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Folder Title:
Ozone Letter - Environment Committee

Stack:	Row:	Section:	Shelf:	Position:
S	61	5	6	2

southern hemisphere → largest ↓ in October.

mid/late 1970's → dramatic decrease in Antarctic ozone.

vortex breaks up late in spring w/ warming

TOMS = satellite.
↳ measures amt of sunlight scattered back.

solar cycle theory → NO_x causing ↓ → but not → low NO_x.

CH_3Cl = a nat'l source of Cl -- from oceans but on 0.7 ppb v/v

springtime minimum profile over Antarctica – lowest 87 – 89 smaller less bad.

*Montreal Protocol based on models that don't incorporate heterogeneous chemistry.

* problem of HCFC's = reactive & ∴ taken in troposphere.

* global warming potential ↑ w/ ↓ ozone depletion potential.

KM → BAR?

TERMS AND DEFINITIONS

TROPOSPHERE - the first 10 - 12 km (6.2 - 7.5 miles) of the atmosphere above the earth

STRATOSPHERE - the 2nd atmospheric layer extending to ~50 km

OZONE LAYER - ozone (O_3) is at a maximum at about 25 km (~ 15 miles). The ozone layer shields the earth from ultraviolet (uv) radiation from the sun. (The ozone layer is a thin layer in the stratosphere; if it were brought down to sea level, this layer would be only 3 mm deep.) The column abundance of ozone is typically ≥ 300 DU (DU - Dobson Unit; 1 DU = 2.6×10^{16} molecules/cm^2)

OZONE DEPLETION - globally, this refers to a thinning of stratospheric ozone (on the order of 1%)

OZONE HOLE - the severe depletion of the ozone layer occurring seasonally (springtime) since the late 1970's over the Antarctic (up to 50% of the ozone has been destroyed)

POLAR STRATOSPHERIC CLOUDS - clouds that occur in the stratosphere over the poles due to very cold temperatures

RESERVOIR SPECIES - species that are not reactive;for example, hydrogen chloride (HCl) and chlorine nitrate ($ClONO_2$) are chlorine reservoir species - the chlorine is bound up in a form that does not react with ozone

REACTIVE SPECIES - species that are reactive; for example, chlorine atoms (Cl) readily react with ozone

PHOTOCHEMICAL REACTION - a chemical reaction caused by energy from the sun (light)

PHOTODISSOCIATION - the break-up of a molecule by energy from the sun; for example, $O_2 + h\nu \rightarrow O + O$ ("hv" is the symbol for a photon, a discrete unit of energy transmitted by electromagnetic radiation.)

NEWS FROM

U.S. Senator Al Gore

(D - Tennessee) SR 393 Russell Building, Washington, D.C. 20510 (202) 224-4944

FOR IMMEDIATE RELEASE
WEDNESDAY, MAY 9, 1990

CONTACT: Marla Romash
202-224-7155
202-547-0806 (H)

GORE TO ADMINISTRATION:
DROP THE 'WHAT, ME WORRY?' ENVIRONMENT POLICY
Calls Administration Refusal to Back Int'l Plan Outrageous

WASHINGTON -- Calling the administration's refusal to support an international plan to protect the earth's atmosphere "shortsighted and just plain outrageous," Sen. Al Gore, D-TN, today (5/9) said U.S. policy on these issues is becoming an embarrassment and a serious obstacle to urgent actions critically needed. Gore, chairman of the Interparliamentary Conference on the Global Environment which concluded May 2, pointed to agreements reached there among the 42 nations that participated.

"It's time for this Administration to drop its 'What, me worry?' attitude toward the environment," Gore said. "It's time to take off the sunglasses and the floppy hats, come out from under the umbrella and stop hiding from an environmental problem we can do something about."

"Their footdragging is becoming an embarrassment. It is shortsighted and just plain outrageous," Gore said. "In country after country, policy makers and scientists, and government leaders recognize we need to take action now. In our country, the Administration says, 'We'll worry about it tomorrow.' If we don't act today, the problems we face tomorrow could be insurmountable."

Delegates to the Interparliamentary Conference on the Global Environment, sponsored by the U.S. Senate, approved a resolution calling for dramatic reductions in emissions of ozone-depleting chemicals and greater protections for the stratospheric ozone. Included among the recommendations were significant improvements in the Montreal Protocol.

