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THE WHITE HOUSE

WASHINGTON

June 10, 1987

MEMORANDUM FOR THE DOMESTIC POLICY COUNCIL

FROM: THE ENERGY, NATURAL RESOURCES & ENVIRONMENT
WORKING GROUP *TCF*

SUBJECT: Stratospheric Ozone

On May 20, 1987, the Council met to discuss the international protocol negotiations currently underway to limit emissions of ozone depleting chemicals. Several questions were raised and the Working Group was asked to provide answers. The questions were:

- * What are the legislative and legal impacts of an international ozone protocol?
- * What are the most up-to-date scientific data on climatic and health effects of ozone depletion?
- * What is the cost/benefit effect of an international protocol restricting ozone depleting chemicals?

The following has been summarized by the Working Group after discussion of detailed presentations by experts in each area.

Climatic and Atmospheric

- o Since 1960 the natural variability of the total global column of ozone has been about 3%.
- o Observations have shown (1) a decrease in ozone of about 7% during the last decade in the upper part of the stratosphere; and (2) a 40% decrease in total column ozone over Antarctica in the spring season since the mid-1970's. Whether the recent changes in column and upper stratospheric ozone are due to natural phenomena or in part to CFCs remains an open question.
- o Continued growth of CFC and Halon emissions at 3% per year is predicted to yield a globally averaged ozone depletion of 6% by the year 2040, and more thereafter, which would be greater than natural variability. In contrast, a true global freeze on emissions of CFCs and Halons (i.e. full international participation, full chemical coverage, and full compliance) is predicted to yield a maximum global average column ozone depletion of less than 1%. Ozone depletions at high latitudes are predicted to be 2-3 times larger than the global average.
- o A true global freeze would limit column ozone depletion to less than the natural variability. A protocol freeze would fall short of a true global freeze as it would have less than

full compliance among developed countries and would most likely allow for limited growth in CFC usage in developing countries.

- o Ozone depletion in the upper part of the stratosphere greater than 25% is predicted to occur even in the case of a true global freeze. This would lead to a local cooling greater than natural variability. The consequences of this cooling for the earth's climate cannot be predicted at this time.
- o There is an uncertainty factor of two to three in the predictive abilities of the theoretical models used to simulate the present atmosphere.
- o If there is environmental damage due to CFCs and Halons, their long atmospheric lifetimes would mean that recovery would take many decades even after complete cessation of emissions.

Health and Ecological Effects

- o Projected ozone depletion will increase health effects of ultraviolet radiation (UVB)
 - Without ozone depletion, projections show UVB is a serious problem, and will cause:
 - 2,977,000 skin cancer deaths of Americans born before 2075,
 - 165 million skin cancer cases,
 - 426,516,000 cataracts.
 - If the predicted 25% depletion of ozone in the upper stratosphere occurs by 2075, UVB related health effects would increase by:
 - 2 million additional skin cancer deaths,
 - 98 million additional skin cancer cases,
 - 43 million additional cataracts.
 - If upper stratospheric depletion of 7.7% occurs instead (as predicted to result from a protocol freeze with less than full compliance and limited emissions growth in developing countries),
 - 1.6 million additional American deaths would be averted,
 - 79 million additional skin cancer cases would be averted,
 - 32 million additional cataracts would be averted.
 - If upper stratospheric depletion of 6.1% occurs (as predicted to result from a 20% emissions reduction protocol with less than full compliance and limited emissions growth in developing countries) incrementally,
 - 80,000 additional American deaths would be averted,
 - 4 million additional skin cancer cases would be averted,

wrong
b/c this
is true
global
freeze.

not
consistent
w/ above.

- 2 million additional cataracts would be averted.
- If upper stratospheric depletion of 3.2% occurs (as predicted to result from a 50% emissions reduction protocol with less than full compliance and limited emissions growth in developing countries) incrementally,
 - 130 thousand additional American deaths would be averted,
 - 7 million additional skin cancer cases would be averted,
 - 7 million additional cataracts would be averted.
- Uncertainties include future ozone depletion, the action spectra and estimates of dose-response coefficients.
 - The analysis assumes no behavioral changes.
 - Considering quantifiable uncertainties, there is a 50% chance that the actual damages will be between 50% and 125% of the above estimates.
 - There is a 90% chance that the actual damages will be between 20% and 260% of the above estimates.
- Laboratory studies link UVB with suppression of the immune system.
 - Evidence suggests a relationship to infectious disease.
 - A relationship has been demonstrated in herpes simplex and the tropical disease, leishmanias.
- o Evidence supports the conclusion that ozone depletion would exacerbate existing environmental problems.
 - Photochemical air pollution in places like Los Angeles would probably worsen.
 - The lifetime of outdoor plastics and latex paints would be shortened.
- o Evidence supports the conclusion that ozone depletion could seriously influence crops and aquatics.
 - Knowledge is limited, but experimental data indicate crop production may be reduced and ecosystems disturbed.
 - Field experiments have not been done, but laboratory data indicate aquatic organisms are sensitive to higher UVB, especially during critical breeding seasons.
- o Higher emissions of CFCs and its indirect effects of vertical ozone re-distribution will raise global temperatures and change climate.

Cost/Benefit

- o Cost/benefit analysis has been carried out for known health effects (skin cancer, deaths, non-fatal skin cancers, cataracts) based on EPA's Risk Assessment.
- o Potential effects of ozone depletion on plants, aquatic life, the human immune system, ground-level ozone concentrations, polymer degradation, and sea level rise were not quantified.
- o A range of assumptions were used in the analysis to reflect economic uncertainties and lack of inter-agency consensus on the values of key parameters.
- o The analysis is based on EPA models which attempt to project health impacts through year 2165 and assume no changes in technology, medicine or human behavior.
- o Conclusions:
 - The economic benefits from a protocol freeze (at 1986 levels with less than full international participation) of CFC emissions are substantially greater than the costs over all plausible assumptions and ranges of uncertainty.
 - The economic benefits of a protocol freeze plus a 20% reduction in CFC emissions are also in almost all cases substantially in excess of the costs.
 - The incremental benefits of the additional 20% reduction beyond the freeze are in most cases in excess of the incremental costs of the cut.
 - The benefits of an additional 30% reduction (beyond the freeze plus 20% reduction) appear in some cases to be greater than the incremental costs, and in other cases to be less. Further scientific, technical, and economic review will be valuable in evaluating benefits and costs before implementing this step.

ISSUES AND DISCUSSION

At the May 20 Council meeting, the status of the international ozone negotiations was provided. It included a review of the November 28, 1986 Circular 175, which was approved by Under Secretary of State Allen Wallis, and which authorized the U.S. delegation to negotiate a protocol. The approval process for the Circular 175 has been criticized by some members of the Working Group, on the basis that numerous departments and agencies had not concurred on the Circular, or that concurrence was by individuals not at policy-making levels. The Circular 175 authorized

- only one case is less.

the U.S. delegation to negotiate a protocol providing for:

- I. A near-term freeze on the combined emissions of the most ozone-depleting substances;
- II. A long-term scheduled reduction of emissions of these chemicals down to the point of eliminating emissions from all but limited uses for which no substitutes are commercially available (such reduction could be as much as 95%), subject to III; and
- III. Periodic review of the protocol provisions based upon regular assessment of the science. The review could remove or add chemicals, or change the schedule or the emission reduction target.

