the fifth year after entry into force, instead of the "four years" contained in your instructions. The second phase, a further 30% CFC reduction, will occur five years after the first phase. This timing ensured that Japan would agree to the protocol.

*originally  
"fourth"*

All of the fundamental principles contained in your instructions - a weighted voting system, a grace period for lesser developed countries, strong enforcement provisions, periodic assessments of the control provisions, and equitable trade provisions - were incorporated into the protocol.

*Added*

Overall, the United States was a leader in drafting an international protocol that will reach your ultimate objective of protecting the ozone layer through supporting actions determined to be necessary based on regularly scheduled scientific assessments. This is a significant Administration achievement on both the domestic and the world environmental front.

*(Last sentence concerning industry being pleased w/ the protocol deleted).*

September 16, 1987

FACT SHEET

PROTOCOL TO CONTROL OZONE DEPLETING SUBSTANCES

On September 16, 1987 the U.S. signed in Montreal a protocol to the 1985 Vienna Convention for the Protection of the Ozone Layer that provides specific mechanisms to control emissions of ozone depleting substances.

Most major producing and consuming countries, including the EC, Japan and the Soviet Union, joined in signing the protocol. These countries represent about seventy percent of global consumption and eighty percent of global production of ozone depleting substances;

Two principal features of the ~~envisaged~~ protocol are an obligation relating to the control of emissions of ozone-depleting substances (Article 2) and the restriction of trade in controlled substances with States not party to the protocol (Article 4). On control measures, the text provides for:

- o A freeze on consumption of the major ozone-depleting substances (chlorofluorocarbons 11, 12, 113, 114, and 115 and Halons 1211, and 1301 and 2402) within three years at 1986 levels.

*is that right?*

- o Long-term scheduled reductions (of twenty percent by 1994, then an additional thirty percent by 1999) of chlorofluorocarbon consumption.

- o Periodic assessments of the control provisions, based upon scientific, environmental, technical and economic information, which could result in addition or removal of chemicals from the list of controlled substances or a change in the reduction schedule or the emission reduction target.

With respect to trade with non-parties, the protocol includes

- o A ban on imports from non-parties of the controlled substances within one year of the protocol's entry into force.

- o A ban or restrictions on imports of products containing controlled substances from non-parties within four years of entry into force.
  
- o Consideration within five years of entry into force of restriction on imports of products produced with controlled substances from non-parties.
  
- o A prohibition against concluding new agreements which provide non-parties with financial assistance for producing the controlled substances.

The decision to reduce consumption by a total of fifty percent can only be rescinded or amended by two-thirds of the parties representing at least two-thirds of total consumption, allowing us in effect a veto. To ensure that the economic burden of these controls is equitably shared, the protocol will only enter into force when 11 countries representing sixty-seven percent of global consumption have ratified the agreement.

The protocol provides a limited grace period from compliance with the control measures for low-consuming countries who adhere to the protocol and thus forego building their own production facilities in the future. The protocol permits us to add new substances to the controlled list or delete substances. It also requires an annual report by each party of its production, imports and exports of controlled substances, and for treatment of parties that are not in compliance with obligations under the protocol.

Prior to concluding the protocol -- and in tandem with the negotiations -- the Administration engaged in an extensive domestic regulatory review process, including a thorough assessment of the risks and risk management options. Industries which produce and use ozone depleting substances have actively participated in assessing risk and policy options. We have consulted closely as well with other interested groups as we have developed our negotiating positions -- including discussion with members of the Congress and their staffs.



-5-

Drafted by: OES/ENV:ADSen's:dah  
Clearances: OES/E:WANitze  
EPA:LFisher  
OES:ATidball  
PA:POakley

Wang no. 6971T

## TIMING

assuming protocol activated on 1 Jan 89 (as it appears that it will):

CFC freeze	1 July 89	(7 months after EIF)
Halon freeze	1 Jan 92	(3 years after EIF)
CFC 20% reduction	1 Jan 94	(4½ yrs after freeze)
CFC further 30% reduction	1 Jan 99	(10½ yrs after freeze)

MONTREAL PROTOCOL ON SUBSTANCES THAT  
 DEplete THE OZONE LAYER (SIGNED IN  
 MONTREAL ON 16 SEPTEMBER 1987, BY THE  
 UNITED STATES AND THIRTY-THREE OTHER DELEGATIONS)

o VOTING

Entry Into Force (EIF)	11 States representing 2/3 of <u>global consumption</u>
Reconsideration of 50% reduction	2/3 of Parties representing 2/3 of <u>Protocol</u> consump- tion
Other adjustments and reductions	2/3 of Parties representing 50% of <u>Protocol</u> consump- tion
New substances	2/3 of Parties to adopt and to ratify. Not binding on States not ratifying.

o CONTROLS

Freeze on CFCs at 1986 base	Begins 7 months after EIF of Protocol
Freeze on Halons at 1986 base	Begins 37 months after EIF of Protocol
20% Reduction on CFCs	Begins 1 July 1993
50% Reduction on CFCs	Begins 1 July 1998

o FORMULA: Consumption = Production (P) + Imports (I) -  
 Exports (E)

Caps both consumption and production at 1986 base.  
 Provides some flexibility in production to meet the  
 basic domestic needs of LCDC Parties and for industrial  
 rationalization.

	C=P+I-E	P	P.FLEX
Freeze	100%	100%	+ 10%
20% Reduction	80%	80%	+ 10%
50% Reduction	50%	50%	+ 15%

o TRADE

Imports from non-parties	Banned one year after EIF
Exports to non-parties	
from LCDC parties	Banned 1 January 1993
from non-LCDC parties	Not subtracted in calculating consumption beginning 1 January 1993
Imports of products containing controlled substances from non-parties	Parties to consider restrictions within 3 years after EIF
Imports of products made with controlled substances from non-parties	Parties to consider restrictions within 5 years after EIF

o SPECIAL CLAUSES

USSR	Allows USSR production now under construction to be added to 1986 base.
CANADA	Allows small producers (under 25 kilo-tons) to transfer production.
EEC	Allows EEC (or any other REIO) to transfer consumption among members. All members must be Parties.
Low Consuming Developing Countries (LCDCs)	Allows LCDCs to delay implementation of controls for up to 10 years and to increase consumption by up to 0.3 killograms per capita.

STATE DEPT DESK 02

SIGNATORIES TO OZONE PROTOCOL

September 16, 1987

SIGNED

✓ BELGIUM  
CANADA  
EGYPT  
FINLAND  
✓ FRANCE  
✓ FRG  
GHANA  
- ITALY  
JAPAN  
KENYA  
MEXICO  
✓ NETHERLANDS  
NEW ZEALAND  
✓ NORWAY  
✓ PORTUGAL  
SENEGAL  
✓ SWEDEN  
- SWITZERLAND  
TOGO  
✓ U.K.  
U.S.  
VENEZUELA  
EEC

23 + EEC

The USSR and Australia signed the Final Act but not the Protocol.

## DRAFT PRESS STATEMENT

The U.S. delegation to the United Nations Environment Programme Conference meeting in Montreal, Canada, has reported today that all major obstacles have been removed for signing a Protocol on Chlorofluorocarbons as called for in the Vienna Convention for the Protection of the Ozone Layer. Lee Thomas, EPA Administrator and head of the US delegation, will sign the protocol in a ceremony now scheduled for 2:00 p.m. this afternoon. He will make remarks following the signing. Interagency teams in Montreal and Washington have worked together to carry out the President's instructions for an international protocol protecting the ozone layer through actions determined to be necessary based on regularly scheduled scientific assessments. (Detailed information about the protocol will be provided as soon as practicable after the delegation returns home.)

*File Strat Ozone*  
*330*

THE WHITE HOUSE

WASHINGTON

September 21, 1987

MEMORANDUM FOR THE DOMESTIC POLICY COUNCIL

FROM: RALPH C. BLEDSOE *Ralph Bledsoe*

SUBJECT: Stratospheric Ozone Protocol

For your information, attached is a copy of the final act, which includes the protocol on protection of the ozone layer that was signed in Montreal September 16, 1987 by Lee Thomas, head of the U.S. delegation. Lee briefly reviewed the features of the protocol at the Council meeting this afternoon. The ratification process for the protocol will begin as soon as practicable.

MONTREAL PROTOCOL ON  
SUBSTANCES THAT DEplete THE OZONE LAYER

FINAL ACT

1987



FINAL ACT

1. The Conference of Plenipotentiaries on the Protocol on Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer was convened by the Executive Director of the United Nations Environment Programme (UNEP) pursuant to decision 13/18 adopted by the Governing Council of UNEP on 23 May 1985.

2. The Conference met at the Headquarters of the International Civil Aviation Organization, Montreal, with the kind support of the Government of Canada, from 14 to 16 September 1987.

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, Burkina Faso, Byelorussian Soviet Socialist Republic, Canada, Chile, China, Colombia, Congo, Costa Rica, Czechoslovakia, Denmark, Democratic Yemen, Egypt, Finland, France, Germany, Federal Republic of, Ghana, Greece, Indonesia, Israel, Italy, Japan, Kenya, Korea, Republic of, Luxembourg, Malaysia, Mauritius, Mexico, Morocco, Netherlands, New Zealand, Nigeria, Norway, Panama, Peru, Philippines, Portugal, Senegal, Spain, Sweden, Switzerland, Thailand, Togo, Tunisia, Uganda, Ukrainian Soviet Socialist Republic, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland, United States of America, Venezuela.

4. The European Economic Community also participated.

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

Dominican Republic, Ecuador, Hungary, India, Kuwait, Poland.

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

World Meteorological Organization (WMO), General Agreement on Tariffs and Trade (GATT), International Civil Aviation Organization (ICAO), Organization of African Unity (OAU), Council of the European Communities (CEC), Organization for Economic Co-operation and Development (OECD), International Chamber of Commerce (ICC), Federation of European Aerosol Associations, European Chemical Industry Federation, Chemical Manufacturers Association, Natural Resources Defense Council, World Resources Institute, Environmental Defense Fund, Greenpeace, Friends of the Earth, Seattle Foundation (Canada), Mammoth International Humanitarian Societies Square Projects Inc. (Canada), Watto Laboratories International (Canada), Dr. F.A. Homonnay and Associates (Canada), International Organization of Automobile Manufacturers, Alliance for Responsible CFC Policy, Air-Conditioning and Refrigeration Institute (USA), Environmental Protection Agency (USA), Institute for European Environment Policy, National Fire Protection Association, Dupont Canada, The Beloff Group (Canada), Produits Chimiques Allied Canada Inc., United States Air Force.

7. The Conference was formally opened by Dr. Mostafa K. Tolba, the Executive Director of UNEP. In the course of the inaugural ceremony, the Conference heard a welcoming address by the Honourable Tom McMillan, P.C., M.P., Minister of the Environment, on behalf of the Government of Canada.

8. Dr. Mostafa K. Tolba served as Secretary-General of the Conference and Dr. Iwona Rummel-Bulska (UNEP) served as Executive Secretary.

9. The Conference unanimously elected Ambassador W. Lang (Austria) as its President.

10. The Conference also elected the following officers:

Vice-Presidents:       Ambassador E. Hawas (Egypt)  
                              Dr. V. Zakharov (Union of Soviet Socialist Republics)

Rapporteur:             Mr. C.R. Roque (Philippines)

11. The Conference adopted the following agenda:

1. Opening of the Conference.

2. Organizational matters:

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

3. Consideration of the draft Protocol to the Vienna Convention for the Protection of the Ozone Layer.
  4. Report of the Credentials Committee.
  5. Adoption of the Protocol to the Vienna Convention for the Protection of the Ozone Layer.
  6. Adoption of the Final Act of the Conference.
  7. Signature of final instruments.
  8. Closure of the Conference.
12. The Conference adopted as its rules of procedure document UNEP/IG.79/2 proposed by the secretariat.
13. 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. Jon J. Allen (Canada)

Members: Argentina  
Australia  
France  
Japan  
United Kingdom  
United States

Credentials Committee:

Chairman: Ambassador Jose M. Bustani (Brazil)

Members: Finland  
Germany, Federal Republic of  
Indonesia  
Kenya  
Mexico  
Norway

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

- Seventh Revised Draft Protocol on [Chlorofluorocarbons] [and Other Ozone Depleting Substances], UNEP/IG.93/3 and Rev. 1;
- Reports of the Ad Hoc Working Group of Legal and Technical Experts for the Elaboration of a Protocol on Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer (Vienna Group), UNEP/WG.151/L.4, UNEP/WG.167/2 and UNEP/WG.172/2.

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

16. 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.

17. On the basis of the deliberations of the Committee of the Whole, the Conference, on 16 September 1987, adopted the Montreal Protocol on Substances that Deplete the Ozone Layer. The Protocol, which is appended to this Final Act, will be open for signature at the Ministry for External Affairs of Canada in Ottawa from 17 September 1987 to 16 January 1988 and at the United Nations Headquarters in New York from 17 January 1988 to 15 September 1988.

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

1. Resolution on the Montreal Protocol.
2. Resolution on the exchange of technical information.
3. Resolution on the reporting of data.
4. Tribute to the Government of Canada.

IN WITNESS WHEREOF the representatives have signed this Final Act.

DONE at Montreal, this sixteenth day of September one thousand nine hundred and eighty seven 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 THE MONTREAL PROTOCOL

The Conference,

Having adopted the Montreal Protocol on Substances that Deplete the Ozone Layer,

Noting with appreciation that the Protocol was opened for signature in Montreal on 16 September 1987,

Recalling the Vienna Convention for the Protection of the Ozone Layer, adopted on 22 March 1985,

Bearing in mind the Resolution of the Conference of Plenipotentiaries on the Protection of the Ozone Layer adopted on the same day which urged in the sixth operative paragraph "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",

1. Calls upon all States and regional economic integration organizations that have not yet done so to implement the sixth paragraph, bearing in mind the special situation of the developing countries;
2. Appeals to all States to become Parties to the Vienna Convention for the Protection of the Ozone Layer;
3. Urges all States and regional economic integration organizations, including those that have not participated in this Conference, to sign and become Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer;
4. Requests the Executive Director of the United Nations Environment Programme to forward this Resolution to the Secretary General of the United Nations and to circulate it to all States and regional economic integration organizations.

2. RESOLUTION ON THE EXCHANGE OF TECHNICAL INFORMATION

The Conference,

Having adopted the Montreal Protocol on Substances that Deplete the Ozone Layer,

Realizing the importance of reducing as quickly as possible the emissions of these substances,

Recognizing the need for an early exchange of information on technologies and strategies to achieve this,

1. Requests the Executive Director of the United Nations Environment Programme (UNEP), pending the first meeting of the Parties, to make appropriate arrangements to facilitate the exchange of information on technology referred to in Articles 9 and 10 of the Protocol;

2. Appeals to interested States and regional economic integration organizations to sponsor, at the earliest opportunity, in cooperation with UNEP, a workshop with the aim of:

- (a) exchanging information on technologies and administrative strategies for reducing emissions of the substances listed in Annex A to the Protocol and for developing alternatives, taking into account paragraph 2 of Annex II to the Vienna Convention for the Protection of the Ozone Layer; and
- (b) identifying areas in which further research and technical development are required,

3. Urges all interested parties to participate in and contribute to such a workshop and to make expeditious use of the information so gained in order to reduce the emissions of those substances and to develop alternatives.

