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Last Updated: 04/03/2024

DRAFT OZONE ISSUE PAPER OUTLINE

ISSUE

What action should the Administration take with respect to the international and domestic proposals for the control of chemicals that deplete stratospheric ozone?

BACKGROUND

1. Review of the credible scientific findings and projections regarding:
 - A. Stratospheric ozone levels
 - B. Atmospheric concentrations of ozone-depleting chemicals
 - C. Potential effects of ozone depletion (as specific as possible as to what effects are likely for various levels of potential depletion)
2. Description of the ozone-depleting chemicals at issue including domestic and international analysis of:
 - A. Production and use levels over time
 - B. Breakdown of uses
 - C. Chemical cost as a component of a product or of a production process
3. Review of domestic and international actions to date
 - A. UNEP negotiations toward protocol
 - B. Domestic litigation
 - C. Domestic legislative proposals
 - D. Importance of proceeding internationally (including description of precedential nature of the protocol)
 - E. Interconnection of international and domestic action

OPTIONS

1. Attempt to reach acceptable international agreement on a protocol for the control of ozone-depleting chemicals in the

July 1987 negotiating session. To be acceptable, an agreement would have to provide for satisfactory treatment of the following issues:

- A. Measurement of emissions
 - B. Country coverage (including issues involved with developing countries)
 - C. Chemical coverage
 - D. Emissions control levels (including timing)
 - E. Periodic assessment of scientific, technological and economic developments
 - F. Trade Aspects
2. Impose domestic controls in lieu of or in addition to an international agreement.
 3. Continue international and domestic review and discussion to assemble additional scientific information; delay international or domestic action until such information is available.

Mary Beth Ozone
FYI 33

THE WHITE HOUSE

WASHINGTON

May 12, 1987

MEMORANDUM FOR NANCY J. RISQUE

FROM:

RALPH C. BLEDSOE 

SUBJECT:

Stratospheric Ozone Status

Attached is an Issue Summary on Stratospheric Ozone. It calls for DPC consideration of the issue on May 20, with a backup date of May 27. The President can be presented the issue sometime in mid-June if necessary. Final U.S. positions will be taken at the protocol negotiations in late June, and the protocols are scheduled to be signed in September.

For the forthcoming hearings by Sen. Baucus, agency testimony was due by COB yesterday. OMB has scheduled a meeting for 4:00 p.m. today to review proposed testimony. Agencies still hold somewhat differing positions on some aspects of the protocols, but all know the issue will be considered by the Domestic Policy Council.

THE WHITE HOUSE

WASHINGTON

May 12, 1987

MEMORANDUM FOR NANCY J. RISQUE

FROM:

RALPH C. BLEDSON 

SUBJECT:

Ozone Layer Protocol Negotiations

Issue - What should the U.S. position be on the protocol to protect the stratospheric ozone layer by controlling emissions of ozone-depleting substances.

Background - Because of the global nature of stratospheric ozone depletion, a delegation, led by the State Department, has been involved in international negotiations to reduce the use of chemicals that appear to damage the ozone layer. These chemicals are included in the following seven broad categories: solvents, refrigerants, foam blowing, fire extinguishing agents, sterilants, aerosol propellants, and miscellaneous uses.

There have been three negotiating sessions to date, the first in December 1986, the second in February 1987, and the third in April 1987. The general objectives for the U.S. Government are delineated in State Department Circular 175 of November 28, 1986. These objectives include:

- (a) a near-term freeze on the combined emissions of the most ozone-depleting substances;
- (b) 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 (could be as much as 95%), subject to c; and
- (c) periodic review of the protocol provisions based upon regular assessment of the science, so as to reduce or add chemicals, or change the schedule or the emission reduction target.