The international negotiations to date have resulted in a Chairman's Text, a proposed protocol to which negotiating countries have been asked to respond.

The Working Group recommends that the Council support continuation of negotiations pursuant to the current Circular 175. The Working Group also recommends however, that additional guidance be given to the U.S. negotiators, based on reviews by a wider range of agencies such as those represented on the Council.

The following are issues for which the Working Group feels additional guidance to the negotiators may be appropriate.

A. PARTICIPATION AND TRADE PROVISIONS

There are many complex issues pertaining to fair trade provisions and participation of developing countries in the protocol.

1. What should be the U.S. position regarding international participation in the protocol?

The Working Group feels that the U.S. delegation should seek maximum international participation in the protocol. To many, participation is the key issue, because growth of emissions from non-participating countries would offset the emissions reductions of those who are parties to the protocol, thereby hindering overall attainment of protocol objectives.

Developing countries are an important part of the participation issue. While the 48 countries participating in the protocol negotiations account for over 90% of the current production, substantial growth of production and consumption is anticipated in developing countries. The U.S. and the United Nations Environment Program (UNEP) have expended considerable effort to encourage broad participation by developing countries. However, only relatively few have shown the interest or the expertise to participate. Parties to the protocol would not be able to prevent non-joining countries from producing CFCs for their

internal market or from exporting to other non-parties, but, if the protocol provides for trade sanctions, parties could prevent non-parties from profiting through international trade with protocol parties.

A strong protocol, including the major producing and consuming countries, should lead to earlier development of substitute products, and might discourage non-joiners from investing heavily in CFC technology that would not generate trade with parties to the protocol. Further, some believe that the very existence of a protocol, as an expression of concern by the international community, increases the pressure on non-member countries to join; in essence, if they continue to produce CFCs, they are exposed as behaving irresponsibly on a matter of global import.

The following options are proposed for the Council's consideration:

- a. Give the U.S. delegation discretion for seeking maximum participation.
- b. Develop criteria for acceptable levels of participation, e.g. minimum participation of countries producing a specified percentage of the total global CFC/Halon production; or a formula requiring minimum participation of countries accounting for a specified portion of the world population.
- c. Wait to reassess the U.S. position after we know the extent of participation by other countries.

To encourage the participation of developing countries, some parties favor granting developing countries a limited grace period from compliance with protocol provisions. Such a grace period would be allowed in recognition of the importance of having global participation in the 21st century, and in recognition of the fact that developing countries have not received the benefits of CFC and Halon use. The length of the grace period and the levels of production/consumption that would be permitted are questions that would need to be resolved.

2. Voting among parties to the protocol.

Also at issue is the voting process for making future decisions under the protocol. This could include decisions on future reductions. The Working Group recommends that the U.S. delegation negotiate for a system of voting which would give due weight to the major producing and consuming countries.

3. The control formula and trade provisions

The Working Group recommends that the Council direct the U.S. delegation to continue to seek to include in the protocol an effective formula to control emissions with accountability, the

fewest possible restrictions on the flow of trade and capital among parties, the most favorable formula for U.S. industry, stimulation of substitutes and innovative emission controls, and with no greater restriction on trade involving the U.S. than will be adopted and enforced by other nations.

Trade: The U.S. has pushed for a strong protocol article on trade sanctions to be imposed on parties which have not signed the protocol. This would limit imports not only of the controlled chemicals but also of products containing these chemicals (e.g., air conditioners or foam insulation). The U.S. has pushed for a study of the feasibility of limiting imports of products manufactured using the controlled chemicals (e.g., electronic equipment). The intent of the trade article would be to provide a "stick" for encouraging others to join and to limit the impact on ozone depletion and the transfer of commercial benefits from parties to the protocol to countries which have not joined.

This would represent a major policy decision, as it could be an important precedent for using trade sanctions to enforce environmental regulations. Also to be decided is whether trade sanctions should be applicable to parties who materially violate their protocol obligations.

Control Formula: Since it is not possible to measure emissions directly, the negotiators have explored alternative formulas to control emissions which consider production, consumption, imports and destruction.

4. Should the U.S. seek protocol provisions for reporting, monitoring, verification and enforcement provisions?

There are many complex issues relating to enforcement of a protocol. Because of the enforcement roles of EPA and U.S. environmental groups, our compliance with the protocol is apt to be substantial. Most other nations do not have such enforcement mechanisms. No monitoring or verification system has been identified to date. A system of on-site inspections for the presence of new or expanded CFC-producing facilities would be expensive and probably ineffective because of the large land areas involved.

Some Working Group members believe the U.S. should insist upon strong monitoring and reporting provisions in a protocol. Some favor the U.S. negotiating for strong provisions, and exploring the feasibility and cost effectiveness of establishing ad hoc inspection teams to investigate any alleged violations of protocol requirements. Trade provisions could at least prevent entry of such production into international trade with parties to the protocol.

The following options are presented for the Council's consideration:

a. Give the U.S. delegation discretion for seeking such provisions.

b. Insist that the protocol include such provisions.

5. Should the U.S. attempt to receive "credit" for its 1978 unilateral voluntary ban on CFC-producing non-essential aerosols?

Some believe that in addition to a freeze, other nations should ban non-essential aerosols as the U.S. did in 1978. Otherwise, many nations might be able to meet their obligation to reduce CFC emissions through the simple expedient of banning such aerosols, while the U.S. is required to cut back on other products using CFCs. One form of recognition may be to require other countries to ban non-essential aerosols in addition to meeting other protocol requirements.

The U.S. attempted unsuccessfully to get such credit two years ago during the negotiation of the Vienna Convention on the ozone layer, and some believe that if the U.S. were to insist upon such credit as a condition of a protocol, the negotiations would come to a standstill as in 1985. Some argue that even with the aerosol ban, the U.S. remains responsible for most of the long-lived CFCs in the stratosphere, and the U.S. per capita CFC consumption is still the world's highest.

The Working Group recommends that the Council consider and provide guidance for the U.S. delegation as to whether or not we should attempt to gain credit for our previous actions.

B. AN EMISSIONS CONTROL PROTOCOL

The aforementioned Chairman's Text contains proposals related to (1) a freeze on emissions, and (2) emissions reductions beyond a freeze. The Working Group discussed these at length.

1. A Freeze on Emissions. The following are major questions:

a. What chemicals should the freeze cover?

The Chairman's Text provides for a freeze on emissions at 1986 levels which would cover CFCs 11, 12, 113, 114, and 115. Due to a technicality, Halons are not now included.

The Working Group consensus is that the freeze should include all of these CFCs as well as Halons 1201 and 1311. The U.S. delegation will be seeking to expand the protocol to include the Halons.