### 3. RESOLUTION ON REPORTING OF DATA

The Conference,

Having adopted the Montreal Protocol on Substances that Deplete the Ozone Layer,

Convinced that the timely reporting of complete and accurate data on the production and consumption of controlled substances is critical to the effective and efficient implementation of this Protocol,

1. Calls upon all Signatories to take, expeditiously, all steps necessary to acquire data and report on the production, import and export of controlled substances in a complete and timely fashion in accordance with Article 7 of the Protocol and taking into account paragraph 1 of Article 4 of the Vienna Convention for the Protection of the Ozone Layer;
2. Invites Signatories to consult with other Signatories, and to seek advice and assistance from the United Nations Environment Programme (UNEP) and other relevant international organizations, as necessary, in designing and implementing data reporting systems;
3. Calls upon the Executive Director of UNEP to convene, within six months of the adoption of this Resolution, a meeting of governmental experts with the assistance of experts from relevant international organizations to make recommendations for the harmonization of data on production, imports and exports to ensure consistency and comparability of data on controlled substances.



#### 4. TRIBUTE TO THE GOVERNMENT OF CANADA

The Conference,

Having met in Montreal from 14 to 16 September 1987 at the gracious invitation of the Government of Canada,

Convinced that the efforts made by the Government of Canada and by the civic authorities of Montreal 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 Canada and the City of Montreal to the members of the delegations, observers and the secretariat attending the Conference,

Expresses its sincere gratitude to the Government of Canada, to the authorities of Montreal and, through them, to the Canadian people and in particular to the population of Montreal 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.

MONTREAL PROTOCOL ON SUBSTANCES THAT DEplete THE OZONE LAYER

The Parties to this Protocol,

Being Parties to the Vienna Convention for the Protection of the Ozone Layer,

Mindful of their obligation under that Convention 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 that world-wide emissions of certain substances can significantly deplete and otherwise modify the ozone layer in a manner that is likely to result in adverse effects on human health and the environment,

Conscious of the potential climatic effects of emissions of these substances,

Aware that measures taken to protect the ozone layer from depletion should be based on relevant scientific knowledge, taking into account technical and economic considerations,

Determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge, taking into account technical and economic considerations,

Acknowledging that special provision is required to meet the needs of developing countries for these substances,

Noting the precautionary measures for controlling emissions of certain chlorofluorocarbons that have already been taken at national and regional levels,

Considering the importance of promoting international co-operation in the research and development of science and technology relating to the control and reduction of emissions of substances that deplete the ozone layer, bearing in mind in particular the needs of developing countries,

HAVE AGREED AS FOLLOWS:

## ARTICLE 1: DEFINITIONS

For the purposes of this Protocol:

1. "Convention" means the Vienna Convention for the Protection of the Ozone Layer, adopted on 22 March 1985.
2. "Parties" means, unless the text otherwise indicates, Parties to this Protocol.
3. "Secretariat" means the secretariat of the Convention.
4. "Controlled substance" means a substance listed in Annex A to this Protocol, whether existing alone or in a mixture. It excludes, however, any such substance or mixture which is in a manufactured product other than a container used for the transportation or storage of the substance listed.
5. "Production" means the amount of controlled substances produced minus the amount destroyed by technologies to be approved by the Parties.
6. "Consumption" means production plus imports minus exports of controlled substances.
7. "Calculated levels" of production, imports, exports and consumption means levels determined in accordance with Article 3.
8. "Industrial rationalization" means the transfer of all or a portion of the calculated level of production of one Party to another, for the purpose of achieving economic efficiencies or responding to anticipated shortfalls in supply as a result of plant closures.

## ARTICLE 2: CONTROL MEASURES

1. Each Party shall ensure that for the twelve-month period commencing on the first day of the seventh month following the date of the entry into force of this Protocol, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex A does not exceed its calculated level of consumption in 1986. By the end of the same period, each Party producing one or more of these substances shall ensure that its calculated level of production of the substances does not exceed its calculated level of production in 1986, except that such level may have increased by no more than ten per cent based on the 1986 level. Such increase shall be permitted only so as to satisfy the basic domestic needs of the Parties operating under Article 5 and for the purposes of industrial rationalization between Parties.

2. Each Party shall ensure that for the twelve-month period commencing on the first day of the thirty-seventh month following the date of the entry into force of this Protocol, and in each twelve month period thereafter, its calculated level of consumption of the controlled substances listed in Group II of Annex A does not exceed its calculated level of consumption in 1986. Each Party producing one or more of these substances shall ensure that its calculated level of production of the substances does not exceed its calculated level of production in 1986, except that such level may have increased by no more than ten per cent based on the 1986 level. Such increase shall be permitted only so as to satisfy the basic domestic needs of the Parties operating under Article 5 and for the purposes of industrial rationalization between Parties. The mechanisms for implementing these measures shall be decided by the Parties at their first meeting following the first scientific review.

3. Each Party shall ensure that for the period 1 July 1993 to 30 June 1994 and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex A does not exceed, annually, eighty per cent of its calculated level of consumption in 1986. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed, annually, eighty per cent of its calculated level of production in 1986. However, in order to satisfy the basic domestic needs of the Parties operating under Article 5 and for the purposes of industrial rationalization between Parties, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1986.

4. Each Party shall ensure that for the period 1 July 1998 to 30 June 1999, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex A does not exceed, annually, fifty per cent of its calculated level of consumption in 1986. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed, annually, fifty per cent of its calculated level of production in 1986. However, in order to satisfy the basic domestic needs of the Parties operating under Article 5 and for the purposes of industrial rationalization between Parties, its calculated level of production may exceed that limit by up to fifteen per cent of its calculated level of production in 1986. This

paragraph will apply unless the Parties decide otherwise at a meeting by a two-thirds majority of Parties present and voting, representing at least two-thirds of the total calculated level of consumption of these substances of the Parties. This decision shall be considered and made in the light of the assessments referred to in Article 6.

5. Any Party whose calculated level of production in 1986 of the controlled substances in Group I of Annex A was less than twenty-five kilotonnes may, for the purposes of industrial rationalization, transfer to or receive from any other Party, production in excess of the limits set out in paragraphs 1, 3 and 4 provided that the total combined calculated levels of production of the Parties concerned does not exceed the production limits set out in this Article. Any transfer of such production shall be notified to the secretariat, no later than the time of the transfer.

6. Any Party not operating under Article 5, that has facilities for the production of controlled substances under construction, or contracted for, prior to 16 September 1987, and provided for in national legislation prior to 1 January 1987, may add the production from such facilities to its 1986 production of such substances for the purposes of determining its calculated level of production for 1986, provided that such facilities are completed by 31 December 1990 and that such production does not raise that Party's annual calculated level of consumption of the controlled substances above 0.5 kilograms per capita.

7. Any transfer of production pursuant to paragraph 5 or any addition of production pursuant to paragraph 6 shall be notified to the secretariat, no later than the time of the transfer or addition.

8. (a) Any Parties which are Member States of a regional economic integration organization as defined in Article 1(6) of the Convention may agree that they shall jointly fulfil their obligations respecting consumption under this Article provided that their total combined calculated level of consumption does not exceed the levels required by this Article.
- (b) The Parties to any such agreement shall inform the secretariat of the terms of the agreement before the date of the reduction in consumption with which the agreement is concerned.
- (c) Such agreement will become operative only if all Member States of the regional economic integration organization and the organization concerned are Parties to the Protocol and have notified the secretariat of their manner of implementation.

9. (a) Based on the assessments made pursuant to Article 6, the Parties may decide whether:
- (i) adjustments to the ozone depleting potentials specified in Annex A should be made and, if so, what the adjustments should be; and
  - (ii) further adjustments and reductions of production or consumption of the controlled substances from 1986 levels should be undertaken and, if so, what the scope, amount and timing of any such adjustments and reductions should be.
- (b) Proposals for such adjustments shall be communicated to the Parties by the secretariat at least six months before the meeting of the Parties at which they are proposed for adoption.
- (c) In taking such decisions, the Parties shall make every effort to reach agreement by consensus. If all efforts at consensus have been exhausted, and no agreement reached, such decisions shall, as a last resort, be adopted by a two-thirds majority vote of the Parties present and voting representing at least fifty per cent of the total consumption of the controlled substances of the Parties.
- (d) The decisions, which shall be binding on all Parties, shall forthwith be communicated to the Parties by the Depositary. Unless otherwise provided in the decisions, they shall enter into force on the expiry of six months from the date of the circulation of the communication by the Depositary.
10. (a) Based on the assessments made pursuant to Article 6 of this Protocol and in accordance with the procedure set out in Article 9 of the Convention, the Parties may decide:
- (i) whether any substances, and if so which, should be added to or removed from any annex to this Protocol; and
  - (ii) the mechanism, scope and timing of the control measures that should apply to those substances;
- (b) Any such decision shall become effective, provided that it has been accepted by a two-thirds majority vote of the Parties present and voting.
11. Notwithstanding the provisions contained in this Article, Parties may take more stringent measures than those required by this Article.

### ARTICLE 3: CALCULATION OF CONTROL LEVELS

For the purposes of Articles 2 and 5, each Party shall, for each Group of substances in Annex A, determine its calculated levels of:

- (a) production by:
  - (i) multiplying its annual production of each controlled substance by the ozone depleting potential specified in respect of it in Annex A; and
  - (ii) adding together, for each such Group, the resulting figures;
- (b) imports and exports, respectively, by following, mutatis mutandis, the procedure set out in subparagraph (a); and
- (c) consumption by adding together its calculated levels of production and imports and subtracting its calculated level of exports as determined in accordance with subparagraphs (a) and (b). However, beginning on 1 January 1993, any export of controlled substances to non-Parties shall not be subtracted in calculating the consumption level of the exporting Party.

### ARTICLE 4: CONTROL OF TRADE WITH NON-PARTIES

1. Within one year of the entry into force of this Protocol, each Party shall ban the import of controlled substances from any State not party to this Protocol.
2. Beginning on 1 January 1993, no Party operating under paragraph 1 of Article 5 may export any controlled substance to any State not party to this Protocol.
3. Within three years of the date of the entry into force of this Protocol, the Parties shall, following the procedures in Article 10 of the Convention, elaborate in an annex a list of products containing controlled substances. Parties that have not objected to the annex in accordance with those procedures shall ban, within one year of the annex having become effective, the import of those products from any State not party to this Protocol.
4. Within five years of the entry into force of this Protocol, the Parties shall determine the feasibility of banning or restricting, from States not party to this Protocol, the import of products produced with, but not containing, controlled substances. If determined feasible, the Parties shall, following the procedures in Article 10 of the Convention, elaborate in an annex a list of such products. Parties that have not objected to it in accordance with those procedures shall ban or restrict, within one year of the annex having become effective, the import of those products from any State not party to this Protocol.

5. Each Party shall discourage the export, to any State not party to this Protocol, of technology for producing and for utilizing controlled substances.

6. Each Party shall refrain from providing new subsidies, aid, credits, guarantees or insurance programmes for the export to States not party to this Protocol of products, equipment, plants or technology that would facilitate the production of controlled substances.

7. Paragraphs 5 and 6 shall not apply to products, equipment, plants or technology that improve the containment, recovery, recycling or destruction of controlled substances, promote the development of alternative substances, or otherwise contribute to the reduction of emissions of controlled substances.

8. Notwithstanding the provisions of this Article, imports referred to in paragraphs 1, 3 and 4 may be permitted from any State not party to this Protocol if that State is determined, by a meeting of the Parties, to be in full compliance with Article 2 and this Article, and has submitted data to that effect as specified in Article 7.

#### ARTICLE 5: SPECIAL SITUATION OF DEVELOPING COUNTRIES

1. Any Party that is a developing country and whose annual calculated level of consumption of the controlled substances is less than 0.3 kilograms per capita on the date of the entry into force of the Protocol for it, or any time thereafter within ten years of the date of entry into force of the Protocol shall, in order to meet its basic domestic needs, be entitled to delay its compliance with the control measures set out in paragraphs 1 to 4 of Article 2 by ten years after that specified in those paragraphs. However, such Party shall not exceed an annual calculated level of consumption of 0.3 kilograms per capita. Any such Party shall be entitled to use either the average of its annual calculated level of consumption for the period 1995 to 1997 inclusive or a calculated level of consumption of 0.3 kilograms per capita, whichever is the lower, as the basis for its compliance with the control measures.

2. The Parties undertake to facilitate access to environmentally safe alternative substances and technology for Parties that are developing countries and assist them to make expeditious use of such alternatives.

3. The Parties undertake to facilitate bilaterally or multilaterally the provision of subsidies, aid, credits, guarantees or insurance programmes to Parties that are developing countries for the use of alternative technology and for substitute products.



## ARTICLE 6: ASSESSMENT AND REVIEW OF CONTROL MEASURES

Beginning in 1990, and at least every four years thereafter, the Parties shall assess the control measures provided for in Article 2 on the basis of available scientific, environmental, technical and economic information. At least one year before each assessment, the Parties shall convene appropriate panels of experts qualified in the fields mentioned and determine the composition and terms of reference of any such panels. Within one year of being convened, the panels will report their conclusions, through the secretariat, to the Parties.

## ARTICLE 7: REPORTING OF DATA

1. Each Party shall provide to the secretariat, within three months of becoming a Party, statistical data on its production, imports and exports of each of the controlled substances for the year 1986, or the best possible estimates of such data where actual data are not available.

2. Each Party shall provide statistical data to the secretariat on its annual production (with separate data on amounts destroyed by technologies to be approved by the Parties), imports, and exports to Parties and non-Parties, respectively, of such substances for the year during which it becomes a Party and for each year thereafter. It shall forward the data no later than nine months after the end of the year to which the data relate.

## ARTICLE 8: NON-COMPLIANCE

The Parties, at their first meeting, shall consider and approve procedures and institutional mechanisms for determining non-compliance with the provisions of this Protocol and for treatment of Parties found to be in non-compliance.

ARTICLE 9: RESEARCH, DEVELOPMENT, PUBLIC AWARENESS  
AND EXCHANGE OF INFORMATION

1. The Parties shall co-operate, consistent with their national laws, regulations and practices and taking into account in particular the needs of developing countries, in promoting, directly or through competent international bodies, research, development and exchange of information on:

- (a) best technologies for improving the containment, recovery, recycling or destruction of controlled substances or otherwise reducing their emissions;
- (b) possible alternatives to controlled substances, to products containing such substances, and to products manufactured with them; and
- (c) costs and benefits of relevant control strategies.

2. The Parties, individually, jointly or through competent international bodies, shall co-operate in promoting public awareness of the environmental effects of the emissions of controlled substances and other substances that deplete the ozone layer.

3. Within two years of the entry into force of this Protocol and every two years thereafter, each Party shall submit to the secretariat a summary of the activities it has conducted pursuant to this Article.