Since the negotiations are now reaching a stage where final positions are to be taken, and due to the broad impacts of these positions, several Cabinet agencies have asked that the Domestic Policy Council should review the the U.S. position and give guidance to the U.S. negotiating team on the following Administration positions:

- o reduction of ozone-depleting chemicals;
- o the scope of chemicals covered;
- o the stringency and timing of any freeze;
- o sanctions for non-participating members;
- o provisions to protect countries who are party to the protocol from being put at a competitive disadvantage vis-a-vis non-parties;
- o exemption of less developed countries from the protocol;
- o a schedule for scientific, technical, and economic review;
- o the timing of the entry into force of any protocol;
- o and other miscellaneous issues.

Recommendations

That the Working Group on Energy, Natural Resources and the Environment, which has been meeting periodically to review the progress of the international negotiations, prepare an options paper for discussion by the Domestic Policy Council at a meeting scheduled for May 20, 1987.

Consistent with the above, OMB should coordinate the review of testimony to be presented before the Subcommittee on Environmental protection, the Subcommittee on Hazardous Waste and Toxic Substances, and the Senate Committee on the Environment and Public Works, May 13-15, 1987.

The final decisions on the U.S. positions can be reviewed and approved by the President and the Council in early June 1987.

DRAFT

MAY - 8 1987

STATEMENT
OF
EILEEN CLAUSSEN
DIRECTOR, OFFICE OF PROGRAM DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
AND THE
SUBCOMMITTEE ON HAZARDOUS WASTE AND TOXIC SUBSTANCES
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE

MAY 13, 1987

Good morning. I am pleased to have the opportunity to present to you our preliminary analysis of the costs and benefits of possible measures to protect stratospheric ozone, and our view on short-term adjustments that can be made to respond to these measures.

Before describing our analytic process, I want first to underscore the fact that this is an on-going effort, and that we expect to add to and improve our regulatory and economic analysis. We have brought together a substantial data base on costs and benefits, and have used this data base to develop our initial estimates. The numbers presented today should be viewed with some caution as they may be modified in the future.

The discussion of our analysis of costs and benefits will be followed by a brief description of our efforts related to chemical substitutes.

Development of Analytic Framework

The framework that we have developed includes data on the most damaging ozone depleters (e.g. the fully halogenated chlorofluorocarbons, CFCs). This includes CFC-11, CFC-12, and CFC-113; and two brominated compounds: Halon 1211 and Halon 1301. These compounds are used in a wide variety of products and processes.

To accurately characterize the disparate uses of CFCs and Halons, we have collected data and explored control opportunities for 7 broad use categories:

- ° Solvents
- ° Refrigeration
- ° Foam blowing
- ° Fire extinguishing agents
- ° Sterilants
- ° Aerosol propellants
- ° Miscellaneous uses

For each of these categories, we have looked at different use patterns and technical options for change. As a result, we have broken down the broad uses into 81 specific application categories. For example, within the broad use category of foam blowing, we consider 9 specific applications:

- ° Extruded polystyrene boardstock
- ° Extruded polystyrene sheet
 - egg cartons
 - single service
 - single service hinged containers
 - stock food trays
- ° Flexible urethane foam
 - molded
 - slabstock
- ° Rigid polyurethane foam
 - boardstock, furniture
 - boardstock, construction & building

We have utilized the technical expertise of a team of consultants to help us explore current uses and control options for each application. The consultants estimated the current CFC and Halon use, identified the technically feasible control options and provided preliminary estimates of control costs. They examined opportunities for emissions and process controls, recycling, and product and chemical substitutes. The firms drew on a range of past work and industry estimates.

The data collected in this initial effort were collated and integrated into a master data base. The cost estimates that were developed for over 600 control opportunities are currently being more fully documented, and will be available for review within one month.