"Lawmakers from around the world are bringing back to their governments the agreements we reached for stronger protections and new action. Meanwhile, our government is sitting on its hands with dead weights tied around its ankles. It just doesn't make sense," Gore said.

NOTE: COPIES OF THE RESOLUTIONS ON OZONE DEPLETION AND CLIMATE CHANGE APPROVED BY THE INTERPARLIAMENTARY CONFERENCE ARE ATTACHED. THE CONFERENCE FOCUSED ON FIVE OTHER AREAS AS WELL, WITH RESOLUTIONS APPROVED FOR EACH.

##

United States Senate

WASHINGTON, D.C. 20510

Wednesday, May 9, 1990

The President
The White House
Washington, D.C.

Dear Mr. President,

We are writing to request a meeting with you at the earliest possible date to discuss your recent decision to oppose efforts to strengthen the Montreal Protocol. We are deeply disappointed in your decision and gravely concerned about its implications for the United States and for all of the nations of the world. We strongly believe this decision should be reversed immediately so that the Geneva negotiations may produce meaningful new agreements.

By refusing to support an international effort to help developing nations move toward environmentally safe technologies, the United States is threatening to undermine the Montreal Protocol, the single most important international agreement to date to protect the world's environment. At a time when the United States should be providing leadership in the world community, it is instead being isolated within a world community that recognizes an urgent problem and the critical need for action.

We are concerned that advice from the Environmental Protection Agency and the Department of State is being ignored and, in fact a course opposite to their recommendations is being pursued by our negotiators. It is unconscionable to us that U.S. negotiators would be instructed to reject a provision calling for the industrialized nations of the world to provide minimal sums for technology conversion to developing nations who want to comply with the Protocol. Serious questions remain about our policy in light of this action.

The negotiations underway in Geneva are critical to the massive international effort to reduce emissions of ozone-depleting chemicals -- an effort prompted by hard, scientific evidence that if we reduce emissions of these chemicals we can protect the ozone layer which shields all life on earth from dangerous ultraviolet radiation.

Here in the U.S. Senate, we acted to strengthen our laws to reduce the use and emissions of these chemicals: we called for the faster phase-out of ozone-destroying chemicals, we called on the federal government to develop a plan to promote the safest alternatives, and we called for the immediate prohibition on the export of technologies that produce these chemicals. We believe that U.S. companies could be in a position to develop alternatives, and to lead the world to post-CFC technologies. This would not only be a great benefit for the environment, but also for U.S. competitiveness in world markets.

Immediate action is needed to change the direction of Administration policy on these issues. We look forward to discussing these matters with you further as soon as possible.

Sincerely,

Al Gore

Alan Cranston

Patrick J. Leahy

John F. Kerry

Joseph Lieberman

Max Baucus

Claiborne Pell

Joseph R. Biden, Jr.

Frank R. Lautenberg

Timothy E. Wirth

Brock Adams

Bill Bradley

file – Bonn Ltr. to Pres.

United States Department of State

Washington, D.C. 20520

JUN 13 1991

Dear Senator Chafee:

Your letter of April 24 concerning the Montreal Protocol, cosigned by 29 of your Senate colleagues and addressed to President Bush, has been referred to the State Department for reply.

In your letter you propose a four-point plan to strengthen the Montreal Protocol on Substances that Deplete the Ozone Layer. Allow me to respond to these points individually:

-- First, you propose that the Protocol's reduction and phaseout schedules be accelerated. The international assessment process established by the Montreal Protocol necessary for any further strengthening is now underway. The U.S. has played and continues to play a leading role in these assessments. Our experts currently chair the science assessment panel of the Montreal Protocol, and co-chair the technical assessment panel. These panels will be issuing reports by late this year, in time for any action by the Parties to the Protocol at their fourth meeting in June, 1992. (Under the terms of the Protocol, proposed amendments must be circulated at least six months before consideration by a meeting of the Parties.) Of course, the recent findings by Dr. Stolarski of NASA regarding further depletion of the ozone layer will be fully incorporated into this assessment process. Domestically, U.S. industry is moving aggressively to reduce its use of ozone-depleting substances: it reduced CFC production by 23% beyond that required by the Protocol during the first control period (July 1989 to June 1990), and is well-positioned to exceed the subsequent phase-down schedules called for in the Protocol.