ARTICLE 10: TECHNICAL ASSISTANCE

1. The Parties shall, in the context of the provisions of Article 4 of the Convention, and taking into account in particular the needs of developing countries, co-operate in promoting technical assistance to facilitate participation in and implementation of this Protocol.

2. Any Party or Signatory to this Protocol may submit a request to the secretariat for technical assistance for the purposes of implementing or participating in the Protocol.

3. The Parties, at their first meeting, shall begin deliberations on the means of fulfilling the obligations set out in Article 9, and paragraphs 1 and 2 of this Article, including the preparation of workplans. Such workplans shall pay special attention to the needs and circumstances of the developing countries. States and regional economic integration organizations not party to the Protocol should be encouraged to participate in activities specified in such workplans.

## ARTICLE 11: MEETINGS OF THE PARTIES

1. The Parties shall hold meetings at regular intervals. The secretariat shall convene the first meeting of the Parties not later than one year after the date of the entry into force of this Protocol and in conjunction with a meeting of the Conference of the Parties to the Convention, if a meeting of the latter is scheduled within that period.

2. Subsequent ordinary meetings of the Parties shall be held, unless the Parties otherwise decide, in conjunction with meetings of the Conference of the Parties to the Convention. Extraordinary meetings of the Parties shall be held at such other times as may be deemed necessary by a meeting of the Parties, or at the written request of any Party, provided that, within six months of such a request being communicated to them by the secretariat, it is supported by at least one third of the Parties.

3. The Parties, at their first meeting, shall:

- (a) adopt by consensus rules of procedure for their meetings;
- (b) adopt by consensus the financial rules referred to in paragraph 2 of Article 13;
- (c) establish the panels and determine the terms of reference referred to in Article 6;
- (d) consider and approve the procedures and institutional mechanisms specified in Article 8; and
- (e) begin preparation of workplans pursuant to paragraph 3 of Article 10.

4. The functions of the meetings of the Parties shall be to:

- (a) review the implementation of this Protocol;
- (b) decide on any adjustments or reductions referred to in paragraph 9 of Article 2;
- (c) decide on any addition to, insertion in or removal from any annex of substances and on related control measures in accordance with paragraph 10 of Article 2;

- (d) establish, where necessary, guidelines or procedures for reporting of information as provided for in Article 7 and paragraph 3 of Article 9;
- (e) review requests for technical assistance submitted pursuant to paragraph 2 of Article 10;
- (f) review reports prepared by the secretariat pursuant to subparagraph (c) of Article 12;
- (g) assess, in accordance with Article 6, the control measures provided for in Article 2;
- (h) consider and adopt, as required, proposals for amendment of this Protocol or any annex and for any new annex;
- (i) consider and adopt the budget for implementing this Protocol; and
- (j) consider and undertake any additional action that may be required for the achievement of the purposes of this Protocol.

5. The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State not party to this Protocol, may be represented at meetings of the Parties as 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 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 Parties.

#### ARTICLE 12: SECRETARIAT

For the purposes of this Protocol, the secretariat shall:

- (a) arrange for and service meetings of the Parties as provided for in Article 11;
- (b) receive and make available, upon request by a Party, data provided pursuant to Article 7;
- (c) prepare and distribute regularly to the Parties reports based on information received pursuant to Articles 7 and 9;

- (d) notify the Parties of any request for technical assistance received pursuant to Article 10 so as to facilitate the provision of such assistance;
- (e) encourage non-Parties to attend the meetings of the Parties as observers and to act in accordance with the provisions of this Protocol;
- (f) provide, as appropriate, the information and requests referred to in subparagraphs (c) and (d) to such non-party observers; and
- (g) perform such other functions for the achievement of the purposes of this Protocol as may be assigned to it by the Parties.

#### ARTICLE 13: FINANCIAL PROVISIONS

1. The funds required for the operation of this Protocol, including those for the functioning of the secretariat related to this Protocol, shall be charged exclusively against contributions from the Parties.
2. The Parties, at their first meeting, shall adopt by consensus financial rules for the operation of this Protocol.

#### ARTICLE 14: RELATIONSHIP OF THIS PROTOCOL TO THE CONVENTION

Except as otherwise provided in this Protocol, the provisions of the Convention relating to its protocols shall apply to this Protocol.

#### ARTICLE 15: SIGNATURE

This Protocol shall be open for signature by States and by regional economic integration organizations in Montreal on 16 September 1987, in Ottawa from 17 September 1987 to 16 January 1988, and at United Nations Headquarters in New York from 17 January 1988 to 15 September 1988.

#### ARTICLE 16: ENTRY INTO FORCE

1. This Protocol shall enter into force on 1 January 1989, provided that at least eleven instruments of ratification, acceptance, approval of the Protocol or accession thereto have been deposited by States or regional economic integration organizations representing at least two-thirds of 1986 estimated global consumption of the controlled substances, and the provisions of paragraph 1 of Article 17 of the Convention have been fulfilled. In the event that these conditions have not been fulfilled by that date, the Protocol shall enter into force on the ninetieth day following the date on which the conditions have been fulfilled.
2. For the purposes of paragraph 1, any such instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by member States of such organization.
3. After the entry into force of this Protocol, any State or regional economic integration organization shall become a Party to it on the ninetieth day following the date of deposit of its instrument of ratification, acceptance, approval or accession.

#### ARTICLE 17: PARTIES JOINING AFTER ENTRY INTO FORCE

Subject to Article 5, any State or regional economic integration organization which becomes a Party to this Protocol after the date of its entry into force, shall fulfil forthwith the sum of the obligations under Article 2, as well as under Article 4, that apply at that date to the States and regional economic integration organizations that became Parties on the date the Protocol entered into force.

#### ARTICLE 18: RESERVATIONS

No reservations may be made to this Protocol.

#### ARTICLE 19: WITHDRAWAL

For the purposes of this Protocol, the provisions of Article 19 of the Convention relating to withdrawal shall apply, except with respect to Parties referred to in paragraph 1 of Article 5. Any such Party may withdraw from this Protocol by giving written notification to the Depositary at any time after four years of assuming the obligations specified in paragraphs 1 to 4 of Article 2. 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.

ARTICLE 20: AUTHENTIC TEXTS

The original of this Protocol, 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 PROTOCOL.

DONE AT MONTREAL THIS SIXTEENTH DAY OF SEPTEMBER, ONE THOUSAND NINE HUNDRED AND EIGHTY SEVEN

## ANNEX A

## CONTROLLED SUBSTANCES

Group	Substance	Ozone Depleting Potential *
Group I		
	CFC1 <sub>3</sub> (CFC-11)	1.0
	CF <sub>2</sub> Cl <sub>2</sub> (CFC-12)	1.0
	C <sub>2</sub> F <sub>3</sub> Cl <sub>3</sub> (CFC-113)	0.8
	C <sub>2</sub> F <sub>4</sub> Cl <sub>2</sub> (CFC-114)	1.0
	C <sub>2</sub> F <sub>5</sub> Cl (CFC-115)	0.6
Group II		
	CF <sub>2</sub> BrCl (halon-1211)	3.0
	CF <sub>3</sub> Br (halon-1301)	10.0
	C <sub>2</sub> F <sub>4</sub> Br <sub>2</sub> (halon-2402) (to be determined)	

\* These ozone depleting potentials are estimates based on existing knowledge and will be reviewed and revised periodically.



"PLEASE CHECK AGAINST DELIVERY"  
EMBARGOED: 16 September 1987

"Facing a Distant Threat"

REMARKS AT THE CLOSING OF THE  
PLENIPOTENTIARY MEETING ON OZONE

BY

DR. MOSTAFA K. TOLBA

EXECUTIVE DIRECTOR

UNITED NATIONS ENVIRONMENT PROGRAMME

Montreal, 16 September 1987

Ladies and Gentlemen,

A few years ago, when UNEP embarked seriously on its ozone programme, I gave a speech which I called "Facing a Distant Threat." I can admit now that I was not sure that we really would face up to that threat. Never before in the history of science and law has the international community agreed to take such radical steps to avert a problem which they anticipate, before that problem has begun to take its toll.

We have done that. We have faced the distant threat. You have established a new land mark in the history of the environment movement, in international co-operation and in preventive rule-making.

It is customary on occasions such as this to speak about the many years of work that have led to your action; about how the problem was uncovered; about how the scientific community was mobilized; to tell a story or two about one's colleagues from those early days; and to sit back, just for a while, and be contented with a job well done, and to exchange thanks.

Delegates will excuse me if I dispense with this familiar exercise. I think everyone here knows that UNEP and the public are enormously indebted to the people who have been working on ozone ever since 1974 and even before. Some of these people I know well. Our distinguished President, Ambassador Lang, whose patient leadership has seen us through some difficult moments, Ambassador Hawas, whose quiet statesmanship helped us forge a broad consensus; and Ambassador Bustani and his credentials committee for helping us maintain the authenticity of our enterprise. Profound gratitude is also due to all other distinguished officers who served on the Bureau and Committees and especially Mr. Jon Allen and his drafting group for giving us precision in language and formulae that would stand the test of time. But there are many others: known to me only as authors of scientific and legal papers. Others still, are not known to me at all: the lab technicians, the media people, the conference staff. They have all done their bit, and I cannot single out a few names and leave the rest unnamed. In a way this is an enterprise too big - too important - to be summed up in a few words of thanks.

However, as Executive Director of the U.N. Environment Programme, I must acknowledge the delegations present here for facing that threat in an intelligent and caring manner. As a scientist, I salute you: for with this agreement the worlds of science and public affairs have taken a step closer together. I am relieved, because it is a union which must guide the affairs of the world into the next century. As an internationalist - as a man who has turned from the affairs of his own country to the affairs of the international community - I offer my strongest support to an agreement that has shown - once again - that the environment can be a bridge between the worlds of East and West, and of North and South. And as Mostafa Tolba - a resident of this planet - I thank you. I thank you a dozen times. I thank you most of all on behalf of our young people who will inherit the world we give them. For with this agreement, we have shown that we care - that we want to give them a world worth living in.

We now have a respectable legal document, the Protocol. But the legal document, any legal document, is only as good as the Parties are willing to make it. Protocols don't save environments. People save environments. This Protocol is a point of departure. It is the beginning of the real work to come.

First. Nations which have not signed and ratified the Vienna Convention should do so for both the Convention and the Protocol at the earliest possible opportunity.

Second. Nations will ratify the Protocol in accordance with their own legislative procedures. You have set a target date of 1 January 1989 for its entry into force. This is the first test of our seriousness. Meanwhile, if we are again serious, nations should act now. They should voluntarily comply with the terms of the Protocol without waiting for its entry into force.

Third. It is essential to have the best scientific knowledge and the most reliable data available before the first meeting of the Contracting Parties, and we must intensify dramatically - through industry co-operation - our effort to secure safe substitutes to the dangerous chemicals.

And, finally. Parties must be prepared to take further action on the ozone problem. If surveys continue to show a decline in the total ozone column, and if ozone-depleting substances continue to constitute a threat to the ozone layer, then the legal work must continue to reflect those changes. We must always be prepared to listen to the scientists, however much we hope that the ozone question is closed. We must be prepared to move faster if we find that human health and human environment are at risk. Today we take a giant step forward. Let us not falter.

Thank you very much.

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Conference of Plenipotentiaries on  
Protection of the Ozone Layer

Statement by  
The Honorable Lee M. Thomas  
Administrator  
U.S. Environmental Protection Agency

Wednesday, September 16, 1987  
Montreal, Canada

Mr. President, Distinguished Delegates, Ladies and Gentlemen,

One year ago I had the privilege of meeting many of you in Leesburg, Virginia, where we explored a range of possible measures for protecting the earth's fragile ozone layer.

Today, a mere twelve months later, we have adopted a protocol that will surely be viewed as a milestone in the evolution of international environmental cooperation.

This protocol is indeed unprecedented. It represents the first time the nations of the world have joined forces to address an environmental threat in advance of fully established effects. It also reflects an unprecedented degree of cooperation in balancing environmental protection and economic development interests.

Within the United States and elsewhere, government, industry, and the environmental community have come together to safeguard the ozone layer in a manner virtually impossible a decade ago. Clearly, it has not been easy. Curtailing use of economically-valuable chemicals that have served mankind well has inherent difficulties.

Thus, difficult compromises have had to be made, compromises which leave each interest group and party to these negotiations short of their preferred ideal solution. I am certain, however, that each of us will take well-justified pride in our contributions to the final product.

The degree of cooperation manifest throughout our negotiations over the past year has been remarkable. My government has been especially heartened by the support for this protocol displayed by the developing nations. They have been justifiably concerned about the implications for their own societies. Nonetheless, the developing world has consistently supported the concept of a global response to a global problem. On our part, the United States and other industrialized nations have been strong advocates of incorporating into the protocol special provisions to assist developing nations to bridge the transition to new chemicals and alternative technologies.

Throughout the past year, the United States has exchanged information, ideas and views on the ozone depletion problem with governments around the world. We carried out especially active dialogue with the European Communities and its member governments. Throughout, EC Director General Laurens Brinkhorst has exhibited a quality of leadership and advocacy for the Communities' positions that has earned him our respect. While we have not always seen eye to eye, his frankness and willingness to present and consider new approaches and proposals have contributed to the creation of a workable and equitable accord.

I wish to pay tribute to three other individuals who have made particularly outstanding contributions throughout the negotiations. To our distinguished President, Ambassador Winfried Lang of Austria, we extend our profound gratitude for bringing to our deliberations his skills as a diplomat, negotiator and leader. Ambassador Essam-El-Din Hawas of Egypt, who has provided such wise counsel and direction in the exceptionally complex area of trade and developing country issues, has similarly earned admiration and appreciation of my Government.

And, Dr. Mostafa Tolba, the outstanding Executive Director of the United Nations Environment Program, we salute you for your herculean efforts on behalf of the protocol. We especially appreciate the fact that, in approaching this task, you have resisted the easy road of settling for a minimal, least-common-denominator international accord. Rather, you have pushed, prodded and led us throughout the negotiations to keep our eyes fixed on the ultimate objective, protection of the environment, and to avoid seeking short-term economic gains or political advantages. The product resulting from these efforts will stand as a testament to your personal accomplishment and also exemplify the necessary and effective role the United Nations Environment Program, and other international agencies, can play in addressing environmental problems today and in the future.

Finally, Mr. President, I wish to extend our deep appreciation to the Government and citizens of Canada, our friend and neighbor to the North, for hosting this Conference. Over the years, Canada has been in the forefront of international efforts to protect the global environment. The "Protocol of Montreal" will assuredly enhance this reputation. Canada's bold step of scheduling this plenipotentiary conference during the early stages of the negotiations proved to be an effective stimulus for keeping our work moving ahead rapidly, and we all owe a debt of gratitude for this foresight.

From the very outset, the United States has pursued a protocol that will be effective in protecting the stratosphere, equitable in the treatment of the parties, flexible in adapting to changes in science and technology, and capable of attracting the early, active participation of all nations. I believe that we have achieved these goals.