Because of the long-term nature of this issue, control options were evaluated for short, medium, and long term periods. For example, the control options for CFC-11 applications in slabstock polyurethane foams were identified as:

- ° Short term options (0 to 3 years)
 - cotton batting
 - minimum foam density specification
 - minimum foam density specification with alternative blowing agent
 - alternative blowing agents
 - vertical foam chamber
 - water-blown systems
- ° Medium term options (3 to 7 years)
 - carbon adsorption / recycling
 - formic acid "AB" process
 - vertical foam chamber and carbon adsorption
- ° Long term options (7 years or longer)
 - CFC 123
 - CFC 141b
 - plastics / semi-flexible foam

The costs, effectiveness, and applicability of each control option were evaluated. The costs of the control options were traced through all steps in their design, implementation, and operation. When appropriate, vintaging of existing stocks was taken into account. Control costs were broken down into:

- ° Individual control costs
 - start-up / one-time costs
 - recurring capital costs
 - annual costs
 - salvage costs
- ° Societal costs
 - energy costs
 - other penalties
- ° Industry impacts
- ° Overall regulatory impacts

Summary of Initial Results

Based on this extensive analysis of the current uses of CFCs, we believe that substantial low cost reductions are available using currently available technologies. While our data are not conclusive, and some of the reductions might not be realized, our initial analyses suggest that reductions up to 30 percent of current use might be possible *without chemical substitutes and* at a cost of 0.15 dollars per kilogram. Let me emphasize that these *about* reductions do not assume that new technologies or new chemical substitutes become immediately available. Reductions are achieved by such methods as alternate test gases, increased recycling and product substitutes. For example:

- ° CFC-11 used in rigid polyurethane foam packaging could be replaced in most applications by fiber-based materials.
- ° CFC-113 used in metal degreasing and electronics cleaning could be more effectively captured and recycled.
- ° CFC-11 used in centrifugal chillers could be recycled instead of released during servicing.
- ° CFC-12 used in mobile air conditioning to test for leaks could be replaced by other test gases.
- ° Halon 1301 released during tests of total flooding systems could be reduced by better system design
- ° CFC-12 used in hospital sterilization could be replaced by units which recycle the CFC.
- ° CFC-12 blown food packaging products could be replaced by paper packaging.

A longer list of possible steps to reduce current uses of CFCs and Halons is attached to this testimony.

The estimates we have been able to develop for costs of meeting a particular regulatory goal could change and should be viewed with caution. Our initial work so far suggests a freeze at 1986 levels on CFC-11 and CFC-12 would result in cumulative costs from 1985 to 2000 of around \$200 million while the costs of a 30% reduction would be on the order of \$700 million.

Note: Let's use costs associated with 20% if available — more representative of current negotiations

The above cost estimates assume that individual firms implement available least cost reduction steps. However, not all low-cost reductions identified in our data base will be taken. Moreover, some identified costs could not be accurately estimated, and we, of course, cannot account for likely hidden costs and complications. In addition, some controls are incompatible. In contrast, certainly not all possible methods of reduction have been identified. Some are impossible to know, given the proprietary nature of their technologies. In other cases, market incentives will unleash innovation, which leads to new or lower cost controls. New options will undoubtedly be developed as cost incentives rise.

Beyond the initial short-term period (0-3 years), additional reductions would be possible as new capital replaces old capital. Moreover, beyond five years, if adequate price incentives exist, additional reductions through chemical substitutes might be possible. Thus, any costs of meeting a regulatory goal will be extremely sensitive to the timing of implementation. In addition, the certainty of the regulatory goal would also strongly influence movement toward low cost reductions to CFCs and Halons.

Summary of Benefits from Reductions

The costs presented in these analyses can be compared to the benefits of stratospheric ozone protection. By reducing growth in CFC and Halon emissions, the control strategies are projected to reduce stratospheric ozone depletion, thereby

It should be noted that CFCs have a primary, harmful effect on humans. In other words, they are not known to be toxic. Instead, it's their secondary effects, their ozone depletion qualities that impact our environment by reducing future increases in harmful ultraviolet radiation.
In addition, reductions in CFC and Halon emissions ^{potentially} ~~will~~ ^{should} slow ~~and consequently~~ ^{effect} global climate change. *humans.*

→ The effects of stratospheric ozone depletion and global climate change were analyzed in our recently completed risk assessment: "Assessing the Risks of Trace Gases that Can Modify the Stratosphere". The report, which was recently reviewed by the Agency's Science Advisory Board, also presents the models used to compute health and environmental effects due to ozone depletion.