From a purely scientific perspective all chemicals containing chlorine and bromine, weighted by the ozone depleting potential, should be considered for the protocol, both for the freeze and for potential future reductions. The Chairman's Text is somewhat less than a purely scientific perspective because only the fully halogenated chemicals (CFCs 11, 12, 113, 114 and 115, and Halons 1201 and 1311) are being considered for inclusion. Chemicals such as CFC 22 and methyl chloroform which are only partially halogenated are not being considered as they are believed to be part of the solution and have relatively low ozone depleting potential.

Concern has been raised with regards to reductions in Halons 1201 and 1311 and CFC 113 because of their strategic value to the U.S., and the apparent lack of suitable substitutes. This is a legitimate concern but one that can be handled if controls are on the sum of the ozone depleting potential of all chemicals, rather than on individual substances. This will allow each individual country the flexibility to live within the internationally agreed protocol with the least interference on how a country wants to implement the protocol.

b. When should a freeze on emissions occur?

The Chairman's Text proposes that the freeze take effect within two years of entry into force. There is uncertainty as to when entry into force will occur, but the best estimate is that it will be in the 1988-90 time period. The Working Group consensus is that a freeze on emissions should go into effect within one to two years after entry into force of the protocol.

2. Reductions Beyond a Freeze

a. What chemicals should the reductions cover?

The Chairman's Text proposes that the additional reductions beyond a freeze include CFCs 11, 12, 113, 114 and 115. The Working Group consensus is that any additional reductions should cover CFCs 11 and 12; however, there are questions about the coverage of CFCs 113, 114, 115, and Halons 1201 and 1311. National security concerns argue against including the Halons in any reductions. There is also a national defense and security concern with including CFC 113 in any reductions beyond a freeze, especially given 113's importance for certain high-technology electrical applications. The questions regarding coverage of CFCs 114 and 115 concern their potential use as substitutes for controlled chemicals and their present low usage.

b. How much and when?

The Chairman's Text provides for a 20% reduction to take effect 4 years after entry into force (1992-94) and an additional 30% reduction to take effect either 6 years (1994-96) or 8 years (1996-98) after entry into force.

With respect to any future reductions, the Working Group recognizes the importance of the future assessments of science, technology, economics and environment.

The Working Group identified distinct issues surrounding each potential reduction. With respect to the 20% reduction, some favor it because it can be accomplished with existing industrial processes and because reductions beyond a freeze may be needed to counterbalance less than full participation in a freeze. Yet others note there are uncertainties as to the need for any additional reductions.

Regarding the additional 30% reduction, some favor its inclusion on the basis of judgements about the science and potential adverse health effects. Others emphasize, however, the uncertainties about the need to commit at this time to this additional measure. One or more scientific reviews would be available prior to this reduction going into effect.

The Working Group recommends that the Council discuss and provide guidance on whether the U.S. position is to support:

1. A 20% reduction beyond a freeze.
2. An additional 30% reduction.
3. Additional reductions beyond 50%.

c. Should the reductions be automatic (subject to reversal by a 2/3 vote) or contingent upon a positive vote of a majority of the parties?

The Chairman's Text proposes an initial 20% reduction to take effect automatically (implicitly reversible by a 2/3 vote).

The Text provides two alternative implementing mechanisms for the next 30% reduction -- 6 years after entry into force if the majority of the parties so decide, or 8 years after entry into force unless reversed by a two-third majority of the parties.

There are strong views in the Working Group on the implementing mechanism for the additional 30% percent reduction. Many do not wish to commit to the reduction at this time unless it is contingent upon a positive vote of a majority of the parties. Others, however, believe the evidence warrants committing to this reduction at this time.

Most believe the future assessments of the science, technology, economics and environment are important to these reduction decisions. There are differing views, however, on how such future assessments ought to factor into reduction decisions. Some believe final reduction decisions ought to follow future

assessments, whereas others believe reductions should be scheduled now with an opportunity for reversal based upon future assessments.

The Working Group recommends that the Council provide guidance on whether the U.S. should support automatic reductions of:

- a. 20% beyond the freeze.
- b. an additional 30%.

C. ISSUES FOR LATER CONSIDERATION

The Working Group identified several related issues that will require further consideration. They include:

1. The relationship between international protocol and domestic regulations. Since the overall objective of the protocol is to avoid or reduce health and environmental risks, compliance with the international protocol will necessarily result in domestic regulation. There is legal precedent for such a linkage between international agreements and subsequent domestic regulations.

2. Non-Regulatory Approaches. There is no reason why the Nation's efforts to achieve the objectives sought in the protocol should be limited to a regulatory approach. The suggestion has been made that if the government imposes such regulatory burdens upon the people and the economy of the U.S., consideration should also be given to policies which may ease the regulatory burdens, including, but not limited to, possibly rendering unnecessary imposition of regulations beyond those necessary to assure U.S. compliance with the international protocol.

Such a domestic, non-regulatory supplement to the international protocol might, for example, contain elements intended to eliminate government barriers to, or facilitate, the development of: substitutes for covered chemicals, technology to mitigate or eliminate the adverse effects of chemical emissions upon stratospheric ozone, or medical advancements in the understanding and treatment of the problems caused by ozone depletion.

[NOTE: This paper attempts to portray the general flavor of the Working Group discussions on this very complex issue. It was not possible to include all of the important comments contributed by representatives of the participating agencies.]

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THE WHITE HOUSE

WASHINGTON

June 11, 1987

Close Hold

MEMORANDUM FOR THE PRESIDENT

FROM: THE DOMESTIC POLICY COUNCIL

SUBJECT: Stratospheric Ozone

Issue: What guidance should the U.S. delegation follow during the next stages of international negotiation of a stratospheric ozone protocol?

Background

During the 1970's, concerns were expressed by the science community about potentially harmful effects of depletion of the stratospheric ozone layer. It was felt that emissions of certain chemicals were causing this depletion. This led to a 1978 unilateral ban on aerosols in the United States.

Concern for protection of the ozone layer increased after discovery of the Antarctic "hole" in 1985. Some scientists predict that significant ozone depletion will occur unless international action is taken to control the relevant chemicals. They say that depletion of the ozone layer is likely to cause adverse health and environmental effects including increased skin cancer deaths, cataracts, crop damage and aquatic impacts.

In 1985, the United Nations Environment Program sponsored the Vienna Convention for the Protection of the Ozone Layer. The U.S. has been a leader at the three international meetings held over the past seven months to develop a global agreement on the control of the chemicals thought to cause ozone depletion. The next international meeting is scheduled for June 29, 1987.

There is strong domestic pressure for action to protect the ozone layer. Any such action should be on an international level to best prevent ozone depletion and to prevent disadvantaging American industry in world markets. Yet if an international agreement is not reached, both Congress and the courts are likely to impose unilateral domestic requirements which would fail to protect the ozone layer and would disadvantage U.S. industry.

U.S. industry uses the chemicals thought to deplete the ozone layer in the production of refrigerators, air-conditioners, foam-insulation and electronic products. Industrial groups have publicly recognized the need to control these chemicals through an international agreement.