I also believe that our protocol has implications that far transcend protection of the ozone layer. We have clearly broken new ground in our collective ability to address environmental issues with significant economic dimensions, and which lay outside the realm of any single country or regional grouping of countries. Thus, in achieving our immediate goal of providing necessary protection to the earth's ozone layer, we have also demonstrated the foresight, creativity, political will and cooperation necessary to cope with other environmental challenges.



Our efforts over the past year have been arduous, and the results at times in doubt. Today, however -- looking both backward to where we started and ahead to where we can go -- this certainly has been a journey worth taking.

1ST STORY of Level 1 printed in FULL format.

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The New York Times

September 20, 1987, Sunday, Late City Final Edition

SECTION: Section 4; Page 28, Column 5; Week in Review Desk

LENGTH: 248 words

HEADLINE: IDEAS & TRENDS: The Environment;  
A Pact to Protect the Ozone

BODY:

The agreement will probably not show results in the delegates' lifetimes, but there were congratulations all around when an international conference in Montreal last week produced an accord to protect the earth's ozone layer. The agreement requires the limitation and eventual reduction of chlorofluorocarbons and other chemicals that destroy ozone in the upper atmosphere, threatening radiation damage to the ecosphere and increased skin cancer among humans.

The protocol was signed by 24 nations, including the United States, and by the European Community. Delegates from many other nations, including the Soviet Union, declared support for the pact but did not have their governments' authorization to sign it in Montreal. To take effect, it must be ratified by nations representing two-thirds of the global use of the chemicals, which is not expected to present a problem.

The conference came more than a decade after the first warnings of a threat to the ozone layer, which filters harmful solar radiation; since then, a drastic thinning of the ozone layer over Antarctica has been noted. Scientists predicted that even with an immediate ban on chlorofluorocarbons, ozone depletion would proceed for decades because of the tons of CFC gases already released into the atmosphere.

CFC's are used in aerosol sprays, refrigerants, solvents and foam insulation and packaging. The United States, Canada and the Scandinavian countries banned CFC's in aerosol propellants in the 1970's.

GRAPHIC: Drawing

SUBJECT: Terms not available

2ND STORY of Level 1 printed in FULL format.

The Associated Press

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September 17, 1987, Thursday, PM cycle

SECTION: Business News

LENGTH: 552 words

HEADLINE: Egyptian Diplomat Praised for Shepherding Treaty

BYLINE: By JEFF BRADLEY, Associated Press Writer

DATELINE: MONTREAL

KEYWORD: Ozone

BODY:

Mostafa Tolba was celebrating the conclusion of the world's first ozone treaty with a glass of champagne when a Canadian legal expert walked into his office.

The lawyer, John Allen, paused for a moment, gave Tolba a hug and said simply, "Without you ... "

A plant biologist and former Cabinet minister under Egyptian Presidents Gamel Abdel Nasser and Anwar Sadat, Tolba is executive director of the United Nations Environment Program.

Educated in London and an avid reader of Agatha Christie mysteries, Tolba first alerted UNEP member countries in 1974 to the danger that man-made chlorofluorocarbon compounds might be depleting the planet's ozone shield.

On Wednesday, 24 nations and the European Economic Community signed the Montreal Protocol, agreeing to reduce chlorofluorocarbon consumption by 50 percent before the end of the century and force manufacturers to find substitutes for products such as refrigerator coolants, aerosols, foam cups and insulation. More nations are expected to sign later.

"This," Tolba said of the treaty, "is the culmination of 13 years' work."

Tolba, 64, said the achievement is particularly great because scientific investigation has not yielded specific amounts of ozone damage \_ only estimates. Controls will mostly benefit future generations since chlorofluorocarbons linger in the atmosphere for up to a century.

Participants agreed earlier this year on a scientific consensus that 3 to 7 percent of the ozone layer has been depleted, and each additional 1 percent loss could result in a 5-percent increase in skin cancer.

A hole the size of the continental United States has been discovered in the ozone umbrella over the Antarctic.

The Associated Press, September 17, 1987

"There is enough information to show that if we don't act now, the magnitude could be great," Tolba said. "We kept pushing the idea that we can't wait until disaster is upon us."

Delegates said Tolba was the prime mover in achieving the world's first environmental clean-up treaty.

"You have pushed, prodded and led us throughout the negotiations," said Lee Thomas, administrator of the U.S. Environmental Protection Agency.

"We salute you for your Herculean efforts."

Delegates said Tolba's success stemmed from gentle persuasion, a good rapport with officials from developing nations, a grasp of the facts and what one participant termed some "head-bashing" when weeklong negotiations bogged down Tuesday.

"Yesterday at 4 o'clock everybody except me felt there would be no agreement," Tolba said Wednesday. "But at 5:15 we had one."

During the week of negotiations, Tolba and conference chairman Winfried Lang of Austria relied on a 10-member working group to work out details of the treaty and to pressure delegations from the United States and the EEC to agree to new ideas.

Many compromise clauses came from New Zealand, Tolba noted.

It was possible to roam the corridors of the International Civil Aviation Organization building in downtown Montreal and not be aware that it was hosting the ozone conference, as small groups huddled in private rooms.

The Soviets postponed signing the treaty but said they would later.

Twenty-four nations and the EEC did sign. Alone they constitute enough to meet the pact's requirement that countries producing two-thirds of all chlorofluorocarbons ratify the agreement.

7TH STORY of Level 1 printed in FULL format.

Proprietary to the United Press International 1987

September 17, 1987, Thursday, PM cycle

SECTION: International

LENGTH: 676 words

HEADLINE: Countries reach agreement on ozone preservation

BYLINE: By WARREN PERLEY

DATELINE: MONTREAL

KEYWORD: Ozone

BODY:

Forty-six countries attending a U.N. conference have adopted an unprecedented agreement aimed at protecting the earth's ozone layer by reducing production of a chemical that destroys the protective shield.

The pact was hailed on its adoption Wednesday as a major breakthrough in the effort to control production and consumption of chlorofluorocarbons, or CFCs, the man-made chemical that destroys ozone.

'You have established a new landmark in the history of the environmental movement,' Dr. Mostafa Tolba, executive director of the U.N. environment program, told delegates from the 46 nations. 'Let governments work with industry to find safe substitutes for dangerous chemicals. Be prepared to listen to your scientists.'

Ozone protects life on earth by absorbing excessive ultraviolet radiation from the sun, which can cause skin cancer and eye damage in humans and can harm animals, crops and biological processes. CFCs are compounds commonly used in refrigerants, cleaning solvents and aerosol products, and in the manufacture of plastic foams.

The agreement reached Wednesday must be ratified by the governments of the 11 countries that consume two-thirds of all CFCs used in the world.

Lee Thomas, administrator of the U.S. Environmental Protection Agency and head of the American delegation to the U.N. conference, said he expects the agreement to be endorsed by Jan. 1, 1989.

'I think we'll get ratification from the major countries very soon,' Thomas said. 'The U.S. Congress will ratify it ... after next Jan. 1. This treaty sets a precedent for dealing with worldwide environmental problems.'

The United States consumes 27 percent of the world's CFCs, as do the countries in the European Economic Community. Japan uses 11 percent, while Canada and the Scandinavian countries consume a combined 2 percent.

On the production end, the United States and the EEC generate 75 percent of the world's CFCs. The Soviet Union and Japan produce 20 percent.

Proprietary to the United Press International, September 17, 1987

'We have all the EEC countries on board,' said Laurens J. Brinkhorst, head of the EEC delegation. 'I'm confident they will all ratify the agreement. We have the main producers (and consumers) on board. We hope the Soviet Union will also join in ratifying it.'

Vladimir Zakharov, head of the Soviet delegation, said in his closing speech to delegates that his country supports the agreement but must examine it carefully before ratifying the pact.

'Public opinion and our government favor efficient international cooperation to protect the environment, especially the ozone layer,' Zakharov said. 'The text of the protocol includes new provisions which must be examined by our government.'

CFCs destroy the earth's layer of ozone, a form of pungent, colorless oxygen that occurs naturally in the high atmosphere. An estimated 800 kilotons of CFCs are produced annually in the world.

The agreement calls for CFC production to be frozen at 1986 levels until Jan. 1, 1990, and then cut in half by 1999.

The Soviets said 1990 should be the base production year. They said setting 1986 as the benchmark would conflict with their five-year economic plans.

Delegates at the conference agreed to a compromise by setting a different timetable for communist countries that rely on centralized, long-range economic planning.

Under the agreement, developing countries and some communist-bloc countries will be allowed to build CFC plants already on the drawing board as long as overall production levels meet the limits.

Zakharov, saying his country supports even larger cuts in CFC production, predicted the Soviet government will sign the agreement quickly.

'It is very little, but it is a first step toward environmental protection,' he said. 'It's only a beginning.'

The agreement counts the EEC as a single unit in determining CFC production levels, but each individual country in the Common Market must ratify the pact.

The United Nations has been trying for a decade to find a solution to the threat of excessive solar radiation penetrating the ozone layer.

9TH STORY of Level 1 printed in FULL format.

The Associated Press

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September 16, 1987, Wednesday, PM cycle

SECTION: Business News

LENGTH: 569 words

HEADLINE: Army Fire-Fighting Chemical Is Found Major Ozone -Destroyer

BYLINE: By JEFF BRADLEY, Associated Press Writer

DATELINE: MONTREAL

KEYWORD: Ozone -Halons

BODY:

Scientists and diplomats from 43 nations negotiating a protocol to protect the Earth's ozone layer face a special dilemma with a group of wonder chemicals known as halons.

Developed by the U.S. Army Corps of Engineers at the end of World War II to fight fires in tanks and armored personnel carriers, halons are used to protect high-tech computer and electronic facilities around the world.

Costly halon gas is considered the world's most advanced fire-fighting agent. It can extinguish in seconds a fire in a telephone exchange, bank computer room, museum storage vault or on board a destroyer \_ without damaging equipment or harming personnel.

One-third of halon sales are to armies. There is no known substitute for the compounds, produced by DuPont and Great Lakes Chemicals in the United States, Atochem in France, Kali Chemi in West Germany and Nippon Halon in Japan, among others.

But in investigating chemicals that are tearing holes in the Earth's ozone layer, allowing ultraviolet rays through the upper atmosphere, scientists discovered recently that halons may be the worst offender of all.

Previously, the damage was largely attributed to chlorofluorocarbons (CFCs), used in aerosol cans, refrigerator coolants, plastic foam and solvents.

The U.N.-sponsored Montreal meeting has focused on a 50 percent reduction in CFCs by the end of the century.

Alexander Chisholm, director of atmospheric research at Environment Canada and a prime mover in the treaty, said Tuesday, however, that the provision on halons may be the most crucial.

The pact would freeze halon production at 1986 levels, starting three years after the protocol takes effect.

The Associated Press, September 16, 1987

"Halons are three to 10 times as effective at depleting the ozone layer as CFCs," Chisholm said.

"We calculate that roughly 20 percent of the depletion Canada is responsible for is caused by halons.

"It's the single most significant victory in the protocol."

Chisholm said several countries argued that halons, urgently needed by their armies and essential facilities, should be excluded until more research is done.

Julia Langer of Friends of the Earth, a conference observer, said the countries included France and the Soviet Union.

Chisholm said the United States pressed for halon controls, after reporting that halon presence in the atmosphere is growing at 23 percent a year.

He said if halons were exempted, "the halon problem could literally undermine the protocol."

"Without them, even if CFCs are controlled, we could have a problem of the same magnitude or larger within four or five years," said Ms. Langer.

She called for an 85 percent cut in both CFCs and halons, to force the chemical companies to find alternatives.

Gary Taylor of the National Fire Protection Association of Canada said halon users favored controls on emissions, rather than production.

He said the industry will try to meet the restrictions through conservation, mainly by preventing halon emissions when ceiling fire extinguishing systems are serviced or replaced.

Halons are CFCs that also contain bromine, which reacts more destructively against ozone.

Because halons are held in tanks and seldom released, leakage into the atmosphere is only 23 percent a year compared with 85 percent for CFCs.

About 40 million pounds of halons are produced each year, compared with 1 million tons of CFCs. Halons cost nearly 10 times as much, about \$8 a pound.



10TH STORY of Level 1 printed in FULL format.

The Associated Press

The materials in the AP file were compiled by The Associated Press. These materials may not be republished without the express written consent of The Associated Press.

September 16, 1987, Wednesday, AM cycle

SECTION: International News

LENGTH: 945 words

HEADLINE: Ozone Treaty Signed by 24 Countries, EEC

BYLINE: By JEFF BRADLEY, Associated Press Writer

DATELINE: MONTREAL

KEYWORD: Ozone

BODY:

A treaty that aims to save the Earth's ozone layer by calling on nations to reduce emissions of harmful chemicals by the year 2000 was signed by two dozen countries Wednesday.

The unprecedented global cooperation against pollution was hailed by Canadian Environment Minister Tom McMillan as a "law of the air."

Lee Thomas, administrator of the U.S. Environmental Protection Agency, said "it feels great" as he got up from the table after signing the first worldwide treaty on reducing pollutants by set amounts.

The Montreal Protocol, which calls for nations to reduce ozone-depleting chemicals by 50 percent before the end of the century, is a "milestone" that could set an example for worldwide collaboration on other environmental challenges, Thomas said.

Negotiations in the past week were arduous and results at times in doubt, but the United States succeeded in obtaining the strong treaty it sought, Thomas said.

Once ratified, the protocol will control consumption and production of two groups of manmade chemicals — chlorofluorocarbons and halons — that are destroying the blanket of ozone protecting the Earth from the sun's harmful ultraviolet rays.

"Without this treaty, we were on a crash course for disaster," said meteorologist Peter Usher of the United Nations Environment Program, the sponsor of the conference. "Life on Earth was at risk within a century."

Participants agreed earlier this year on a scientific consensus that 3 to 7 percent of the ozone layer has been depleted, and each additional 1 percent loss could result in a 5-percent increase in skin cancer.

The Associated Press, September 16, 1987

A hole the size of the continental United States has been discovered in the ozone umbrella over the Antarctic.

The treaty will force manufacturers to find substitute chemicals that don't damage ozone.

It does not directly control the products using chlorofluorocarbons. These range from foam cups and padded furniture to refrigerator coolants and car air conditioners, home insulation, solvents and computer chip cleaners.

When the United States took the first major step against chlorofluorocarbons in 1978 by banning them from aerosol cans, manufacturers substituted carbon dioxide, propane and butane.

Those gases are too flammable for other uses, but DuPont, Britain's ICI and other companies are looking at safer, new chlorofluorocarbon compounds and other chemicals as alternatives.

Friends of the Earth, hailing the treaty as an important first step, announced Wednesday that McDonald's, Wendy's, Burger King and Kentucky Fried Chicken franchises in the United States and some other countries have agreed to abandon chlorofluorocarbon-filled foam packaging for safer materials.

"It's the tip of the iceberg, but a visible one," said the group's international director, Geoffrey Webb.