Using these models, we find that control strategies lead to substantial reductions in harmful effects. For example, under the "no controls" scenario, with increased growth in CFCs (i.e., 2.5% annual growth), the number of skin cancer cases in the U.S. ^{could} ~~would~~ increase by 105 million (there are currently 500,000 skin cancers annually), and the number of premature deaths by 2 million among the population alive today and born through 2075. *(i.e., numbers include possible cancer cases and deaths that may occur well into the 22nd century)* For a global freeze on current CFC production levels, 92 million excess skin cancer cases and 1.8 million deaths ^{could} ~~would~~ be averted. For a 50% global phase-down on world CFC production, 97 million excess skin cancer cases and 1.9 million deaths would be averted. *(This assumes that developing nations continue using CFCs at ever-increasing amounts.)* While more difficult to quantify, controls on CFCs would lead to other benefits to human health and welfare and the environment. These benefits ^{apply to} ~~would~~ include reduced damage to the eye and the immune system, reduced degradation of outdoor polymers,

These calculations assume no changes in population behavior, societal behavior regarding tanning, medical knowledge, diagnosis, treatment, or prevention through this time period.

reduced formation of ground-level ozone, reduced contribution to global warming and sea level rise, and reduced perturbations to terrestrial and aquatic ecosystems.

Chemical Substitutes

In addition to our identification of existing control options for CFCs, we have initiated a special effort to explore promising new chemical substitutes for CFCs. We have convened a panel of internationally recognized chemists, engineers, and toxicologists from industry and academia to explore questions of technical and economic feasibility as well as safety of new compounds that are less harmful to stratospheric ozone. The panel, chaired by Dr. Richard Lagow of the University of Texas, included representatives from the United States, Japan, the United Kingdom, and the Federal Republic of Germany.

The panel has met in two sessions -- in Washington, DC in February 1987 and in California in April 1987. The panel concluded that it is the absence of a market for higher priced chemicals -- not technical or environmental barriers -- that is slowing the commercialization of new, less harmful chemicals. The panel stated that it felt that only worldwide governmental regulations could provide sufficient incentives to commercialize the new chemicals. If regulation of the existing chemicals increased their price sufficiently, the panel projected that ^{some of} the new chemicals could be marketed within six years.

The panel also concluded that the most promising new chemicals -- FC134a and CFC-123 -- can be produced using a variety of technologies that are available throughout the world. They rejected the possibility that a monopoly would develop and predicted that these new chemicals will be competitively produced and priced. A representative from E.I. DuPont de Nemours & Co., Inc. stated that at full-scale commercialization, the company would offer FC134a at a price between two dollars per pound and four dollars per pound. The price of CFC-12 is approximately 70 cents per pound.

Representatives from the automobile and refrigeration industries expressed a preference for a "drop-in" chemical such as FC134a, even if it were priced several times higher than existing CFCs, because these chemicals are a small component of equipment cost and would require less changes in refrigeration equipment. However, representatives of the rigid foam insulation industry expressed concern that they could not afford major price increases for CFC-11. CFC-11 is priced at 60 cents per pound and its potential alternative, CFC-123, is estimated by DuPont to cost \$1.25 per pound to \$2.50 per pound once full-scale commercialization is achieved. The panel identified the most promising substitutes, the likely range of cost, and the time necessary for commercial production.

Conclusion

As part of our effort to evaluate the impact of possible reductions of ozone-depleting chemicals, we have developed an extensive data base on potential costs of limiting CFCs and Halons. ^(present) This information ^{indicates} ~~demonstrates~~ that low cost reductions of up to 30 percent appear possible in the short term given currently available technologies. Additional reductions are possible after three years even in the absence of new chemicals. According to current estimates, if toxicity problems are not encountered, FC134a, a possible substitute for CFC-12, could be available in five to six years if the price of CFC-12 rises sufficiently ~~as a result of regulation.~~

Refinement of the data base continues.