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Discussion

The Domestic Policy Council is recommending that you provide guidance to the U.S. delegation as they enter the final stages of negotiating a protocol. The delegation will meet with the Chairman and a small group in Brussels in late June and early July to discuss country views on the attached Chairman's text. The diplomatic meetings at which the final protocol will be discussed and signed will be in early September, 1987, in Montreal. The protocol must then be ratified by each country. Thus, there will be opportunities for further Administration review.

ISSUE I. GENERAL U.S. POSITION ON INTERNATIONAL PROTOCOL

Ideally, the United States should seek a protocol agreed to by all nations which provides for a true global freeze on covered chemicals. Such an international agreement is not obtainable at this time.

Your decision on the following options will guide the U.S. delegation.

Option 1: Continue negotiations pursuant to State Department Circular 175, with U.S. delegation authorized to use its discretion on all issues, including: chemical coverage; acceptable level of country participation; when and to what extent freeze and further reductions up to 95% should occur; whether reductions should be automatic (subject to reversal by 2/3 vote) or require affirmative vote of majority; whether voting system should give weight to major producing and consuming nations; whether to seek, in addition to freeze, a ban by other nations of non-essential aerosols as the U.S. did in 1978; and whether to seek verification provisions.

Pro:

- o The U.S. position, as reflected in the 175 has been presented in formal negotiating sessions, congressional testimony and public position papers. Thus, diplomatic considerations favor continuing with the existing Circular 175.
- o The Circular 175 provides a general framework, and allows for the delegation to propose flexible, alternative approaches to the specific provisions of a control protocol.

Con:

- o As the negotiations move toward a very important U.S. commitment, the essential elements of a potential protocol from the U.S. perspective should be made more specific.
- o The existing Circular 175 has not been reviewed or approved by the highest levels in the inter-agency process.

Those in favor of this option include the Department of State, Environmental Protection Agency, _____ and _____.

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Option 2: Continue negotiations, but with the U.S. delegation instructed to make every effort to achieve a protocol containing the following provisions:

- (a) Freeze the most ozone-depleting chemicals (CFCs 11, 12, 113, 114 and 115 and Halons 1201 and 1311) at 1986 production level within two years after entry into force.
- (b) Twenty percent reduction by participants following a major international scientific, technological, health and economic review which takes into account the effects of the freeze; and when approved by a majority vote of participants not in material breach of freeze.
- (c) Further reductions more or less than a cumulative 50%, also following a major scientific, technological, health and economic review which takes into account the effects of the freeze and previous reductions; and when approved by a majority vote of participants not in material breach of the protocol.
- (d) ~~Entry into force~~ ^{approve} when sufficient number of countries, determined by formula, sign and ratify.
- (e) To encourage participation by current non-producers (such as developing nations), permit a grace period up to the year 2000.
- (f) Seek other participants' agreement that, in addition to freeze, they will ban use of non-essential aerosols, as United States did in 1978.

not accurate phrasing

Pro:

- o These conditions will help ensure that the U.S. actions are matched by other countries.
- o These conditions have been studied and found to be generally acceptable to the U.S. economic and political communities.

Con:

- o These could be seen as changes in the U.S. position, thus stimulating major new conditions by other countries.
- o Introduction of these could be seen by environmental groups as an attempt to stall the negotiations.

Interior, CEQ and _____ support this option.

Option 3: Advise the Convention that beyond a freeze the negotiations should be delayed, pending a major study of scientific, technological, economic, health an environmental factors related to depletion of the stratospheric ozone layer.

Pro:

- o This will provide more certainty to the subsequent protocol agreements.
- o This might benefit some industries in that they could continue production of items that would otherwise be banned.

Con:

- o Congress and environmental groups will severely criticize this move, and Congress will likely legislate their own "protocol."
- o We could lose vital credibility with other countries.

The Office of Science and Technology Policy, Department of Commerce and _____ support this option.

ISSUE II. PROTOCOL TRADE SANCTIONS

*Need
Intro
A--*

Option 1: Generally instruct the delegation to negotiate a trade provision which will protect U.S. industry in world markets.

Pro:

- o Gives delegation flexibility to negotiate a trade article.
- o Does not risk committing the Administration publicly to trade sanctions in advance of a negotiated agreement.

Con:

- o Does not provide specific direction to delegation on desirable aspects of a trade article.
- o Does not send strong signal to other countries about the economic value of participating in the negotiations and of complying with a future protocol.

Option 2: Specifically instruct the delegation to attempt to negotiate a protocol which includes a trade provision containing:

- (a) Sanctions against non-parties and parties in material breach of protocol requirements;

(b) Such sanctions should include banning or limiting imports by parties of:

- (1) controlled chemicals in bulk;
- (2) products containing controlled chemicals;
- (3) products manufactured by using controlled chemicals.

Pro:

- o Encourages participation and compliance in the protocol.
- o Prevents the transfer of commercial benefits from parties to non-parties.

Con:

- o Establishes precedent for use of trade sanctions to enforce environmental regulations.
- o General disfavor of restraints of trade.

Edwin Meese III
Chairman Pro Tempore

Attachment

DECISION:

ISSUE I. GENERAL U.S. POSITION ON INTERNATIONAL PROTOCOL

- _____ Option 1. Continue negotiations pursuant to State Department Circular 175.
- _____ Option 2. Continue negotiation, with U.S. delegation instructed to achieve protocol under terms described above.
- _____ Option 3. Advise Convention that beyond a freeze, further reductions should be delayed.

ISSUE II. PROTOCOL TRADE SANCTIONS

- _____ Option 1. U.S. delegation has flexibility to negotiate best possible agreement.
- _____ Option 2. Instruct delegation to ensure that the protocol contains specific trade provisions consistent with terms cited above.

EPA	Commerce	OPD	Hando Divis	OSTP	Energy
yes	yes	yes	yes	yes, as the maximum measure	
yes & - cld just freeze 114 & 115 - cld be 10 yrs for 30%	① 30% shld be aft aft determin of pties based ② not sure about 113 ✓ 000 views	① 30% shld be aft aft determin based on STGS review ② 30% in 10 yrs	① 30% aft aft vote by parties	no further reductions planned now. Science not currently warrant.	
yes	yes	yes	yes	yes	
yes	concept, yes, but not like warding - elim what science dictates	concept, yes, but reword - take out "anthropogenic" put in CO ₂ & halons	yes	in principle, reasonable. But we have too much uncertainty.	
yes	yes	yes	yes	yes	
yes & could strike "attempt"	yes strike "attempt"	strike "attempt"	strike "attempt"	yes	①

CEA

OSTP's question shld be wh'd
into the Circular 175
discussion.

DOI -- not Becky, but econ.

-- Repeat in c/bene section
the assume that no
improvements in med tech or
chg's behavior (detc, diagnosis,
trmt, preven.)

-- assume. that non-compliance
will grow with time
is not nec'ly correct.