The European Economic Community signed separately after establishing a legal precedent by entering the protocol as an economic entity responsible for controlling consumption within the 12-nation EEC.

Eight of the EEC nations signed separately Wednesday and the other four, Greece, Spain, Luxembourg and Ireland, will sign later.

Nearly half the countries that took part in the talks signed the protocol, from Egypt and Ghana to Japan and Switzerland.

The treaty requires ratification by at least 11 nations representing two-thirds of 1986 global consumption of chlorofluorocarbons. If all the signers ratify, that figure is guaranteed. The United States and EEC alone account for 60 percent of consumption and 75 percent of production.

In Washington, Rep. John Dingell, D-Mich., chairman of the House Energy and Commerce Committee, said the agreement is "an important step that certainly appears to deserve solid congressional support."

Dingell said, however, that he would be holding hearings to get the Reagan administration to address concerns about trade provisions granted developing countries, the Soviet Union, and the EEC nations.

Target dates call for a freeze in chlorofluorocarbon consumption at 1986 levels starting on July 1, 1990. Their use would be reduced by 20 percent by June 30, 1994, and another 30 percent by June 30, 1999.

Production cuts would be similar, except manufacturers could expand output by 10 percent in the two initial phases and a total of 15 percent by 1999,

The Associated Press, September 16, 1987

provided they export the chemicals to developing countries.

Developing countries would have a 10-year grace period under the pact, and the Soviet Union would be allowed to expand production by opening plants it cannot cancel under its centrally planned economy.

The Soviets and the Japanese each produce about 10 percent of the world's chlorofluorocarbons.

The treaty theoretically would enable China to boost its production from 18,000 tons a year currently to 300,000 tons because of its 1 billion population.

That would negate much of the impact of the treaty.

Chinese delegate Wang Zhijia said that scenario was impossible, however, because China lacked the economic infrastructure for such a major increase, and had as much interest as the First World in curbing ozone damage.

"It won't happen," he said. "Within 10 years, alternative substances will become cheap."

Nations that ratify but violate the treaty would be subject to trade sanctions. But specific implementation will be decided at a later meeting.

The Soviet Union said it believed the accord should be stronger but will sign it anyway \_ at an unspecified later date.

"I think we must sign," said chief Soviet delegate Vladimir Zakharov, who was displeased the protocol covers the Soviet halon-2402, which some Western scientists estimate causes 20 times the damage of ordinary chlorofluorocarbons.

12TH STORY of Level 1 printed in FULL format.

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September 16, 1987, Wednesday

LENGTH: 951 words

HEADLINE: ENVIRONMENT: TREATY TO PROTECT EARTH'S OZONE LAYER SIGNED

DATELINE: MONTREAL, Sept, 16

BODY:

An international treaty to save the earth's ozone layer from chemical erosion was signed here today by representatives of 43 countries after nine days of hard bargaining.

To take effect, the treaty must be ratified by at least 11 countries which account for two-thirds of the world's consumption of chlorofluorocarbons (CFC's). Signatories of today's pact, known as the "Montreal Protocol," call it an "historic first" and a model for other pollution problems.

The intense negotiations, which started on Sept. 8, and which led to the new treaty, are the culmination of five years of world-wide talks involving scientists, politicians and industrial experts.

The U.N. Environment Program (UNEP) has been pushing to have an ozone -layer treaty for more than a decade. The U.N. body estimates that CFC's are being produced at the global rate of more than 800 million kilotons annually, most of which are eventually released into the atmosphere.

But Austria's Winfried Lang, chairman of the Diplomatic Conference for the Protection of the Ozone Layer, organized by the UNEP, conceded to reporters that the talks almost broke down over a disagreement between the United States and the European Economic Community (EEC) over how the pact -- which enters into force Jan. 1 1989 -- would be applied.

The 12-nation EEC, which produces about 40 percent of the world's CFC's, wanted to be treated as a bloc in terms of production of the ozone -depleting chemicals.

This would have allowed member nations to trade off production quotas among one another as long as there is overall compliance with treaty obligations to reduce consumption.

The United States, for its part, had called for a treaty ratified by countries that produce a combined total of at least 90 percent of the ozone -producing chemicals.

But countries like Canada said that any nation producing more than 20 percent of the chemicals, or several small nations in combination, could prevent the treaty from coming into force.

The United States alone produces 30.9 percent of the synthetic chemicals, compared to 47.8 percent for West and East Europe, 8.9 percent for Japan, 2.5 percent for Canada and 9.9 percent for all others.

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The EEC finally comprised on its request to be considered as a unit and agreed to guarantee that all individual member states would have to ratify the treaty.

In return, the United States agreed to a treaty that would take effect once ratified by countries responsible for two-thirds of the world CFC's production.

The Soviet Union convinced other countries that it should be exempted from the proposed freeze until the end of the decade because of production commitments in its current five-year plan.

Along with Ukraine and Byelorussia, however, the Soviet Union promised to sign the Montreal Protocol within a year.

All other industrialized countries agreed to a freeze based on 1986 levels.

Developing countries were given a ten-year grace period during which CFC's consumption may rise to 0.3 kilograms per capita from the present level of 0.2.

Led by Jose Bustani of Brazil and Ernesto Gondra of Argentina, Third World representatives at the Montreal conference resisted until two days ago the signing of the treaty, arguing that CFC's are vital to their economic development.

"It will be the first agreement in history in which the world reduces in a quantifiable manner substances detrimental to the environment," said Lang, however.

"The world is signalling to itself that certain kinds of chemicals are no longer acceptable," Lang told delegates shortly before they signed the long-awaited pact that would commit countries to a gradual reduction in use of ozone -destroying CFC's by 1999.

Containing carbon, fluorine, chlorine and sometimes hydrogen, CFC's are mainly used as propellants in aerosol spray cans, solvents to clean electronic equipment and cool air conditioners and refrigerators.

CFC's usually react at 15 miles above the planet to destroy the ozone layer, which filters out most of the sun's ultraviolet radiations.

For years scientists have warned that any depletion of the atmosphere's ozone layer will allow an increase in the level of the sun's ultraviolet penetration, causing serious damage to both animal and vegetable living tissue.

Increased ultraviolet penetration, they say, would contribute to a rise in skin cancer, eye cataracts, a reduction in the body's ability to cope with disease, as well as have an impact on aquatic organisms and plants.

Further, many agricultural crops, including wheat, corn, rice and soy beans, are particularly sensitive to ultraviolet radiation and their crop yield could be reduced by the depletion of ozone, scientists have warned.

CFC's, in addition to destroying the ozone, also contribute significantly to the global warming or "greenhouse" effect, during which the average temperature of the earth slowly rises, with wide-ranging effects.

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Ozone -depleting chemicals, Canadian Environment Minister Tom McMillan told delegates here, are a planetary time-bomb, "carrying no nation's passport, they bow to no nation's flag. Plant and life on every part of the planet is vulnerable."

"With this agreement," Mostafa Tolba, executive director of UNEP, told the closing session of the Montreal conference, "we have shown that we care -- that we want to give . . . young people a world worth living in."

"We now have a respectable legal document -- the protocol. But the legal document, any legal document, is only as good as the parties are willing to make it," he said.

"Protocols don't save environments. People save environments. This protocol is a point of departure. It is the beginning of the real work to come," he said.

14TH STORY of Level 1 printed in FULL format.

PR Newswire

September 16, 1987, Wednesday

DISTRIBUTION: TO INTERNATIONAL DESK AND ENVIRONMENTAL NEWS EDITOR

LENGTH: 440 words

DATELINE: MONTREAL, Sept. 16

KEYWORD: ENVIRONMENT CANADA: INTERNATIONAL PROTOCOL SIGNED

BODY:

MONTREAL, Sept. 16 /PRN/ -- An unprecedented international protocol to protect the earth's ozone layer was adopted today by over 40 countries. The agreement, which will slash emissions of ozone-depleting chlorofluorocarbons (CFCs) by 50 per cent, was reached after ten days of intense negotiations in Montreal and many months of behind-the-scenes bargaining leading up to the conference.

External Affairs Minister Joe Clark joined Environment Minister Tom McMillan, who headed the Canadian delegation, in saying that Canada was proud to have played a significant role in developing an historic environmental agreement.

The Protocol, developed under the auspices of the United Nations Environment Programme, is the first-ever global atmospheric environment treaty. It will be known as the Montreal Protocol.

Among other things, the protocol will:

- Freeze CFCs at 1986 levels and reduce by 50 per cent atmospheric releases of CFCs by 1999;
- Freeze at 1986 levels the release of halons, another chemical compound with ozone-depleting properties;
- Provide developing countries with access to CFCs in vital areas such as refrigeration, until alternatives are available;
- Enable co-operation among nations in sharing information and research on the ozone layer;
- Enable nations to examine all new data and to review scientific findings as the basis for further negotiations and possible controls;
- Provide for trade sanctions against countries who are not party to the Protocol and try to undermine its force; and
- Encourage government/industry co-operation in developing environmentally safe alternative chemicals and technologies.

McMillan explained that the Protocol represents a gigantic first step towards the elimination of CFCs. "Nations around the world agreed on the tough Protocol because scientists predicted a planetary crisis if action was not taken. We owed it, not only to ourselves, but to future generations as well, to fortify our courage and set aside narrow national self-interest for the sake of the world community."

For the Protocol to come into force, it will need to be ratified by a minimum number of countries. Mr. McMillan said Canada will be among the first countries to do so, under the authority of the new Canadian Environmental Protection Act currently being debated by Parliament.

PR Newswire, September 16, 1987

CONTACT -- Gord Harris, Canadian Secretariat, Environment Canada,  
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16TH STORY of Level 1 printed in FULL format.

Proprietary to the United Press International 1987

September 16, 1987, Wednesday, PM cycle

SECTION: International

LENGTH: 657 words

HEADLINE: Negotiators reach agreement in principle to control ozone depletion

BYLINE: By WARREN PERLEY

DATELINE: MONTREAL

KEYWORD: Ozone

BODY:

Negotiators have overcome several obstacles to reach an agreement in principle on the first international treaty to control depletion of the ozone layer.

Winfried Lang, chairman of the 46-country United Nations conference, said the agreement was reached Tuesday after "some very difficult points" were resolved in closed-door negotiations involving committees from the countries involved.

A plenary session of the conference is expected to approve the proposed pact today before it is officially signed by most of the attending countries.

"It would be the first agreement in history which would reduce in a quantifiable manner substances which are destructive to the environment on a global scale," Lang said at a news conference.

Asked how the obstacles were overcome, Lang said: "I think the Americans and Europeans each wanted a protocol."

The proposed treaty is an attempt to control production of chlorofluorocarbons (CFCs), a man-made chemical which destroys ozone.

A major obstacle to the treaty had been a demand by the 12-country European Economic Community that it be allowed to count as one unit, rather than 12 individual countries, for purposes of CFC control measures.

The United States felt "a certain anxiety" that such a block approach could serve as a negative precedent in economic negotiations worldwide, Lang said.

The compromise finally reached will allow the EEC to count as a block but only after individual countries in that group have ratified the treaty.

Another stumbling block had been a U.S. proposal that stipulated such a treaty would not take effect until it had been ratified by countries producing 90 percent of the world's supply of CFCs.

That obstacle was overcome when the United States agreed the treaty would take effect when 11 countries representing two-thirds of CFC consumption

Proprietary to the United Press International, September 16, 1987

ratify it.

'It was a sign of progress that we moved to consumption, rather than production as the reference point,' Lang said. 'That made the treaty look like less of a cartel of producing nations and will allow consuming (Third World) nations to sign.'

Some Third World delegates had argued that limiting production of CFCs would hurt their countries' industrial development.

CFCs are commonly used as cooling agents in refrigerators and air conditioners, to propel aerosols, to clean computer components and in the manufacture of plastic foams.

The United States and the European Economic Community produce 75 percent of the world's CFCs. The Soviet Union and Japan produce 20 percent.

The United States and the EEC each consumes 27 percent of the world's CFCs, while Japan consumes 11 percent, and Canada and the Scandinavian countries use 2 percent combined.

Conference delegates have proposed freezing CFC production at 1986 levels until Jan. 1, 1990, and then cutting production 50 percent by 1999. The Soviet Union objected, saying that 1990, rather than 1986, should be the base year for determining CFC production levels.

The Soviets said setting 1986 as the benchmark for production levels would conflict with their five-year economic plans.

Delegates agreed to a compromise Tuesday by establishing a different implementation timetable for communist countries which rely on centralized, long-range economic planning, rather than on the rules of a market economy.

The Soviet Union will also be allowed to build CFC plants already on the drawing board.

The U.N. Environment Program has been working for 10 years with its member governments to find a solution to the threat of excessive solar radiation penetrating the ozone layer.

The chlorine compounds in CFCs destroy the layer of ozone, a form of pungent, colorless oxygen which occurs naturally in the high atmosphere.

Ozone protects life on earth by absorbing excessive ultraviolet radiation from the sun which can cause skin cancer and eye damage in human beings and can harm animals, crops and biological processes.

1ST STORY of Level 1 printed in FULL format.

PR Newswire

September 16, 1987, Wednesday

DISTRIBUTION: TO NATIONAL DESK AND ENVIRONMENTAL EDITORS

LENGTH: 573 words

HEADLINE: CHLOROFLUOROCARBON ALLIANCE COMMENDS SIGNING OF GLOBAL AWARD

DATELINE: ROSSLYN, Va., Sept. 16

KEYWORD: CHLOROFLUOROCARBON ALLIANCE COMMENDS GLOBAL ACCORD

BODY:

ROSSLYN, Va., Sept. 16 /PRN/ -- The Alliance for Responsible CFC Policy, the coalition of U.S. users and producers of chlorofluorocarbons (CFCs), commended the signing today of a protocol for the protection of the ozone layer as an 'unprecedented step to protect the global environment and spur global scientific, economic and technological advancement.'

The signing today marks exactly one year since the alliance called for the negotiation of such an agreement at a United Nations Environment Programme Diplomatic Conference. More than 20 nations, including all of the major CFC producer blocs -- the United States, Canada, the European Community and Japan -- signed the agreement.

Richard Barnett, chairman of the alliance, said the alliance will now review the agreement to determine whether or not it meets the goals stated by the industry when it announced its policy statement last year. He said: 'We are certainly pleased that so many nations with such diverse economic conditions were able to work in cooperation with industry and environmental organizations to reach consensus on the scientifically complex issue of ozone depletion. The efforts over the past year to reach this agreement are the strongest recognition ever that principles of environmental protection and economic responsibility can co-exist.'

'It appears that the agreement addresses many of the criteria established by the alliance, including broad coverage of the fully halogenated compounds; extensive participation by countries; ongoing scientific, economic and technological assessment; and limitation on the growth of global production capacity.'

The alliance has indicated concern with the reduction schedule contained in the agreement, however, which would reduce consumption of the chemicals by 50 percent in 10 years. The alliance said that industry representatives have maintained that short-term reduction measures were scientifically unnecessary and could create problems for both industry and consumers. Barnett said industry representatives will have to analyze the impact of the reduction schedule before a decision is made whether or not to support ratification of the agreement by the U.S. Senate. He said: 'No environmental or economic impact statement has yet been prepared for the agreement, but we expect to have the opportunity to comment on those statements (to be prepared by the Environmental Protection Agency and the State Department) prior to the ratification process.'