DRAFT

MAY 12 1987

TESTIMONY OF
LEE M. THOMAS
ADMINISTRATOR
U. S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
AND THE
SUBCOMMITTEE ON HAZARDOUS WASTE AND TOXIC SUBSTANCES
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE

MAY 14, 1987

Good morning Mr. Chairman and members of the Subcommittee. I am pleased to be here to discuss with you my Agency's recent activities related to stratospheric ozone protection.

As I have stated on several occasions before yours and other subcommittees, I view our efforts related to stratospheric protection as critically important. I am pleased to report that we have made substantial progress in dealing with this issue and in developing safeguards against the human health and environmental risks that would occur if there were depletion of the ozone layer.

I want to use this opportunity to briefly describe what I think we have accomplished and where we hope to go from here. I want to focus on activities related to our risk assessment, to the international negotiations, and to our domestic regulatory process.

Page 5 is 1
vital page

RISK ASSESSMENT

In late 1986 EPA staff completed an extensive 5-volume risk assessment document which presented the current scientific understanding related to stratospheric ozone. The document discusses likely trends in trace gases that create or destroy ozone, their effect on current and future trends in ozone levels, and the health and environmental effects if ozone depletion occurs.

To review this document, EPA's Science Advisory Board assembled a special panel of experts chaired by Dr. Margaret Kripke. Since she has already testified at these hearings, I will only briefly touch on my understanding of the outcome of their review.

In general, the panel thought that EPA had done a "commendable job" of synthesizing the relevant scientific information. They supported the basic thrust of the document -- that large risks of depletion exist if CFC use continues and that such depletion could lead to increased exposure to UV-B radiation resulting in higher incidences of skin cancers and cataracts, changes in the immune system, changes in plants and aquatic organisms, weathering of materials, and increased formation of ground-level ozone. They also reported that more sophisticated models suggest greater depletion is likely at higher latitudes. At the same time, their report underscored that only limited research has been conducted on many of these effects and that in the areas other than skin cancers, it is impossible to quantify risks.

I am also aware of ongoing research which raises important questions concerning the magnitude of the problem. The risk assessment and the decisions made to date assume that not enough is now known about the cause of the Antarctic ozone hole to determine whether this phenomenon is the result of CFCs or whether it has implications for the rest of the globe. While these questions still remain, the early evidence from the National Antarctic Ozone Expedition appears to suggest that chlorine chemistry does play a role. This initial evidence further underscores the need for timely and effective actions to limit the global use of CFCs.

INTERNATIONAL NEGOTIATIONS

Because of the global nature of this issue, EPA has made a considerable effort to support U.S. government activities related to obtaining an effective international agreement to protect the ozone layer. We have taken a leading role, along with NASA and NOAA, in assisting the Dept. of State in numerous meetings with scientists and policy-makers from other countries as part of our efforts to convey to them the seriousness of this issue.

Drawing extensively from the risk assessment and from cost impact studies being conducted by the Office of Air and Radiation, EPA was also instrumental in developing the U.S. position for the international negotiations. This position called for a near term freeze of the fully halogenated chlorofluorocarbons and Halons, and a longer-term reduction of

emissions of these chemicals of up to 95% tied to a periodic assessment based on scientific, economic and technical considerations.

This position has been a strong factor in moving other nations in the direction of an effective protocol. In fact, it now constitutes the basic framework for the protocol which is beginning to emerge from the negotiations.

In the last round of negotiations, the U.S. negotiating team explored with delegates of other countries a wide range of possible reduction measures based on the view that the rate and magnitude of such reductions were closely linked. Given the broad spectrum of views that existed among parties to the negotiations, we felt it important that the delegation have flexibility to explore possible control measures consistent with our basic objectives. Thus, the U.S. position allowed for exploration of options between the 20% reduction supported by the European Economic Community and the original U.S. position.

These instructions were developed following an extensive series of briefings involving other interested Federal agencies. EPA actively participated in these briefings and along with others both within and outside government presented background materials and analysis related to this issue.