Jan + Mike

The U.S. has pushed for a strong protocol article ~~containing~~^{on} trade sanctions to be imposed on parties which have not signed the protocol, ~~as an incentive to get other countries to join~~. This would limit imports not only of the controlled chemicals but also of products containing ~~these~~ chemicals (e.g., airconditioners or foam insulation).

THE U.S. HAS PUSHED FOR A STUDY OF THE FEASIBILITY OF LIMITING ~~THE~~ ^{TRADE} ~~IMPORTS~~ ^{OF} ~~OF~~ ^{PRODUCTS} ~~CONTAINED~~ ^{IN} ~~THE~~ ^{MANUFACTURED} ~~BY~~ ^{USING} ~~THE~~ ^{THE} ~~CHEMICALS~~ ^{CONTROLLED}

(e.g., electronic equipment). The intent of this article would be to provide a "stick" for encouraging others to join and to ~~prevent the~~ limit the impact on ozone depletion and the transfer of commercial benefits from parties to the protocol to countries which have not joined.

- Should the U.S. continue to seek inclusion of a strong article on trade with nonparties in the protocol?

NONE SPECIFICALLY

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(c) If there is a freeze, it should be based on each nation's:

- (i) Production of covered chemicals for year 19__;
- (ii) Consumption of covered chemicals for year 19__;
- (iii) Production or consumption of covered chemicals for year 19__, whichever is higher; or
- (iv) Some other specified factor for year 19__.

Working Group Recommendation: Option (___) for 19__

(d) If there is a freeze, should the United States (and the few other countries which followed the U.S. example) receive in some fashion "credit" for its 1978 unilateral, voluntary ban on CFC-producing non-essential aerosols (e.g., increase U.S. freeze level by all or a portion of the reduction in U.S. emissions which already have taken place, or require all participating nations to ban such aerosols and to freeze production or consumption at a level reduced by amount of emissions attributable to such aerosols)?

Working Group Recommendation: _____

(e) Should certain nations, such as LDCs, be allowed to exceed the freeze level specified in (c)?

Working Group Recommendation: _____

(f) If so, U.S. position on which countries may be excepted from a strict freeze should be identified by which of the following criteria:

- (i) Leave up to U.S. negotiators;
- (ii) Inter-agency agreement in advance on specific criteria (such as GNP per capita as of given year, etc.) acceptable to United States; or
- (iii) Inter-agency agreement in advance on certain countries which, notwithstanding criteria identified pursuant to (ii), should not be excepted from a strict freeze (such as certain countries with emerging ability to compete with U.S.)?

KOREA?

Working Group Recommendation: Option(s) _____

(g) If some countries are to be excepted from a strict freeze, the U.S. position on the permissible annual rate of growth of CFCs/halons over what otherwise would have been the freeze level for each such country and the time period during which such growth should be permitted, should be:

Should the protocol provide for imposition of trade sanctions on the ~~export~~^{import} of products of:

- a) the selected chemicals
- b) products containing the chemical, e.g. autos with charged air conditioners, charged air conditioners.
- c) * products made by using CFCs, e.g. printed circuit boards, purse; any electronic item containing printed circuit boards...

Should above trade provisions apply to:

- a) non-signatories
- b) signatories not in compliance
- c) signatories who withdraw

- b-1. should import restriction be applied only to pre-designated items in a list.

Should the U.S. seek redress for emission reductions accomplished by its aerosol ban?

- a. Should the U.S. agree to an "exemption" clause to accommodate LDCs, or
- b. Should the U.S. seek establishment of a committee to grant exemptions when requested by LDCs.

Should the U.S. seek a provision whereby signatories agree to prohibit the export of CFC production technology to

(a) NON PRODUCING COUNTRIES

(b) NON SIGNATORIES

~~Should the U.S. seek to "freeze" current trade patterns in CFCs (as done in short supply controls imposed by commerce or.~~

~~a)~~

~~b).~~

LDCs

R. P. Benedict

June 1

The US + UNEP have expended considerable effort (e.g., through our embassies, through paying travel costs) to encourage ^{broad} participation by developing countries. However, only relatively few have shown the interest or expertise to participate. We cannot prevent non-joining countries from producing CFCs for their internal markets, but we can prevent them from profiting through international trade.

A strong protocol, including the major producer + consumer countries, could lead to earlier development of substitute products. This might discourage non-joiners from investing ^{heavily} in capacity in a soon-to-be-obsolete CFC technology. Further, the ^{very} existence of a protocol, as an expression of concern by the international community, increases the pressure on ~~the~~ non-member countries to join; ^{in essence,} ~~in a sense,~~ ~~the~~ if they

②

~~stop~~
produce CFCs

continue to produce CFCs, they are exposed
as behavior irresponsibly on a matter of global
import.

Done -

IMPACT OF CHLOROFLUOROCARBONS ON ATMOSPHERIC OZONE:

NASA, DOE, EPA, OSTP?

Emissions of CFCs and Halons may be depleting the stratospheric ozone layer, reducing the screen against harmful ultraviolet radiation and altering the Earth's climate system. Continued growth of CFC and Halon emissions at 3% per year is predicted to yield a globally averaged column ozone depletion of 6% by the year 2040, and more thereafter, which is much greater than the natural decadal variability and hence significant. In contrast a true global freeze of the sum of all CFCs and Halons at the present rate is predicted to yield a maximum global average ozone depletion of less than 1%. Ozone depletions at high latitudes are predicted to be 2-3 times larger than the global average. Depletions in upper stratospheric ozone greater than 25% are predicted to occur in both cases which would lead to a local cooling greater than natural variability. The consequences of this cooling for the Earth's climate are unclear. While these theories simulate much of the present atmosphere quite well, they are not perfect, which places a factor of 2-3 uncertainty on their predictive abilities.

Observations have shown (1) column ozone increased about 3% from 1960 to 1970, remained constant throughout the 1970's, and has decreased thereafter by about 4%; (2) a decrease of about 7% during the last decade in the upper stratosphere; and (3) a 40% decrease in column ozone over Antarctica in the spring season since the mid-1970's. Whether the recent changes in column and upper stratospheric ozone are due to natural phenomena or in part to CFCs remains an open question.

To limit column and upper stratospheric ozone depletions to less than the decadal natural variability reductions beyond a true global freeze may be required. A protocol that reduces emissions as much as 20-50 percent could fall short of a true global freeze since it will not include all chemicals, compliance in developed countries may be less than 100 percent, and substantial growth in CFC usage may occur in developing countries. If there is environmental damage due to CFCs and Halons their long atmospheric lifetimes would mean that recovery would take many decades even after complete cessation of emissions.

DRAFT

EPA
Love

MEMORANDUM FOR THE DOMESTIC POLICY COUNCIL

FROM: THE ENERGY, NATURAL RESOURCES & ENVIRONMENT
WORKING GROUP

SUBJECT: Stratospheric Ozone

On May 20, 1987, the Council met to discuss the international protocol negotiations currently underway to limit emissions of ozone depleting chemicals.