'Today, however, is a day to compliment the negotiators who

PR Newswire, September 16, 1987

were able to reach consensus and the many other non-governmental organizations that participated in the process. They have recognized that the ozone issue affects us all and that a global cooperative effort is essential.'

Barnett also stated that many of the industries in the United States have already begun research and development programs for ozone protection technologies. 'The cost of the technological innovations required for this effort will total billions of dollars during the next 10 years, which is why it is important that global cooperation rather than unilateral action by the U.S. be pursued. We hope that the U.S. Congress will be patient with this international effort.

CONTACT -- Kevin Fay or Maureen Healey of the Alliance for Responsible CFC Policy, 703-841-9363

## ***Impasse Broken; Formal Approval Due Today***

# **U.S.-Europe Compromise Leads to Ozone Pact**

MONTREAL (AP)—A last-minute compromise between the United States and the European Communities broke a logjam Tuesday night to produce an historic agreement to protect the Earth's ozone layer.

"Very happy," declared Lee M. Thomas, administrator of the U.S. Environmental Protection Agency, after a tense day of negotiating. He said the United States will move quickly to ratify the pact.

The pact must still be formally approved by the 46 nations attending the U.N.-sponsored conference. The vote will come at a plenary session today. Once ratified, the

pact would freeze consumption and production of chlorofluorocarbons by 50% by Jan. 1, 1999. Developing countries would have a 10-year grace period under the pact.

Chlorofluorocarbons, used in aerosols, refrigerator coolants and plastic foam, float into the stratosphere and attack the ozone layer.

The holes in the ozone, a 20-mile belt of protective gas around the earth, permit the sun's harmful ultraviolet rays to reach the Earth.

The United States is the world's largest producer, responsible for 30% of chlorofluorocarbons. It banned their use in aerosols in

1978, but the chemicals are more difficult to replace in other products.

A related group of chemicals, halon, used in fire extinguishing systems, causes up to 10 times as much damage to the ozone layer. Their production will be frozen in 1992 pending more research.

The U.S.-European compromise was proposed by New Zealand and was referred to Washington and Common Market headquarters in Brussels for political approval.

Thomas said he had been concerned about setting a precedent by recognizing the European Communities as an economic entity, rather than having the 12 member nations join the protocol individually. He said this would have left open the possibility that some of the Europeans might have ignored the treaty.

The impasse was broken with a special clause giving the Common Market overall responsibility, but only if each of the 12 members ratify the pact.

Within the market, Britain, France, Greece, Italy, the Netherlands, Spain and West Germany produce the offending chemicals.

The U.S. delegation compromised in another key issue. It first sought treaty ratification by nations responsible for 90% of the world's chlorofluorocarbons, but was ready to accept a figure closer to two-thirds, delegates said.

# 45 Nations Near Treaty On Ozone

## Chemical Production Would Be Curbed To Protect Atmosphere

By Michael Weisskopf  
Washington Post Staff Writer

MONTREAL, Sept. 15—Diplomats from 45 nations late today swept away the final obstacles to an international agreement designed to halve within a decade the industrialized world's consumption of ozone-depleting chemicals.

The U.N.-sponsored conference convening here is expected Wednesday to approve the agreement, which would curb chlorofluorocarbons (CFCs), the chemicals that break down the ozone layer of the stratosphere. That upper atmosphere ozone serves as a barrier to cancer-causing ultraviolet radiation.

The agreement would represent the first international air-pollution controls.

"There is a high likelihood of a protocol tomorrow [Wednesday]," said Winfried Lang of Austria, the conference chairman. He said last-minute obstacles were resolved in intense negotiating sessions.

Lang said that under compromises worked out in the negotiations, the Soviet Union would be given "special treatment" that permits increases in production and consumption of CFCs in line with its ongoing five-year plan and the nations of the European Economic Community would be treated as a unit for purposes of the agreement.

Today's negotiating breakthrough caps a nine-month effort to restrict CFCs—gaseous chemicals used in a vast array of products, ranging from air conditioners to solvents that clean computer chips. About \$750 million in CFCs are produced annually in the United States.

Unlike other pollutants, the CFCs do not break down in the lower atmosphere. In the upper atmosphere, they release chlorine that erodes the stratospheric layer of

ozone, which protects against the harmful effects of ultraviolet radiation, including skin cancer, eye disease and crop damage.

The agreement, which would become effective a year after its ratification by nations representing two-thirds of the world's CFC consumption, would freeze each participating nation's consumption at 1986 levels. Four years later, the parties would be required to reduce their consumption by 20 percent and six years later by another 30 percent.

An exception would be granted to less-developed nations whose annual per capita consumption of CFCs is below two-thirds of a pound. They would be permitted to import enough of the chemicals to bring their consumption up to that level.

To accommodate increased consumption in the Third World, producer nations would be able to increase CFC output by 10 percent over 1986 levels. But they would be required to cut production when consumption cuts become effect four and six years after ratification.

Except for exports to the Third World, the agreement would provide a number of controversial trade restrictions, including a ban on imports of bulk CFCs from non-signatory nations within a year of ratification and a ban four years later on imports of products containing the chemicals.

The trade restrictions were the most contentious issue resolved today, involving the largest CFC producers—the United States and the EEC nations, which manufacture 30 percent and 45 percent of the world's output of the chemicals, respectively.

The EEC insisted on being treated as a unit, permitting some members to exceed the limits as long as the community as a whole complies.

Representatives of the 12 member nations of the EEC argued that such an exemption is necessary to uphold the provisions of the community's 30-year-old charter. Under the proposed CFC pact, nations that reach their consumption ceiling would be prohibited from importing more of the chemicals.

U.S. officials objected to treating the European Community as a whole, claiming that such action could give an unfair advantage to certain European producers in competition with U.S. manufacturers.

The Soviet Union, which represents about 10 percent of world CFC output but consumes much less, threatened to boycott the agreement because its limitations interfered with its five-year plan to construct new CFC plants by 1990.

Lang said the problem was resolved by permitting increased production of the chemicals from Soviet plants under construction before last January. But the new output cannot raise annual per capita consumption of CFCs in the Soviet Union higher than 1.1 pound.

# Few U.S. Lakes Damaged by Acid Rain, Federal Group Says

By Cass Peterson  
Washington Post Staff Writer

Only a small fraction of U.S. lakes and streams have been damaged by acid rain, and the damage is not likely to worsen significantly, a federal task force has concluded in a report that will probably cause a furor among conservation groups and congressional supporters of acid-rain controls.

The National Acid Precipitation Assessment Program, in a draft report that is scheduled to be released today, states that current research suggests "that there will not be an abrupt change in aquatic systems, crops or forests at present levels of air pollution."

The conclusion runs counter to arguments by some scientists that acid-rain damage is widening in the United States and poses an increasing threat to the nation's lakes and forests. The report strongly supports the Reagan administration's position that acid rain does not warrant expensive new pollution controls.

The acid-precipitation program, established by Congress in 1980, has become the focus of the administration's policy on acid rain. Its latest report, originally due in 1985, was to mark the halfway point in a comprehensive 10-year research effort.

The Natural Resources Defense Council, which obtained a draft of the report and released

it to reporters yesterday, called the document "nothing more than political propaganda."

"This is the Pollyanna-in-blinders approach," said Richard Ayres, senior attorney for the group. He accused the task force of ignoring studies inconsistent with the administration's position, selectively quoting from others and accepting unrealistic projections about emission levels in an effort to demonstrate that "the problem will go away by itself."

As an example, he said, the report embraces a controversial scientific theory that acidified lakes and streams eventually reach a "steady state" in which additional acid rain causes no additional damage. The report concludes that most U.S. waters, except in the Southeast, have reached that stage.

The finding is a crucial one, suggesting that the environment will suffer little damage if acid-rain controls are not installed for several more years, if ever.

J. Laurence Kulp, research director for the acid-rain task force, was not immediately available for comment. Courtney Riordan, research director of the Environmental Protection Agency and a member of the task force's science committee, acknowledged that the "steady state" theory has not been proved, but he added: "The consensus of the community is that it is likely to be so."

According to Ayres, the theory has been dis-

proved by scientists in Canada, who have documented increasing acidity in one long-studied lake despite a reduction in acid rain over the period of the study.

The environmental group also criticized as "misleading" the report's assertion that only a small fraction of U.S. waters have become acidified. The report summary gives such data in terms of pH, or acid content, rather than using what Ayres said is the more accurate measurement of a lake's ability to neutralize acid.

As a result, he said the report states that only 2 percent of lakes in the Upper Midwest had a pH of less than 5.0, although an EPA survey found that 10 percent of the lakes in the Upper Peninsula of Michigan had lost their ability to neutralize acid and were acidified. (A pH of 5.0 is 100 times more acid than ordinary water.)

The environmental group also criticized the report's inclusion of an Energy Department projection that emissions of sulfur dioxide, a key component of acid rain, will decline sharply after the turn of the century.

The projection assumes that older coal-fired power plants will be going out of service by then, although utility companies have increasingly elected to repair older plants rather than build new ones. The projection also assumes that nuclear power generation will triple over the next 40 years, although no new nuclear plants have been ordered in nearly a decade.

Wash Post

9/17/87

THE WHITE HOUSE  
WASHINGTON

September 17, 1987

MEMORANDUM FOR THE PRESIDENT

FROM: NANCY J. RISQUE  
SUBJECT: International Protocol on Chlorofluorocarbons

On behalf of the U.S., EPA Administrator Lee Thomas yesterday signed an international protocol aimed at protecting the stratospheric ozone layer by limiting the future world-wide emissions of chlorofluorocarbons (CFCs) and halons. Joining the United States in signing the protocol were twenty-three other countries, including members of the European Community and Japan - ensuring that, following ratification, the protocol will enter into force after next year. Forty-nine nations, including those who signed the protocol, signed an act approving the meeting's activities. The Soviet Union endorsed the protocol, but their delegation did not have the authority to sign. Countries will have six months within which to formally sign the protocol.

The U.S. delegation in Montreal and an interagency team in Washington worked together to insure that your instructions were carried out. The protocol requires Senate ratification.

Outlined below are some of the major issues that arose during the negotiations of which you should be aware:

o Entry Into Force. The delegation was able to obtain in the protocol a provision that it shall enter into force on January 1, 1989, provided that it is ratified by at least eleven parties representing two-thirds of 1986 estimated global consumption of the controlled substances. These parties would represent countries that now produce over 80% of the CFCs and halons.

o Soviet Allowance. Throughout the negotiations the Soviets wanted reductions based upon 1990 production levels, because of their current five year plan. The U.S. delegation and the other negotiating parties were unanimously opposed to changing the base year from 1986 levels. The Soviets were isolated but firm. A compromise was worked out that allows any party with production facilities under construction or planned for completion prior to the end of 1990 to increase their annual per capita consumption of CFCs and halons up to 0.5 kilograms. We agreed to this because now the Soviets have agreed (as did others) to report their production and consumption levels of CFCs



and halons - something they had opposed earlier - and are committed to limit their CFC and halon production. Neither would have been achieved without the compromise.

o European Community. The European Community (EC) proposed that any regional economic integration organization should be allowed to jointly fulfill their obligations. This, in effect, would have allowed the EC an advantage in world trade markets, by permitting reductions of one member country to offset increases in production of another member country as long as the EC totals were reduced. A compromise was reached that allowed the EC to jointly meet consumption reductions, but each country would be required to individually meet reduced production levels for CFCs. It was also agreed that all the member countries must join in the protocol for this to be permitted.

o Timing. Some timing changes were also accepted to get more desirable features in the protocol. The freeze on halons will take effect at the end of three years, instead of the "one or two years" contained in your instructions. This was needed to get the EC to agree to include halons in the controlled substances listing. Also, a ten year period for the 50% reduction of CFCs was agreed to, instead of the "about eight years" contained in your instructions. The first phase of a 20% reduction of CFCs will occur during the fifth year after entry into force, instead of the "four years" contained in your instructions. The second phase, a further 30% CFC reduction, will occur five years after the first phase. This timing ensured that Japan would agree to the protocol.

All of the fundamental principles contained in your instructions - a weighted voting system, a grace period for lesser developed countries, strong enforcement provisions, periodic assessments of the control provisions, and equitable trade provisions - were incorporated into the protocol.

Overall, the United States was a leader in drafting an international protocol that will reach your ultimate objective of protecting the ozone layer through supporting actions determined to be necessary based on regularly scheduled scientific assessments. This is a significant Administration achievement on both the domestic and the world environmental front.

## Policy Makers, Spurred by Ozone Treaty, Consider Tackling 'Greenhouse' Effect

By ROBERT E. TAYLOR

*Staff Reporter of THE WALL STREET JOURNAL*  
WASHINGTON—The signing of a treaty to protect the Earth's ozone layer is spurring environmental policy makers in many countries to consider tackling a more difficult and more serious problem: the global warming caused by accumulation of carbon dioxide and other gases in the atmosphere.

William Long, head of the U.S. Environmental Protection Agency's international office, said some of his colleagues in other countries see the successful ozone talks as "a sort of a model that could be used" to deal with this so-called greenhouse effect.

Recent scientific evidence indicates that average temperatures are likely to rise more sharply than scientists had thought only a few years ago. A U.S. Energy Department official said his most recent studies forecast an average global warming of 5.76 to 8.64 degrees Fahrenheit within the next century. This could cause a rise of three feet or more in sea level, putting many coastal areas under water, as well as produce drastic changes in rainfall and crop production.

United Nations officials already have begun to harness to the "greenhouse" issue the same machinery that led to the ozone agreement signed yesterday in Montreal. They are focusing research on regional impacts, sponsoring conferences and beginning to explore options for policies to address the problem.

Yet despite optimism stemming from the ozone agreement, some officials here still say the difficulties of curbing the greenhouse effect are huge, maybe insuperable. For example, a sharp reduction in the use of coal would be required. Also, co-operation is complicated by the fact that some areas may benefit from the warming, and that accurately predicting effects on specific regions isn't yet possible.

The "greenhouse" term was coined to describe warming of the earth's atmosphere due to rising levels of carbon dioxide and four other gases that absorb low energy radiation. The gases are said to work like a greenhouse, holding heat inside the stratosphere.

Even the lower end of the predicted temperature rise would produce a warmer Earth than humans have ever witnessed. Jessica Matthews, an analyst for the World Resources Institute, says, "Man has embarked on a vast, unplanned planetary experiment that poses unprecedented challenges to his wisdom, foresight and scientific capacity."

Since carbon dioxide is produced by burning fossil fuels, especially coal, only sharp changes in energy use can prevent warming. U.S. officials find this unlikely. The nuclear alternative is crippled in many nations by high costs and safety concerns. And the Third World is expected to increase emissions; in China, for instance, coal is likely to fuel a tripling of the economy by 2000.