As you are aware, the text that emerged from the April negotiating session called for:

- a freeze within 2 years,
- a 20% reduction 2 years later, or 4 years after entry into force (EIF) of the protocol,
- an additional 30% reduction (for a total of 50%) either 4 years later (6 years from EIF) but requiring a positive majority vote; or 6 years later (8 years from EIF), automatically, and
- a final reduction to possibly include virtual elimination of the use of CFCs to be decided based on a vote of the parties.

The Administration strongly supports the provision that requires an automatic reduction of 50% within 8 years from entry into force because we believe that the automatic reduction step coupled with the slightly longer time period provides for both the certainty and the time necessary for industry to move forward aggressively with the development of chemical substitutes. The Administration also strongly supports the final step that would require a reduction of up to 95% based on a positive vote of the parties. We believe that we should make this position clear as we enter the next round of international negotiations.

Ambassador Benedick will be providing you with a detailed description of the outcome of the last round of negotiations. I just want to emphasize that I believe that substantial progress has been achieved and that a strong agreement within the current timetable appears to be within our grasp. The text developed by the session chair could form the basis for an effective international agreement. I want to assure the members of this Subcommittee that we intend to actively pursue the successful completion of these negotiations and look for your support in accomplishing this goal in the coming months.

DOMESTIC REGULATORY ACTIVITIES

At the same time that we have been aggressively pursuing an international agreement, we have also been conducting a detailed review of domestic regulatory options. We are considering possible regulation in two contexts. Should a satisfactory international protocol be reached, regulation will be needed to implement it domestically; given the global nature of this issue, this certainly would be the preferred approach. Alternatively, in the event that the ongoing negotiations are not successful, we will consider acting either in conjunction with other "like-minded" nations or unilaterally. Let me add that if the latter action proves necessary, we would endeavor to adopt measures which provide the maximum leverage to encourage other nations to join us in reducing their use of CFCs.

Last week, EPA, in a joint motion with NRDC, asked the U.S. District Court for the District of Columbia to modify its order establishing a schedule for an EPA decision on further CFC regulation. Despite our best efforts, we have not completed our review of regulatory options. We did not anticipate the the level of complexity and breadth of analysis required and the substantial effort and time the international negotiations have entailed. We therefore asked the Court to allow us to delay that decision until December 1, 1987, and to postpone a final decision from November 1, 1987 to August 1, 1988.

The additional time will permit us to complete numerous detailed studies now underway that will provide additional information for analyzing these options. The extended timeframe also allows for the continuation of the international negotiations, which are now scheduled to conclude in September of this year, without any possible interference which might result from announcement of a U.S. domestic proposal. EPA and the Department of State agree that publication of a proposed EPA decision at this time would risk unsettling the negotiations at a critical juncture.

CONCLUSION

We have come a long way since last June when I first testified before this subcommittee on the issue of ozone depletion. Given the complex nature of this issue and the need to involve other nations of the world, I think that we have made substantial progress. If we succeed in bringing these efforts to fruition and obtain an effective agreement

this September in Montreal, we will have demonstrated that nations working together can deal with the increasingly difficult problem of global pollution, including emissions of ozone-depleting chemicals.

THE WHITE HOUSE

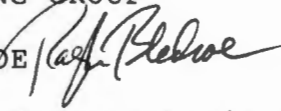
WASHINGTON

May 15, 1987

MEMORANDUM FOR THE ENRE WORKING GROUP

FROM:

RALPH C. BLEDSOE



SUBJECT:

Draft Paper on Stratospheric Ozone

Attached is a draft of the paper on the Stratospheric Ozone issue to be distributed to the Domestic Policy Council in advance of the meeting scheduled for next Wednesday, May 20, 1987. Please provide your comments on this paper to either Bob Sweet or me by Monday, May 18 at 10:00 a.m.

The text of the OMB "fact sheet" attachment will be routed separately. Thanks for your timely response.

DRAFT

May 15, 1987

MEMORANDUM FOR THE DOMESTIC POLICY COUNCIL

FROM: THE ENERGY, NATURAL RESOURCES & ENVIRONMENT
WORKING GROUP

SUBJECT: Stratospheric Ozone Protocol Negotiations

Issue - What should the U.S. position be on the protocol to protect the stratospheric ozone layer by controlling emissions of ozone-depleting substances.