Several questions were raised and the Working Group was asked to provide answers. The questions were:

- * What are the legislative and legal impacts of an international ozone protocol?
- * What are the most up-to-date scientific data on climatic and health effects of ozone depletion?
- * What is the cost/benefit effect of an international treaty restricting ozone depleting chemicals?

The following information has been summarized by the Working Group after discussion of detailed presentations by experts in each area.

Legislative/legal

A pending lawsuit against the EPA seeks to compel the Administrator to promulgate regulations governing stratospheric ozone and to schedule such regulation. The court is not likely to act as long as international negotiations continue. If the international negotiations result in a scheduled reduction, the EPA would have sound defenses to any attempt by the plaintiff or the court to impose substantive emissions levels through the lawsuit. However, if there is no international agreement, it will be difficult to continue to argue for no domestic regulation, either in the existing lawsuit or in future litigation. EPA will be hard pressed to ask for more time to study the issue having initiated study of the issue eight years ago.

To date legislative action has been restrained by strong opponents of domestic legislation (such as Congressman Dingell). If the international negotiations for a protocol fail, there will be a strong push for a unilateral domestic reduction on Capitol Hill. Key Senators and Congressmen have been making statements

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to this effect for months; recent press attention will only heighten that resolve. If the protocol called for a freeze or a freeze plus a 20 percent reduction, the legislative outcome is less certain though Congress would undoubtedly hold additional hearings to determine the need for further domestic reductions. If, on the other hand, the protocol mandated a freeze plus a 50 percent reduction, it seems likely that any pressure for additional regulation domestically would dissipate. Environmental groups, which were initially backing a 95 percent target, have agreed that a freeze plus 50 percent reduction would be a very positive beginning. Without a strong push from these groups, additional action, congressional action, at least in the near term, would be unlikely.

an automatic

**NO would not be ratified by Senate*

**Senate resolution called for 50% automatic on vote of 80 to 2*

an automatic

Climatic

Both satellite and ground-based observations have shown that ozone has decreased in the upper stratosphere by about seven percent during the last decade. Total column ozone has decreased by about 4 percent since 1980. It is not known whether natural phenomena or CFC and Halon emissions have caused these decreases.

Continued growth of CFC and Halon emissions at three percent per year (as consistent with economic projections) is predicted to yield, by the year 2040, a globally averaged overhead-column ozone depletion of about 6 percent and a stratospheric ozone depletion of about 50 percent. These depletion levels are much larger than natural variability and are, therefore, significant.

Use notation language

In contrast, a true global freeze of the sum of worldwide emissions of chlorine and bromine containing chemicals at the present rates is predicted to yield a maximum globally averaged column depletion of less than 0.5 percent by the year 2015 and a stratospheric depletion of 25 percent in the next 100 years. This stratospheric depletion would be much larger than natural variability and would, therefore, be significant. (Note that a "true global freeze" is not realistically attainable given expected compliance problems and the anticipated concessions to developing countries.) The theories and models upon which these predictions are based have uncertainty factors of two to three.

Health

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

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Based on epidemiological and ecological studies, dose-response relationships were developed and reviewed as part of EPA's risk assessment. The extent of additional cancer deaths will depend on the degree of CFC control. If today's ozone level is maintained, the projected number of skin cancer deaths for White U.S. citizens born before 2075 would be ~~2,100,000~~. If the ozone level is decreased by 26 percent, there would be a projected increase in the number of skin cancer deaths of ~~1,200,000~~ over the base of 2,100,000. For an ozone level decrease of 7.7 percent (the likely result of a freeze included in the protocol), there would be an increase in skin cancer deaths of ~~253,000~~ over the case in which there was no ozone depletion. For an ozone level decrease of 6.1 percent (the likely result of a 20 percent reduction in emissions), there would be an increase in skin cancer deaths of ~~168,000~~ over the base. For an ozone level decrease of 3.2 percent (a 50 percent reduction), there would be an increase in skin cancer deaths of ~~89,000~~ over the base. This analysis assumes that ~~the average age of the population remains constant, that exposure to sunlight (e.g., sunbathing) does not increase, and that no major improvements in treatment of skin cancer occur,~~ and that ozone depletion does not increase after 2100.

Recent studies have also shown a strong dose-response relationship between UV-B and the incidence of cataracts. Approximately 12.5 million cases in the U.S. could be averted by a protocol freeze for cohorts born by 2075. A 50 percent reduction in the major CFCs would result in approximately 16.3 million cases averted. While laboratory studies link UV-B to suppression of the human response system with possible implications for increasing the incidence of herpes simplex and leishmaniasis, research into possible broader implications has not been undertaken.

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

Cost/Benefit

A cost benefit analysis has been performed for the projected skin cancer deaths, skin cancer non-fatal cases, and cataracts health effects projected from increased UV-B radiation occurring at the projected baseline growth of CFC emissions and at the levels of emissions contemplated by a protocol freeze of emissions, a 20 percent reduction thereof, and a further 30 percent reduction thereof. Such analysis involves economic uncertainties and is not being presented with respect to the benefits derived from

Handwritten notes in blue ink:

- 3,000,000
- 1,900,000
- 200,000
- 300,000
- 100,000

Handwritten notes in blue ink:

The uncertainties in the total estimate of additional cases are due to uncertainties about the action spectra, predicted ozone depletion, and the dose-response coefficients. There is a 90% probability that the actual cases will be between 20% and 260% of the

Handwritten notes in blue ink:

estimated value, and a 90% probability that it will be between 50% and 125% of that.

DIPLOMATIC PARAGRAPH ^{fore} (by R. Benedict)

The US position, as reflected in the Circular 175 & subsequent position papers, has been presented through three formal negotiating sessions since December 1986, in numerous public appearances ~~with~~ including Congressional testimony by senior Administration ~~off~~ witnesses, & in private consultations with highest level foreign officials by Sec. of State Shultz, EPA Administrator Lee Thomas, & others. Due in large part to these representations, numerous foreign countries have re-examined & modified their own positions in these international negotiations. Given the worldwide (& domestic) public attention to the ozone issue, reversal^{now} of the substance of this position would be a political embarrassment and would damage US credibility in future international negotiations.

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CEA



MEMORANDUM FOR THE DOMESTIC POLICY COUNCIL

FROM: THE ENERGY, NATURAL RESOURCES & ENVIRONMENT
WORKING GROUP

SUBJECT: Stratospheric Ozone

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reducing the incidence of UV-B on plants, aquatic life, the human immune system, ground level ozone concentrations, polymer degradation, and global temperature because of the lack of sufficient quantitative experimental information. However, the benefits of these non quantifiably evaluated benefits are acknowledged to exist and to be additive to the other benefits which were valued and computed.

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

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

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

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

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

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

--However, the benefits of the ^{an additional marginal} 20 percent reduction ^{beyond the freeze} alone are not in all cases in excess of the ^{marginal} costs of the 20 percent reduction ~~alone~~.