-- Second, you mention the importance of recapture and recycling to implementing the provisions of the Protocol. This is also an issue that is being examined through the Protocol's international assessment process. Domestically, the Clean Air Act amendments of 1990 require

The Honorable
John H. Chafee,
United States Senate.

substantial new actions on recycling and emissions reductions. The new law restricts the use, servicing and disposal of CFCs and other controlled substances to the "lowest achievable emissions level" and requires maximum recapture and recycling within two years for CFCs, and within four years for other chemicals. EPA is moving forward aggressively to implement these provisions, and the U.S. plans to urge all nations to adopt similar national measures.

-- Third, you call for limits on the production and use of HCFCs. We recognize that the second meeting of the Parties at London last June left the question of these "transitional substances" unresolved. As you know, the United States favored a specified phaseout date for these chemicals. The Clean Air Act amendments currently call for reductions of HCFCs to begin in 2015 and phaseout by 2030. At the third meeting of the Parties in Nairobi next month, we intend to pick up where we left off on this issue, consistent with the dual goals of protecting the ozone layer and providing industry with the appropriate incentives to continue to produce these substitutes in the near term in order to facilitate an early phaseout of CFCs.

-- Fourth, you mention the question of financial aid and technical assistance to developing countries. The U.S. fully agrees that this will be critical for effective implementation of the Protocol. Indeed, this was the motivation behind the establishment of an interim fund last year in London. The fund, currently capitalized at $160 million (this could rise to $240 million when India and China ratify) for three years, is intended to enable developing country Parties to the Protocol to comply with their obligations under the treaty. The U.S. is the largest voluntary contributor to the Fund, providing 25% of the money. We have also been very active in the Fund's Executive Committee, which oversees the Fund's implementation and operation, providing expertise to enable the Fund Secretariat to begin start-up operations. Furthermore, we have an active bilateral program underway, with activities in Mexico, Brazil, Egypt, China, Venezuela and Ecuador.

The leadership of the United States has been a very important part of the international effort to date in protecting the ozone layer. We intend to continue that tradition, pushing for ratification by countries such as China

and India, and calling for full implementation of the Protocol's provisions as well as strengthening them, where justified under the Protocol's reassessment process.

The Department welcomes your interest in protecting the stratospheric ozone layer, and urges the Senate to consent to ratification of the amendment and adjustments to the Montreal Protocol adopted at London last June as soon as possible.

Sincerely,

Janet G. Mullins
Assistant Secretary
Legislative Affairs

Enclosure:
Correspondence returned.

cc: The Honorable Dave Durenberger
The Honorable Richard G. Lugar
The Honorable James M. Jeffords
The Honorable Bob Packwood
The Honorable Slade Gorton
The Honorable Albert Gore, Jr.
The Honorable Harry Reid
The Honorable Joseph I. Lieberman
The Honorable Paul S. Sarbanes
The Honorable Herb Kohl
The Honorable Dale Bumpers
The Honorable Patrick J. Leahy
The Honorable Timothy E. Wirth
The Honorable Bill Bradley
The Honorable John F. Kerry
The Honorable Barbara A. Mikulski
The Honorable J. Robert Kerrey
The Honorable Robert W. Kasten, Jr.
The Honorable Terry Sanford
The Honorable George J. Mitchell
The Honorable Claiborne Pell
The Honorable Quentin N. Burdick
The Honorable Paul Wellstone
The Honorable Edward M. Kennedy
The Honorable William S. Cohen
The Honorable Thomas A. Daschle
The Honorable Richard Bryan
The Honorable Howard M. Metzenbaum

United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510-6175

April 24, 1991

The Honorable George Bush
The White House
1600 Pennsylvania Avenue
Washington, D.C. 20500

Dear Mr. President:

We are writing to urge that you adopt a four point plan to demonstrate United States leadership on the international environmental problem of protecting the Earth's ozone layer. The plan involves specific proposals to strengthen the Montreal Protocol as soon as possible.