Background - Because of the global nature of stratospheric ozone depletion, a delegation, led by the State Department, has been involved in international negotiations to reduce the use of chemicals that appear to damage the ozone layer. These chemicals are included in the following seven broad categories: solvents, refrigerants, foam blowing, fire extinguishing agents, sterilants, aerosol propellants, and miscellaneous uses.

There have been three negotiating sessions to date, the first in December 1986, the second in February 1987, and the third in April 1987. The general objectives for the U.S. Government are delineated in State Department Circular 175 of November 28, 1986. These objectives include:

- (a) a near-term freeze on the combined emissions of the most ozone-depleting substances;
- (b) 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 (could be as much as 95%), subject to c; and
- (c) periodic review of the protocol provisions based upon regular assessment of the science, so as to reduce or add chemicals, or change the schedule or the emission reduction target.

The Working Group on Energy, Natural Resources and the Environment has been meeting periodically over the past several months and has considered a number of complex aspects of stratospheric ozone depletion. A fact sheet is attached that summarizes the available scientific, environmental, economic, and international data being used to address this issue.

Discussion - Since the negotiations are now reaching a stage where final positions are being influenced, and due to the broad impact of these positions, several Cabinet agencies have asked

that the Domestic Policy Council review the U.S. position and give guidance to the U.S. negotiating team on several elements of our position.

The negotiating team will next meet with the representatives of other countries on June 29 to discuss the Chairman's text. At that time they will address the chemicals to be covered, the timing and stringency of the controls, and the application of scientific data to this process. Following these meetings, the Council will be informed, and asked for further guidance on the U.S. final position prior to the full negotiating meeting on September 8, 1987.

DPC Guidance - General DPC guidance is sought at this time on the following issues:

1. Chemical Coverage

- The U.S. objective is to achieve the broadest coverage of major ozone depleters on a weighted basis, including halons.
- The European Community, Japan, and the USSR wanted only CFC 11 and 12; but now may agree to CFC 113, 114, 115, and maybe halons.
- Options include seeking differential coverage, i.e. reducing some and only freeing others. There is some concern about reducing Halons, given its defense uses.
- Here in the U.S., there is broad interagency agreement on chemical coverage. The negotiating team will press for the broadest attainable coverage, subject to DPC guidance.

2. Stringency and Timing of Controls; Relationship to Periodic Assessments

- Key issues are:
 - o Stringency: Should there be an initial freeze and subsequent reductions? What should the level be and in what increments?
 - o Timing: There appears to be environmental benefits for early action to reduce CFC's, in that it would encourage industry to develop CFC substitutes. However, there is also a need to provide time for adjustment if scientific dictates.
 - o Relationship to periodic reassessments of scientific, technological and economic factors scheduled by protocol: Should we go for (1) planned reductions

subject to reversal by vote of parties after reassessment, or (2) target levels to be implemented only by positive vote after reassessment, or (3) no targeted reductions?

-- The Chairman's text (attached), released after the last negotiating session in April 1987, represents a possible emerging international consensus and is a convenient vehicle for review. It includes:

- o Freeze at 1986 levels of production/consumption of CFC 11, 12, 13, [114, 115] within two years after entry into force (EIF) of the protocol. Likely freeze date 1992.

- o 20% reduction 4 years after EIF (will go into effect unless reversed by two-thirds vote of parties after scheduled reassessment). Likely date 1994.

- o Additional 30% reduction, to be implemented after scheduled reassessment either

- 6 years after EIF (likely date 1996), if positively confirmed by majority vote of parties, or

- 8 years after EIF (likely date 1998), unless reversed by two-thirds vote of parties.

- o Additional steps down to possible eventual elimination of ozone depletion would be decided subsequently by parties based on periodic reassessments.

Evidence: Should U.S. delegation seek agreement along lines of chairman's text, work for greater stringency/earlier impact, or propose some relaxation in terms?