The Reagan administration says not enough is known about the regional effects of warming to consider controls. Many U.S. officials predict nations instead will adapt to climatic change. For instance, they may withdraw people from low coastal areas.

But that may prove impossible in flood-prone Bangladesh or the Maldives, islands in the Indian Ocean with a maximum elevation of about six feet. And Ms. Matthews argues that warming eventually will become generally intolerable. The World Resources Institute's Irving Mintzer adds that carbon dioxide emissions can be trimmed by using energy more efficiently and burning more natural gas, which emits less carbon dioxide than coal.

Peter Usher, atmospheric program officer at the United Nations Environmental Program, says he is "enormously" encouraged by the ozone talks. Over U.S. objections, the U.N. agency's governors have told him to present policy options in 1989 for international action to deal with global warming.

"Maybe we're seeing a turn of events here in terms of people's awareness," says Craig Potter, head of the U.S. Environmental Protection Agency's air programs. "We have a world economy," he adds. "What we're beginning to talk about is the possibility of a global environmental ethic."

## Pact to Protect Ozone Is Signed By 24 Countries

By ALAN FREEMAN

*Staff Reporter of THE WALL STREET JOURNAL*

MONTREAL — Representatives of 24 countries signed a treaty designed to protect the Earth's ozone layer by reducing world production of chemicals known as chlorofluorocarbons.

The agreement will freeze 1990 world production of the most commonly used chlorofluorocarbons at their 1986 levels and calls for a 50% reduction of world production of the chemicals by mid-1999.

The synthetic compounds of chlorine, fluorine, carbon and sometimes hydrogen are used as cooling agents in refrigerators and air conditioners, as propellants in aerosols and as solvents to clean computer components and in the manufacture of plastic foams. Scientists believe that when the chemicals escape or are released into the atmosphere, they attack the ozone layer that protects the Earth from harmful ultraviolet rays.

The agreement is expected to lead to higher costs for chlorofluorocarbons and force the chemical industry and users to increase research into substitutes, which include chlorofluorocarbons that are less destructive to ozone.

Signing the agreement were most of the world's major producers of chlorofluorocarbons, including the U.S., Japan and members of the European Community. More than 30 other countries that participated in the conference didn't sign the pact immediately but are expected to sign later.

Lee Thomas, administrator of the U.S. Environmental Protection Agency, and head of the U.S. delegation, hailed the agreement as a milestone which he hopes will set a precedent for future international agreements on pollution control.

To take effect, the treaty must be ratified by at least 11 countries, and the nations that ratify it must represent at least two-thirds of world chlorofluorocarbon consumption. In the U.S., ratification means getting Senate approval.

A spokesman for the Alliance for Re-

sponsible CFC Policy, a group of about 500 U.S. makers and consumers of chlorofluorocarbons, also known as CFCs, said he was pleased an agreement was reached. But he said the pact went "much further than we thought necessary, which means the costs will be much higher." The group had favored a freeze of current output, rather than a big cut in production.

Joseph Steed, environmental manager of the freon products division of Du Pont Co., the world's largest chlorofluorocarbon producer, said the controls were tighter than expected a year ago, when the talks began. But he said Du Pont will urge ratification of the treaty both in the U.S. and in other countries where Du Pont operates.

The U.S. accounts for about one-third of world production of chlorofluorocarbons. U.S. manufacturers sell about \$750 million of the compounds annually which in turn enter other products and services valued at billions of dollars annually, according to the industry.

The Soviet Union was among the countries that participated in the conference but didn't sign the agreement. Vladimir Zakharov, head of the Soviet delegation, said there are problems with certain aspects of the treaty but he indicated that his country will ratify it. He said the Soviet Union accounts for about 12% of world output of chlorofluorocarbons.

The agreement also calls for a freeze on the consumption of a group of related chemicals, known as halons, in 1992 but there aren't any requirements planned for reductions in consumption.

The Baucus amendment also was approved by voice vote.

Sen. Robert Stafford (R-Vt) voiced his concern over Durenberger's amendment on motorcycle emissions, primarily because it changed the hydrocarbon standard for smaller motorcycles from 1.6 grams per mile to 2 grams per mile.

This change, which occurred after a draft amendment was circulated Sept. 15 for members' review, violated a committee agreement to circulate all proposed amendments 24 hours before consideration, Stafford said. He did not formally object, but urged that all members adhere to that agreement in the future.

A more serious problem, however, is that the motorcycle and bakery amendments may represent the first in a long series of changes that gradually would chip away at the bill's provisions, one congressional staff member told BNA after the hearing. If the relatively weak lobbies for the domestic motorcycle and baking industries are successful in their efforts to change the bill, larger, well-financed industries may have even more success, he said.

No sweeping committee substitutes are expected in subsequent Senate committee markup sessions, although Mitchell may offer several amendments that represent compromises between members, Philip Cummings, committee counsel, told BNA Sept. 15.

Sen. Alan Simpson (R-Wyo), a persistent critic of Mitchell's acid rain provisions, may offer one or more amendments on acid rain and on other issues as well, Cummings said. Sen. John Breaux (D-La) may offer amendments on the toxic air pollution title, although he is trying to work out differences with other members ahead of time. Symms also has a long list of amendments which he may offer, Cummings added.

The House Energy and Commerce Committee has not yet begun consideration of its version of the Air Act amendments, although Committee Chairman John Dingell (D-Mich) has urged that House legislation be comprehensive in scope and praised the Senate sponsors for adopting that approach.

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#### ENVIRONMENT: 47 COUNTRIES SIGN TREATY TO PROTECT OZONE FROM DAMAGE BY CHEMICALS

MONTREAL—(By a BNA Special Correspondent)—Diplomats representing 47 countries Sept. 16 approved a treaty to protect the ozone layer of the Earth's atmosphere from damage by chemicals.

The agreement to limit the use of chlorofluorocarbons is the first international treaty to recognize a threat to the world's environment and take action to prevent it, according to Mostafa Tolba, executive director of the United Nations Environment Program, which coordinated negotiation of the protocol.

"I can admit now that I was not sure we would face up to the threat. We have done that now. We have faced the distant threat," Tolba said.

The agreement is particularly significant because it keeps the door open for further action if it becomes necessary, Lee Thomas, Administrator of the U.S. Environmental Protection Agency and head of the U.S. delegation, said.

"It's a good agreement. It's a strong agreement. It sets the foundation for future controls if the science indicates that's required," he said. "We've begun a control program, but we've also got a provision to move to future reductions."

A total of 24 of countries, including the United States, immediately signed the international protocol, which follows up on the 1985 Vienna Convention for the Protection of the Ozone Layer.

The Soviet Union, although it did not sign the protocol, issued a declaration of its intention to sign at a later date.

The agreement, to be called the Montreal Protocol on Substances that Deplete the Ozone Layer, calls for a freeze on the use of chlorofluorocarbons (CFCs) at 1986 levels within a year of the protocol coming into force. CFC consumption would then have to be cut by 30 percent over a three-year period and by a further 20 percent by January 1, 1999.

The protocol will take effect following ratification by the governments of 11 of the participating countries representing at least two-thirds of world consumption of chlorofluorocarbons.

Scientists have warned that continued use of CFCs, which are widely used in range of products including aerosol sprays, refrigerator coolants, styrofoam, and foam rubber, will deplete the ozone in the Earth's upper atmosphere. A sufficient decrease in ozone levels would allow increased ultraviolet radiation to reach the Earth's surface, resulting in a higher incidence of skin cancer and significant damage to animal life and crops.

World production of chlorofluorocarbons for 1986 has been estimated at 800,000 tonnes (metric tons). The United States is the largest producer, accounting for about 30 percent of the annual total.

The protocol also calls for a freeze on the use of halons—chemicals similar to chlorofluorocarbons commonly used in products like fire extinguishers—within three years of its entry into force. Although scientific evidence on the impact of halon use is still under dispute, it is believed that it could represent a greater threat to the ozone layer than CFC use.

Final agreement on the treaty had been threatened by a last-minute dispute between the U.S. and the European Community.

The dispute, over a demand by the EC to be treated as a single entity under the protocol, was defused after two days of negotiations moderated by UNEP executive director Tolba and Ambassador Winfried Lang, head of the Austrian delegation and chairman of the conference to negotiate the protocol.

American negotiators said they were worried that treating the EC as a single entity would set a dangerous precedent for other international negotiations, and that the protocol would not be enforceable without ratification by all 12 EC countries.

The final protocol document provides for treatment of the EC as a single entity for the purposes of the treaty but only after all 12 countries have individually ratified it.

U.S. EPA Administrator Lee Thomas said Sept. 15 that it was a major achievement to convince the EC that ratification by all 12 member countries was necessary.

"We've been able to reach an accommodation. This is precedent-setting, in a certain way, in U.S.-EC relations," Thomas said.

Another threat to successful completion of the protocol—a demand by the U.S. that it be ratified by countries representing 90 percent of worldwide production of CFCs—was also defused. The U.S. agreed to the two-thirds figure included in the protocol after the other countries agreed to shift the basis of the agreement from production to consumption.

The U.S. wanted the high percentage for entry into force to encourage the major chlorofluorocarbon producers to comply with the protocol, Thomas said. This can also be achieved by a lower percentage based on consumption, he said. "Our concern that the countries should move quickly to ratify the protocol was met," he said.

Thomas said he will do his best to seek quick ratification of the protocol by the U.S. Congress. "I fully intend to sell it to the United States Congress as a strong protocol, and one that is good for the world and for the United States," he said.

Progress on the protocol had also been slowed by a threat from the Soviet Union that it would not sign unless it received special treatment to take into account its planned economy.

The Soviets demanded an exemption from the 1986 base level on which the protocol is based because it would have meant that they could not utilize the production of CFC plants already under construction.

Under a special clause inserted in the protocol, the Soviets would be allowed to add the output of those new plants to the 1986 base figures, to a maximum annual consumption of 0.5 kilograms per capita of chloroflourocarbons within the Soviet Union. Estimates put current Soviet consumption at 0.4 kilograms per capita per year.

Developing countries will receive a 10-year exemption from the protocol's reduction provisions because increased use of CFCs is considered essential to their further development. After that period, they will follow the same reduction schedule applied to the other countries.

Increases in the developing countries will be limited, however, to bringing total CFC consumption to a maximum of 0.3 kilograms per capita per year. Those countries currently have average consumption of 0.2 kilograms per capita per year.

The concession to the developing nations was necessary to gain their acceptance of the protocol, Ambassador Lang said Sept. 14.

"They would not sign the protocol if we do not provide this possibility to provide them the substances they need to meet their basic domestic needs," Lang said. "If we don't get them into the protocol, if we don't get them to join, we would have significant growth (in the use of CFC) outside the protocol that we could not control."

Representatives of industries that manufacture and use chlorofluorocarbons welcomed the protocol, although they insisted that a simple freeze on increased use of the chemicals would have been sufficient to protect the environment.

Developing new technologies and products to replace chlorofluorocarbon consumption will be costly for the U.S. economy, as much as \$1 billion over the next 10 years due to increased product prices, Kevin Fay, executive director of the Alliance for Responsible CFC Policy, said Sept. 14.

But the industry is willing to accept the protocol as long as all of the countries involved ratify it, Fay said. "We are anxious to have all the countries ratify the protocol. Without that kind of cooperation, we don't think it would work," he said.

Environmentalists also said they were satisfied with the agreement, although they said greater reductions should have been negotiated. The environmental groups had recommended an 85 percent cut in the use of chlorofluorocarbons within five years.

The protocol is to be enforced on non-signatories through trade restrictions. Signatories are to ban the import of CFCs or products containing them, to be identified in a list to be developed later, from countries that have not signed the protocol.

Exports of those products are to be banned from non-signatories unless they have been determined to be in compliance with the reduction measures outlined in the agreement.

The signing parties are also to discourage the export to non-signatories of any technology for producing or utilizing the controlled substances and are to avoid any new new subsidies or aid for exports of controlled products or substances to non-signatories.

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#### ENVIRONMENT: EPA'S DRAFT AIR QUALITY POLICY WOULD FORCE DEADLINE FOR CITIES, CLARIFY MANDATES

The Environmental Protection Agency's expects cities that fail to meet the Dec. 31 deadline for complying with federal ambient air quality standards under the Clean Air Act to put in place a combination of federal and local controls and specify a date by which the standards would be met, according to a top EPA official.

# DOZENS OF NATIONS APPROVE ACCORD TO PROTECT OZONE

## 24 Sign and Others Back Pact to Reduce Chemicals That Damage Earth's Shield

By PHILIP SHABECOFF

Special to The New York Times

MONTREAL, Sept. 16 — Hailing a milestone in international cooperation to safeguard the environment, delegates from rich and poor nations approved an agreement today intended to protect the earth's fragile ozone shield.

Under the agreement, participating nations will first freeze and later reduce consumption of widely used chemicals that, according to emerging scientific consensus, destroy ozone molecules in the upper atmosphere.

The ozone shields the earth by blocking some ultraviolet radiation from the sun. Any increase in that radiation resulting from a thinning of the ozone layer will cause skin cancer and other harm to humans and damage crops, forests and other natural systems, scientists say.

### 'Historically Significant'

"This is perhaps the most historically significant international environmental agreement," said Deputy Assistant Secretary of State Richard E. Benedick, the chief United States negotiator here. "For the first time the international community has initiated controls on production of an economically valuable commodity before there was tangible evidence of damage."

While the agreement was reached only after "very complex and difficult" scientific, economic and geographic issues were resolved, he said, "it shows that the world community can sit down and engage in international risk assessment and risk management."

Environmentalists here, while praising the agreement, expressed concern that it did not go far enough to restrict emissions of the damaging chemicals.

The chemicals, called chlorofluorocarbons or CFC's, are used in a wide variety of applications including air conditioning and refrigeration, aerosol sprays, foam insulation, packaging and solvents. Industry representatives here estimated that annual world production is about \$2.2 billion but that in-

Continued on Page A12, Column 1

## Dozens of Nations Approve Pact To Curb Ozone-Killing Chemicals

Continued From Page A1

dustries that use them now have annual sales of many billions of dollars.

Twenty-four nations plus the European Community signed the protocol today. Forty-nine countries signed a document approving the meeting's actions, but some — including the Soviet Union — did not sign the protocol itself, in many cases because delegates did not have the authority.

Before coming into force, the agreement must be ratified by at least 11 nations, representing at least two-thirds of global use of the chemicals. United Nations officials here said they expected all major producing nations to ratify it.

Lee M. Thomas, Administrator of the Environmental Protection Agency, who signed the protocol for the United States, said the agreement "has the potential to serve as a model for other international actions as we increasingly learn there are global environmental problems that have to be dealt with on a global scale."

These are the major provisions of the protocol:

¶ In 1989, when it takes effect, participating nations are to freeze use of chlorofluorocarbons at levels of 1986.

¶ By 1994, the consumption must be reduced by 20 percent.

¶ By 1999, consumption is to be cut 30 percent more.

¶ Use of halons, chemicals used as fire suppressants, is to be frozen at 1986 levels by 1994, but reductions would not be required.