As you know, the current version of the Montreal Protocol as modified by the June 1990 London agreement, requires that industrialized nations implement: 1) a step-wise reduction in production and consumption of chlorofluorocarbons (CFCs), leading to a complete phase-out by the year 2000; 2) a step-wise reduction in production and consumption of halons, leading to a phaseout by the year 2000 (except for essential uses); and 3) a step-wise reduction, leading to a phase-out of carbon tetrachloride and methyl chloroform by the years 2000 and 2005, respectively. Our four-point plan includes a number of provisions to modify and strengthen the Protocol.

First, the interim phase-out schedules and the final phase-out dates for all of the ozone depleting chemicals currently covered by the Protocol should be accelerated. Simply moving the final phase-out dates to the year 1997 is not sufficient. The step-wise percentage reductions for the interim years should be increased.

Second, recapture and recycling provisions should be added to the Protocol. These will achieve significant reductions in the emissions of CFCs, halons, carbon tetrachloride, methyl chloroform, and substitute compounds, such as hydrochloro-fluorocarbons (HCFCs), that are destroying the ozone layer or that have the potential to contribute to global climate change. The venting or releasing of any chemicals from refrigeration and air-conditioning units into the atmosphere by date certain, should also be prohibited with new provisions analogous to those in the Clean Air Act.

Third, while the current version of the Protocol will allow unlimited production and use of other ozone depleting chemicals such as HCFCs, a revised, strengthened Protocol should place limits on the production and use of such chemicals. The limits should be designed to discourage the production of HCFCs that have relatively long atmospheric lifetimes, high ozone depletion potentials, or high global warming potentials.

Finally, the Parties to the Protocol need to continue financial aid and technical assistance to developing countries to accelerate their participation and compliance with the terms of the Montreal Protocol.

The ozone layer is under significant attack.

Scientists have already concluded that man-made chlorinated and brominated chemicals are largely responsible for the "Antarctic Ozone Hole" - the large decrease in stratospheric ozone over Antarctica in springtime.

In 1989 scientists confirmed that the same ozone depleting chlorine species found in the Antarctic are also present in the Arctic stratosphere. Thus the Arctic is primed for an ozone depletion event similar to that in Antarctica. Whether or not any future Arctic ozone depletion occurs will depend on the particular meteorology of each Arctic winter.

Most recently, NASA scientists have shown that ozone depletion is not confined to the polar regions of the globe. In fact, there has been a world-wide depletion of the protective ozone column. Specifically, new data shows a significant downward trend of three to five percent in the ozone column over the past twelve years in the northern hemisphere. This actual, measured decrease is larger by a factor of two to three than the decreases predicted by current theoretical models.

The ozone layer cannot tolerate more abuse.

Thinning of the ozone layer allows more high energy ultraviolet radiation to strike the earth's surface, increasing the incidence of skin cancers and cataracts, and potentially suppressing the immune system. Increased ultraviolet radiation has also been shown to damage crops and marine resources.

The new ozone losses measured by NASA raise serious questions about the adequacy of the control measures set forth in the Montreal Protocol to protect public health and the environment. For these reasons, we urge you to place the United States in a position of world leadership and to adopt our four-point plan for strengthening the Montreal Protocol.

We look forward to working with you on this important issue.

Sincerely,

John H. Chafee

Max Baucus

Dave Durenberger

Harry Reid

Richard G. Lugar

Joseph I. Lieberman

James M. Jeffords

Paul S. Sarbanes

Bob Packwood

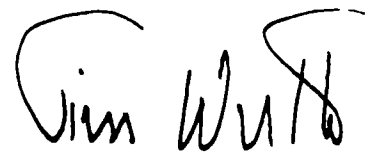
Herb Kohl

Slade Gorton

Dale Bumpers

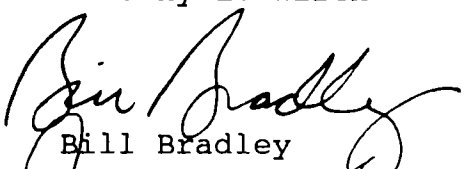
Albert Gore, Jr.