- (a) Freeze. Interagency accord, within 1-2 years of EIF.

- (b) 20% reduction. General interagency agreement, except some agencies believe implementation should require positive vote of parties following reassessment.

- (c) Additional 30% reduction. There is interagency disagreement here.

- Should reduction beyond first 20% be scheduled; if so, at what level?

- Should reduction 6 years after EIF be subject to a positive vote, or 8 years after EIF subject to reversal, or either? Other?

- (d) Additional steps. Should the delegation press for further reductions? If so, at what levels and time frame? Should they require a positive vote or be implemented unless there is a vote for reversal?

3. Control Formula and Trade Provisions: (Still needs work; seeking guidance in principle.)

(A) Trade Among Parties.

Significant differences remain among governments over formula for regulating controlled chemicals.

- o Options include national ceilings on production; production plus imports combined or separately; or "adjusted production." The U.S. preference presently is production plus imports (less exports to parties, less amounts destroyed), or combinations thereof.
- o An interagency agreement favoring "adjusted production," but compromise may be required.
- o U.S. objectives include effective control of emissions with accountability, fewest restriction on the flow of trade and capital among parties, most favorable formula for U.S. industry.
- o Subject to DPC guidance, the delegation will pursue these objectives and seek DPC approval of specific recommendations.

(B) Trade With Non-Parties.

-- Key elements:

- o Wide international consensus on:
 - Ban on imports of controlled chemicals in bulk from non-parties. There is wide international consensus here.
- o No international consensus on:
 - Restrictions on exports of bulk chemicals.
 - Restrictions on imports of products containing controlled chemicals.
 - Consideration of restrictions on products made with controlled chemicals.
 - Consideration of restrictions on export of technology.

- U.S. objectives: to regulate trade in order to encourage adherence to protocol and avoid benefits to non-parties at expense of parties. Proposals consistent with GATT. Implementation timed to minimize dislocation.
- Interagency consensus in favor of strong trade article including trade in bulk chemicals and products containing them.
- Subject to DPC guidance, delegation will pursue these objectives and seek DPC approval of specific recommendations.

4. Participation.

- U.S. objective: To encourage effective global control through widest possible participation by other countries.
- Problem: The less developed countries need concessions for domestic consumption to encourage adherence; exemptions must remain sufficiently limited to avoid undercutting global controls. The concessions proposed could double global production ceiling of fully used within the period allowed.
- The most promising option entails exemption from controls for limited period for least consuming countries (LDCs) followed by adherence.
- Related problem: Majority LDC membership could control protocol voting to U.S. disadvantage. Should U.S. press for weighted voting?
- This issue needs more work. Subject to DPC guidance, we will refine in our negotiations and seek DPC approval of specific recommendations.

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

Third Session
Geneva, 27-30 April 1987

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

ARTICLE II: CONTROL MEASURES

1. Each party, under the jurisdiction of which CFC 11, CFC 12, CFC 113, (CFC 114, CFC 115) are produced shall ensure that within (2) years after the entry into force of this Protocol the (combined annual production and imports) (combined adjusted annual production) of these substances do not exceed their 1986 level.
2. Each party, under the jurisdiction of which substances referred to in paragraph 1 are not produced at the time of the entry into force of this Protocol, shall ensure that within (2) years from the entry into force of this Protocol (its combined annual production and imports) (its combined adjusted annual production) do not exceed the levels of imports in 1986.
3. Each party shall ensure, that within (4) years after the entry into force of this Protocol levels of substances referred to in paragraph 1 attained in accordance with paragraphs 1 and 2 will be reduced by 20 per cent.
4. Each party shall ensure that within (6) (a), (8) (b) years after the entry into force of this Protocol, the 1986 levels of substances referred to in paragraphs 1 and 2 will be further reduced (by 30 per cent), (a) (if the majority of the parties so decide, (b) (unless parties by a two-third majority otherwise decide), in the light of assessments referred to in Article III, such decision should be taken not later than (2) (4) years after entry into force.

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

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

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