--The ^{marginal} costs of the ^a further 30 percent reduction appear in ^{some} many cases to exceed the benefits from the further 30 percent reduction. *It is also true that in some cases, the marginal benefits exceed the marginal costs for this incremental step. Further scientific and economic review will be valuable before making the final decision on this step.*

QUESTIONS FOR DECISION

DPC guidance is sought on the following six issues involved in the stratospheric ozone negotiations.

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

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

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

2. Should the U.S. delegation continue to negotiate pursuant to the Circular 175?

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

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

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

III. Periodic review of the protocol provisions based upon regular assessment of the science. The review could remove or add chemicals, or change the schedule or the emission reduction target.

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

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

3. What chemicals should the U.S. seek to include in the control protocol?

There is inter-agency agreement that a freeze on emissions at 1986 levels should cover all of the important ozone depleting chemicals including the Halons.

Any further reductions should exclude the Halons for national security reasons.

Note: The Departments of Commerce and Energy question the advisability of requiring further reductions for CFC 113 given its importance to the semi-conductor industry and to the nation's defense.

The Working Group recommends that the delegation seek a freeze on all ozone depleting chemicals including the Halons and CFC 113, and that any further reductions include all important ozone depleting chemicals except the Halons and CFC 113.

4. What emissions control provisions should the delegation seek regarding stringency, timing, future study and implementing mechanisms?

Points of Agreement:

A. All agencies support a freeze, at 1986 levels, on production/consumption of CFCs 11, 12, 113, 114, 115, and Halons 1211 and 1301, to take effect one or two years after the protocol enters into force.

B. All agencies support regularly scheduled assessments of scientific, economic, technological and environmental factors, prior to any emissions reductions, to enable to parties to adjust the reduction schedule and add or subtract chemicals.

Remaining Questions:

A. Should the delegation seek an automatic 20 percent reduction (subject to reversal upon 2/3 vote) to take effect four years after entry into force?

Yes -- EPA, Commerce, Justice - Lands Division, Energy, State, NASA, OPD

No -- OSTP

Other agencies?

B. Should the delegation seek an additional 30 percent reduction to take effect 8 to 10 years after entry into force and after a majority vote affirming the reduction at a designated future time?

Yes -- EPA, Commerce, Justice - Lands, Energy, State,
NASA, OPD

No -- OSTP

Other agencies?

C. Alternatively, should the delegation seek the additional 30 percent reduction to take effect 8 to 10 years after entry into force automatically unless reversed by a 2/3 vote?

Yes -- EPA, State

No -- Commerce, Justice - Lands, Energy, OMB, OSTP,
OPD, USTR

Other agencies?

D. Should the delegation seek additional scheduled reductions beyond the cumulative 50 percent reduction achieved through the 20 and 30 percent reductions?

Yes -- EPA and State (even if reductions are automatic unless reversed by 2/3 vote)

No -- OSTP

Allow for future consideration -- Commerce, Justice -
Lands, Energy, OMB, OPD

The Working Group recommends that the U.S. delegation seek a freeze at 1986 levels; regularly scheduled assessments of scientific, economic, technological and environmental factors for review in future reduction decisions; a 20 percent reduction to take effect four years after entry into force unless reversed by a 2/3 majority vote; an additional 30 percent reduction to take effect 8 to 10 years after entry into force if affirmed by a positive majority vote of the parties; and allowance for further reductions if confirmed by future majority votes of the parties.

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

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

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

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

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

There is also inter-agency agreement that the U.S. delegation should seek to include a system of voting which would give due weight to the currently significant producing and consuming countries.

The Working Group recommends that the U.S. delegation continue to negotiate for widespread global participation and a voting system which would credit the major producing and consuming countries.

OSTP

Jone

June 6, 1987

OSTP Input to "Remaining Question" of
the DPC Draft Working Group
Paper on Ozone

- a) Should a major science review be conducted in 1990 as now planned, and then the U.S. Government decide on the size and schedule for any future ~~reduction~~ in CFC's and other chemicals.

action

initially to decide

This is actually b-4 even freeze.

1. Generic Pro on the incremental steps:

changed

There are ^{reasonable} ~~possible~~ sets of economic assumptions such that the \downarrow ^{estimated} benefits exceed the \downarrow ^{estimated} costs.

2. Note: For the freeze, or a "freeze + 20%" ^{long} option, the \downarrow ^{estimated} benefits far outweigh the estimated costs.

S. DeCanio

The "Process" question ^{Done} Ted's

In addition to
~~After~~ the agreed upon scheduled reductions,
should the ~~dep~~ delegation seek a process
to be provided as part of the protocol for the
Parties to agree to subsequent control actions
based on the future STEE assessments.

Jone

June 8, 1987

OSTP Input to "Remaining Question" of
the DPC Draft Working Group
Paper on Ozone

4.
A.

In view of the large uncertainties in scientific projections of future ozone changes, should the U.S. agree, at this time, to an international process which could commit the U.S. to future reductions or reduction schedules that it may conclude from future science reviews are unwarranted and it does not want?

Yes _____

No _____

Viki:

Lt. Col Nangle

at 695-7820; In one hour -

Called:

325-2215

"At the working group level at Defense, our position is: Defense will not object to inclusion of Halons in the international protocol ~~protocol~~ if subject to only a freeze and excluded from subsequent reduction targets."

That position applies to ques. 3-4 that you wanted comment on.

On questions 1+2 - Defense can support them.

A Insert

additional projections on potential ozone depletion scenarios were made by NASA at OSTP's request. These showed that an initial freeze as outlined in the "Chairman's Text" followed by a freeze by remaining producers by 2000 (with modest interim growth in production) would maintain ozone levels within the natural limits of variability. If rather than seeking protection of the ozone layer by a freeze on all producers, we achieved an agreement such as that outlined in the "Chairman's Text" with an initial freeze and subsequent reductions, a 5-year delay in effecting reductions would have an almost imperceptible effect on the ozone level. Graphs of these results are provided in Attachment 1.

B Insert

A modified protocol freeze which permitted third world users to delay their adherence to a freeze until the year 2000 would, if accepted by all, achieve the U.S. benefits of a freeze plus 50% reduction at U.S. costs equal to those of a freeze alone. This modified protocol would have the largest net benefits of any alternative considered by this analysis.

C Insert

Based on a study of 413 cataract cases in the U.S., an estimated 239 million accumulated cataract cases are projected by 2075 in the U.S. Cataract cases are estimated to increase by 4 to 7 percent for scenarios ranging from a 3.2% to a 26% to depletion of the ozone layer.

D Insert

By the year 2075 and assuming no change in current stratospheric ozone levels, it is estimated that there would be 2,100,000 deaths from skin cancer for U.S. citizens. With a 3.2% depletion in the ozone level, increased UV-B radiation is estimated to cause an additional 89,000 deaths. With 6.1% depletion of ozone or 7.7% depletion, or with a 26% depletion of ozone, the projected increases in skin cancer deaths would be 168,000, 253,000, and 1,200,000, respectively. EPA has estimated that the 90% confidence limits on the deaths for skin cancer range from 20 to 260% of the number provided.