### Allowance for Developing Nations

While all of the developed countries must limit and then roll back chlorofluorocarbon consumption, the protocol allows developing countries to increase their use if it will help their economic

development. To meet possible needs of poorer countries, producing countries would be able to increase their annual production of CFC's by as much as 10 percent a year over the next 10 years.

Thus, while all of the major producing countries are expected to adhere to the protocol, the decline in total emissions of the chemicals will depend on how much is used by poor countries.

United States officials here, however, said that because the tough restrictions on CFC use would force industry to develop safe alternatives quickly, it was just as likely that the chemicals could be forced off the market by substitutes even more rapidly than envisioned by the protocol.

### U.S. Bars CFC's in Aerosols

The United States, along with Canada and Scandinavian countries, voluntarily ended the use of CFC's in aerosol sprays in the 1970's. But other industrial countries, including Japan and those in the European Community, continued to use them. Industry representatives here said those countries would be able to meet their obligations under the protocol almost entirely through abandoning the aerosols.

Mr. Mustafa K. Tolba, the executive director of the United Nations Environment Program, who convened the negotiations, has said he would call an emergency meeting to reopen the protocol if new scientific evidence indicated stronger action was needed.

Mr. Thomas of the E.P.A. said further action against the global warming problem, caused by emissions of carbon dioxide, chlorofluorocarbons and other gases, was a likely candidate for future international cooperation.

A scientific expedition is now examining the ozone hole that appears over the Antarctic each September and is expected to report its findings before the end of the year. Scientists are not yet sure whether that hole is caused by man-made chemicals, but in any case, worry about a gradual worldwide thinning of the ozone layer lay behind today's agreement.

Some of the impetus for the agreement came from the chlorofluorocarbon industry in the United States, which was facing the prospect of regulatory action by Congress and thus a competitive disadvantage in world markets.

### Comment From Industry

Kevin Fay, executive director of the Alliance for Responsible CFC Policy, a United States industry group, called the agreement a "significant step." But he also said that the schedule for compliance seemed to be "too tight" and that the industry would have to examine the agreement closely to see if it gave the United States "a level playing field" in world markets.

Environmentalists here praised the agreement as a major step in dealing



Lee Thomas, right, administrator of the Environmental Protection Agency, conferring with his Canadian counterpart, Thomas MacMillan, before signing of accord at meeting yesterday in Montreal.

## Radiation blocked by ozone causes cancer,

with the threat to ozone and a precedent for future action.

David Wirth, a lawyer for the Natural Resources Defense Council, an American environmental group, said, "Lee Thomas and the United States deserve a lot of credit for proposing this agreement and for following up with measures that got the agreement here." Such praise for a Reagan Administration environmental official from an environmentalist is rare.

But Mr. Wirth and other environmentalists said the agreement was not strong enough to give adequate protection to the ozone layer and included too many loopholes, including the special provisions for the developing countries and permission to the Soviet Union to complete CFC-producing plants now under construction or under contract.

The environmentalists contend that an 85 percent reduction in CFC's over

the next five years is necessary to stabilize the ozone layer.

But officials of the Environmental Protection Agency said the protocol would dramatically reduce radiation damage.

They said the agency's computer models indicated that if the actions required by the protocol were observed, they would avert 132 million cases of skin cancer and 27 million deaths from skin cancer that would otherwise have occurred among people born before 2075. The data also show that about 1.5 million cases of eye cataracts would be averted.

Even with the new controls, there is expected to be a 2 percent depletion of the ozone layer by the middle of the next century. This will cause some 7 million extra skin cancer cases among people born between now and 2075, according to an estimate by Canada's Environment Ministry.

The destruction of the ozone layer by chlorofluorocarbons was first hypothesized 23 years ago by two American scientists, F. Sherwood Rowland and Mario J. Molina. As recently as a year ago, many of the major CFC-producing nations opposed any stringent control on production and use of the chemicals.

## Chemical Industry Sees Rush To Invent Safer Alternatives

By JONATHAN HICKS

An international agreement to limit production of chlorofluorocarbons and halons will touch off a race in the \$2.2 billion industry to develop chemical alternatives that are not hazardous to the earth's ozone layer, officials at several American chemical companies said yesterday.

The five United States manufacturers of chlorofluorocarbons said the agreement would not significantly hurt their sales or earnings because the chemicals represent only a small percentage of their businesses.

But the chemical industry executives said the agreement — signed yesterday by the United States, the European Community and 23 other nations — would compel them to place more money into research and development. "Our costs for research and development have already gone up, and they

will go up much more," said Charles Coe, a spokesman for Allied-Signal Inc.

### Tighter Supplies Predicted

Some industry officials said the agreement to limit the production of the chemicals would result in a tighter supply as demand for the products in which they were contained grew. They acknowledged that this would lead to slightly higher prices for the chemicals and the products that contain them, most notably refrigerator compressors, air-conditioning equipment and some insulation materials.

"When it comes to access, there is going to be an instant shortage," said Peter Miller, manager of the chlorofluorocarbon department of the Pennsylvania Corporation in Philadelphia. "The prices are going to get so high that companies will be forced to find alternatives."

Mr. Coe said chemical companies would probably study methods of recovering chlorofluorocarbons from old appliances so that they can be recycled rather than released into the atmosphere, as is the case when the products are abandoned.

### 'Catastrophic' Effect on Industry

"For us, this thing borders on being catastrophic for our CFC business," said Robert L. Jeanson, a vice president of Kaiser Chemicals, the Cleveland-based subsidiary of the Kaiser Aluminum and Chemical Corporation. "It is a business that we've been in for over 20 years, and now it's essentially being phased out."

Mr. Jeanson said the larger companies, such as E. I. du Pont de Nemours & Company and Allied-Signal, would probably be first in developing substitutes because of their larger budgets for research and development.

Du Pont executives agreed that the research would be costly and long. "By our estimates, any substitution will take about seven years to develop," said Craig Skaggs, a spokesman for Du Pont, the largest maker of chlorofluorocarbons. "Because of all the testing, the tremendous amount of toxicology testing you have to do internally and with the Federal Government, it's going to take some time."

# 46 Nations Agree on Pact to Protect Ozone Layer

By THOMAS H. MAUGH II, *Times Science Writer*

Representatives of 46 nations adopted a landmark treaty in Montreal on Wednesday that will lead to a 50% reduction in use of ozone-depleting chlorofluorocarbons by the end of the century. But despite its historic significance, the treaty's practical effects are likely to leave few people satisfied.

Manufacturers say that the treaty will cause a rise in the cost of CFCs, as the chemicals are called; in turn, that is likely to drive up the prices of consumer goods such as refrigerators and computers. An industry group has estimated that it will cost the United States at least \$1 billion by the end of the century.

Scientists and environmental groups say the pact doesn't go nearly far enough—in part because the treaty does not place any limits on Third World countries, where

the use of chlorofluorocarbons is increasing.

"The treaty is an important first step because it is a precedent for future action, but it is really only a half step in controlling the ozone problem," said David Doniger of the Washington-based Natural Resources Defense Council.

CFCs are prized by industry because they do not react with any chemicals in the environment and they are nontoxic. They are widely used in refrigerators and air conditioners, as blowing agents for insulating foams and as a cleaning agent in the electronics industry. More than one million tons of the chemicals are produced worldwide each year.

But their inertness creates a danger. The chemicals remain in the atmosphere for decades and

slowly rise to the stratosphere, the segment of the atmosphere extending from nine to 30 miles above the Earth's surface. There, sunlight breaks them apart, creating highly reactive chlorine atoms that destroy large amounts of ozone.

Ozone, a pollutant at ground level, is a protector in the stratosphere. Produced from oxygen by sunlight, it screens out more than 99% of the sun's harmful ultraviolet radiation. But every 1% decrease in ozone allows 2% more ultraviolet to reach the ground. Many scientists believe there has already been at least a 3% reduction in the ozone layer.

For every 1% increase in ultraviolet, scientists say, there will be as many as 30,000 extra cases of skin cancer in the United States alone. Increased ultraviolet radiation can also have deleterious effects on aquatic organisms that live near the surface, on agricultural crops and on the climate.

Scientists have been debating since 1972 whether CFCs damage the ozone layer, but there now seems little doubt that they do. The clincher was the discovery three years ago of a large "hole" in the ozone layer over Antarctica, according to chemist F. Sherwood Rowland of the University of California, Irvine.

The hole, a 40% decrease in ozone over an area the size of the United States, occurs every spring, and most scientists believe it is caused by CFCs. "The hole

changed everything," Rowland said. "It got the governments to believe there is a problem."

The treaty adopted Wednesday calls for a freeze in CFC consumption at 1986 levels beginning July 1, 1990. The United States, Japan and the nations of the European Communities were among those that signed the treaty Wednesday.

The freeze would be followed by a 20% reduction in consumption by June 30, 1994, and another 30% reduction by June 30, 1999.

But there are several loopholes.

Developing countries, such as China, India and most nations in South America and Africa, are exempted for 10 years, and the Soviet Union will be permitted to complete CFC production plants that are under construction. The Soviet Union has said it intends also to sign the treaty. India was not at the conference, and China has not yet signed.

Industrialized countries will be able to increase CFC production by 15% as long as they export to developing countries.

"The net effect is that it will

really be only a 35% reduction," said Doniger of Natural Resources Defense Council.

Many scientists think more drastic action is necessary. "We have to go for a 95% cutback and soon," said Rowland. "Even if we stopped all CFC release now, the ozone-depletion would get worse for 20 years. Forty percent of the CFC that is in the atmosphere now will still be there in the year 2100."

Most scientists were pleased that the treaty has provisions for revising the cutback levels as new evidence develops. "I think that in the near future we'll have a stronger case for much more severe reductions," said chemist Mario Molina of the Jet Propulsion Laboratory in Pasadena.

But a spokeswoman for the Du Pont Co. of Wilmington, Del., which makes nearly 25% of the world's CFCs, said there is no need for treaty-imposed cutbacks because there is "no imminent hazard to humans or the environment." Cathy Forte said the company has already spent \$15 million looking for alternatives, "but there is a lot of work left."

Forte said it will be five to seven years before the company can begin producing alternatives, and that they will cost two to five times as much as CFCs. An industry trade group, the Alliance for Responsible CFC Policy, says that the cost to the United States of a freeze alone would total \$1 billion between 1988 and 2000.



# Nations Sign Agreement to Guard Ozone Layer

By Michael Weisskopf  
Washington Post Staff Writer

MONTREAL, Sept. 16—The world's industrialized nations, except for the Soviet Union, signed an agreement today aimed at protecting the stratospheric ozone layer from destructive chemicals. It is the first international effort to control an air pollutant.

Soviet delegates at the conference here said that while they endorsed the accord they were not authorized to sign it and would take it back to Moscow for review. A delegation spokesman said he was "hopeful" of a prompt signature.

The Soviet decision did little to dim enthusiasm for the agreement which, if ratified, would cut as much as half of the world's consumption of chlorofluorocarbons (CFCs). The largest producers and consumers of CFCs, which erode the ozone barrier shielding Earth from harmful ultraviolet rays, are the United States, Japan and the European Economic Community. Their ratification alone is enough to activate the agreement.

"This is the first truly global treaty that offers protection to every single human being," said Mostafa K. Tolba, executive director of the United Nations Environment Program, which sponsored the conference.

But behind the self-congratulatory speeches several questions remained about the impact of

the accord, which was approved in the final hours of the three-day conference and only after last-minute compromises.

The general assessment by diplomats and environmentalists was that the cuts of 50 percent of CFC consumption and 35 percent production prescribed for western nations by 1999 would slow depletion of the gaseous ozone veil that filters out harmful ultraviolet radiation and protects humans against skin cancer.

But compromises that negotiators considered necessary to assure participation by the Soviet Union and developing nations "water down" the environmental benefits, according to David Wirth of the National Resources Defense Council.

Permitted modest growth in their consumption of CFCs for a limited period of time, those countries could raise current world consumption by up to 15 percent of 1986 levels, diplomats estimate.

Environmental Protection Agency Administrator Lee M. Thomas, head of the U.S. delegation, explained that limited exemptions were granted to the Soviet Union to accommodate its ongoing five-year plan for new CFC plants and to developing nations because their consumption levels are so low that it would have been unfair to hold them to the same standard as wealthier countries.

"We felt it was important to bring in those countries," Thomas said, noting that they will have to observe the same CFC phase-out sched-

ule as other signatory nations once they achieve a certain level of consumption and production.

It is unclear, however, whether the exceptions are enough to gain acceptance of the Third World's two giants—China and India. The Indians did not participate in the conference. The Chinese participated but did not sign the accord, and diplomats noted that Beijing's ambitious plans to provide refrigerators to its bulging society could include a role for CFCs, which serve as an inexpensive and accessible coolant.

Another looming issue is how fast and at what price industry can find substitutes for CFCs, a gas used to puff up foam products and clean computer chips among myriad functions. Annual U.S. production of CFCs is valued at \$750 million.

Industry officials say it will take at least five years to develop alternatives that do not migrate, as CFCs do, to the upper atmosphere, where they deplete ozone. Meanwhile, the supply of CFCs will fall short of demand once the first phase of the pact—a freeze on consumption at 1986 levels and a 10 percent CFC production cap—goes into effect as expected in 1989.

As demand for CFCs exceeds their supply, the price of finished goods containing the chemical will rise by a total of \$1 billion over 10 years, according to industry officials. Consumers buying products containing CFCs, such as air conditioners and furniture, would face small price increases, officials said.

# DOZENS OF NATIONS APPROVE ACCORD TO PROTECT OZONE

24 Sign and Others Back Pact  
to Reduce Chemicals That  
Damage Earth's Shield

By PHILIP SHABECOFF

Special to The New York Times

MONTREAL, Sept. 16 — Hailing a milestone in international cooperation to safeguard the environment, delegates from rich and poor nations approved an agreement today intended to protect the earth's fragile ozone shield.

Under the agreement, participating nations will first freeze and later reduce consumption of widely used chemicals that, according to emerging scientific consensus, destroy ozone molecules in the upper atmosphere.

The ozone shields the earth by blocking some ultraviolet radiation from the sun. Any increase in that radiation resulting from a thinning of the ozone layer will cause skin cancer and other harm to humans and damage crops, forests and other natural systems, scientists say.

### 'Historically Significant'

"This is perhaps the most historically significant international environmental agreement," said Deputy Assistant Secretary of State Richard E. Benedick, the chief United States negotiator here. "For the first time the international community has initiated controls on production of an economically valuable commodity before there was tangible evidence of damage."

While the agreement was reached only after "very complex and difficult" scientific, economic and geographic issues were resolved, he said, "it shows that the world community can sit down and engage in international risk assessment and risk management."

Environmentalists here, while praising the agreement, expressed concern that it did not go far enough to restrict emissions of the damaging chemicals.

The chemicals, called chlorofluorocarbons or CFC's, are used in a wide variety of applications including air conditioning and refrigeration, aerosol sprays, foam insulation, packaging and solvents. Industry representatives here estimated that annual world production is about \$2.2 billion but that in-

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