Marta
OSTP

THE WHITE HOUSE
WASHINGTON
June 5, 1987

MEMORANDUM FOR ENERGY, NATURAL RESOURCES AND ENVIRONMENT
WORKING GROUP

FROM: BOB SWEET *BWS*
SUBJECT: Draft Working Group Paper on Ozone

Attached is a draft paper that includes a summary of the four presentations to the Working group on legislative/legal issues, climatic effects, health effects, and cost benefits of an international protocol on ozone depleting chemicals.

The questions to be addressed by the Domestic Policy Council are included in the second part of the paper.

For the Working Group meeting today we will have a presentation on cost benefits for the first 3/4 hour, followed by a review of the questions to be sent to the DPC with the Working Group recommendations.

Please make changes in the text wherever appropriate and be prepared to submit them for your agency by COB today, June 5. Once changes have been made, the paper will be circulated again. If another Working Group meeting is needed, we will call one for Monday or Tuesday of next week.

Attachment

DRAFT

MEMORANDUM FOR THE DOMESTIC POLICY COUNCIL

FROM: THE ENERGY, NATURAL RESOURCES & ENVIRONMENT WORKING GROUP

SUBJECT: Stratospheric Ozone

On May 20, 1987, the Council met to discuss the international protocol negotiations currently underway to limit emissions of ozone depleting chemicals. ~~Subsequently~~ (A)

Several questions were raised and the working Group was asked to provide answers. The questions were:

- * What are the legislative and legal impacts of an international ozone protocol?
- * What are the most up-to-date scientific data on climatic and health effects of ozone depletion?
- * What is the cost/benefit effect of an international treaty restricting ozone depleting chemicals?

→ Subsequent to the May 20, 1987 Council meeting, (A) insert

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Change to justice

Climatic

Both satellite and ground-based observations have shown that ozone has decreased in the upper stratosphere by about seven percent during the last decade. Total column ozone has decreased by about 4 percent since 1980. It is not known whether natural phenomena or CFC and Halon emissions have caused these decreases.

↘

Continued growth of CFC and Halon emissions at three percent per year (as consistent with economic projections) is predicted to yield, by the year 2040, a globally averaged overhead-column ozone depletion of about 6 percent and a stratospheric ozone depletion of about 50 percent. These depletion levels are much larger than natural variability and are, therefore, significant.

In contrast, a true global freeze of the sum of worldwide emissions of chlorine and bromine containing chemicals at the present rates is predicted to yield a maximum globally averaged column depletion of less than 0.5 percent by the year 2015 and a stratospheric depletion of 25 percent in the next 100 years. This stratospheric depletion would be much larger than natural variability and would, therefore, be significant. (Note that a "true global freeze" is not realistically attainable given expected compliance problems and the anticipated concessions to developing countries.) The theories and models upon which these predictions are based have uncertainty factors of two to three.

↓ Δ

Health

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

potential
limited
Preliminary evidence indicates possible
modest
in

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reducing the incidence of UV-B on plants, aquatic life, the human immune system, ground level ozone concentrations, polymer degradation, and global temperature because of the lack of sufficient quantitative experimental information. However, the benefits of these non quantifiably evaluated benefits ~~are~~ ^{possible may} acknowledged to exist and to be additive to the other benefits which were valued and computed. ^{estimated.} ^{could be added}

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

Sensitivity analysis was performed with respect to the economic valuation of lives saved and the growth in their value over time. ^{The age at death was not considered.}

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

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

^{5/18/84} ^{W. J. ...} [↓] ^③ [→] ^{INSERT HERE}
--The benefits from a "protocol freeze" of the CFC emissions are substantially more than the costs over all plausible assumptions and ranges of uncertainty.

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

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

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

QUESTIONS FOR DECISION

DPC guidance is sought on the following six issues involved in the stratospheric ozone negotiations.

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

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

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

2. Should the U.S. delegation continue to negotiate pursuant to the Circular 175?

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

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

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

III. Periodic review of the protocol provisions based upon regular assessment of the science. The review could remove or add chemicals, or change the schedule or the emission reduction target.

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

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

3. What chemicals should the U.S. seek to include in the control protocol?

There is inter-agency agreement that a freeze on emissions at 1986 levels should cover all of the important ozone depleting chemicals including the Halons.

Any further reductions should exclude the Halons for national security reasons.

Note: The Departments of Commerce and Energy question the advisability of requiring further reductions for CFC 113 given its importance to the semi-conductor industry and to the nation's defense.

The Working Group recommends that the delegation seek a freeze on all ozone depleting chemicals including the Halons and CFC 113, and that any further reductions include all important ozone depleting chemicals except the Halons and CFC 113.

4. What emissions control provisions should the delegation seek regarding stringency, timing, future study and implementing mechanisms?

Points of Agreement:

A. All agencies support a freeze, at 1986 levels, on production/consumption of CFCs 11, 12, 113, 114, 115, and Halons 1211 and 1301, to take effect one or two years after the protocol enters into force.

B. All agencies support regularly scheduled assessments of scientific, economic, technological and environmental factors, prior to any emissions reductions, to enable to parties to adjust the reduction schedule and add or subtract chemicals.

Remaining Questions:

A. Should the delegation seek an automatic 20 percent reduction (subject to reversal upon 2/3 vote) to take effect four years after entry into force?

Yes -- EPA, Commerce, Justice - Lands Division, Energy, State, NASA, OPD

No -- OSTP

Other agencies?

B. Should the delegation seek an additional 30 percent reduction to take effect 8 to 10 years after entry into force and after a majority vote affirming the reduction at a designated future time?

Yes -- EPA, Commerce, Justice - Lands, Energy, State,
NASA, OPD

No -- OSTP

Other agencies?

C. Alternatively, should the delegation seek the additional 30 percent reduction to take effect 8 to 10 years after entry into force automatically unless reversed by a 2/3 vote?

Yes -- EPA, State

No -- Commerce, Justice - Lands, Energy, OMB, OSTP,
OPD, USTR

Other agencies?

D. Should the delegation seek additional scheduled reductions beyond the cumulative 50 percent reduction achieved through the 20 and 30 percent reductions?

Yes -- EPA and State (even if reductions are automatic unless reversed by 2/3 vote)

No -- OSTP

Allow for future consideration -- Commerce, Justice - Lands, Energy, OMB, OPD

The Working Group recommends that the U.S. delegation seek a freeze at 1986 levels; regularly scheduled assessments of scientific, economic, technological and environmental factors for review in future reduction decisions; a 20 percent reduction to take effect four years after entry into force unless reversed by a 2/3 majority vote; an additional 30 percent reduction to take effect 8 to 10 years after entry into force if affirmed by a positive majority vote of the parties; and allowance for further reductions if confirmed by future majority votes of the parties.

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

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

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

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

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

There is also inter-agency agreement that the U.S. delegation should seek to include a system of voting which would give due weight to the currently significant producing and consuming countries.

The Working Group recommends that the U.S. delegation continue to negotiate for widespread global participation and a voting system which would credit the major producing and consuming countries.