Patrick J. Leahy



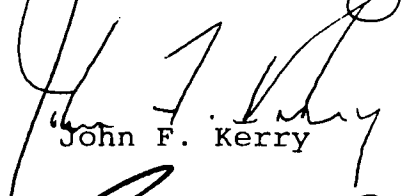
Timothy E. Wirth

Claiborne Pell



Bill Bradley

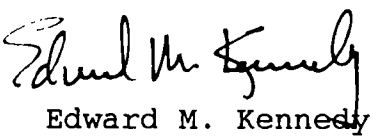
Quentin N. Burdick



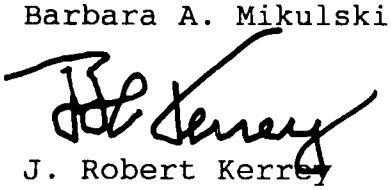
John F. Kerry

Paul Wellstone

Barbara A. Mikulski



Edward M. Kennedy



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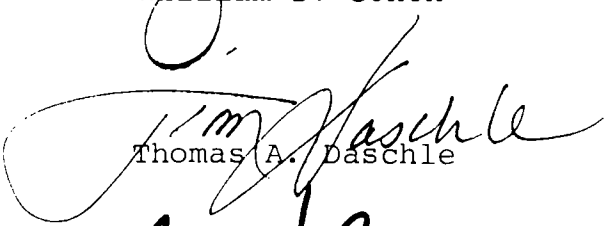
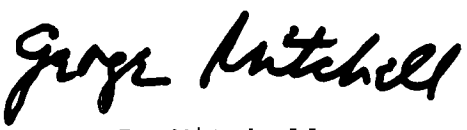


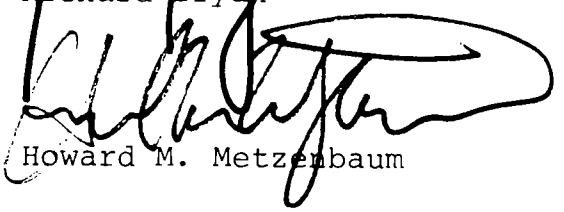
Thomas A. Daschle

Terry Sanford

Richard Bryan



George J. Mitchell



Howard M. Metzenbaum

From Greenwire 6/19 #9

Feli - Ozone resolution & letter also works on other copy & file on CFC alternatives

LEVEL 2 - 1 OF 1 STORY

Financial Times

June 19, 1991, Wednesday

SECTION: SECTION I; Back Page; Pg. 22

LENGTH: 438 words

HEADLINE: Ozone hole expert warns of CFC substitutes risk

BYLINE: WILLIAM DULLFORCE and CLIVE COOKSON, GENEVA, LONDON

BODY:

SUBSTITUTES for CFCs will [illegible]

Mr Joe Farman, the British atmospheric physicist, described the leading substitutes for ozone-destroying CFCs (chlorofluorocarbons) as 'powerful greenhouse gases'. If industry was allowed to release large quantities of the new chemicals - HCFCs (hydrochlorofluorocarbons) and HFCs (hydrofluorocarbons)

- the potential benefits from phasing out CFCs could vanish.

The chemicals industry has spent hundreds of millions of pounds developing CFC substitutes. Du Pont of the US, the largest CFC manufacturer, puts its investment at Dollars 250m (Pounds 155m) and talks of spending more than Dollars 1bn over the next 10 years. Chemical companies say that if they are not allowed to produce HCFCs and HFCs for long enough to make a return on their investment, users will face a severe crisis when CFC manufacturing stops in the late 1990s, in accordance with the Montreal Protocol. The refrigeration industry is most vulnerable.

Mr Farman's discovery of the Antarctic ozone hole in 1986 gave a powerful impetus to the Montreal agreement to phase out CFCs. He was speaking yesterday in Geneva, where government officials are meeting to start drafting a similar international convention on climate change, aimed at limiting global warming.

Mr Farman, who retired from the British Antarctic Survey last year, said the chemical industry seriously underestimated the environmental impact of CFC substitutes when it claimed that they would add only 1 per cent to man-made global warming in coming decades.

MF Mack McFarland, Du Pont's environmental science co-ordinator, rejected Mr Farman's arguments - which are similar to those of pressure groups such as Friends of the Earth to press for restrictions on HCFCs and HFCs.

'You have to look at the big picture when judging what are the best alternatives to CFCs,' he said. 'That means looking at their environmental impact (including ozone depletion and global warming impact), toxicity and flammability.'

Preliminary findings from the Alternative Fluorocarbons Environmental Acceptability Study (AFEAS), funded by the international chemical industry, were released this week. Studies by Oak Ridge National Laboratory in the US show that 'replacement of CFCs with suitable HCFCs or HFCs can yield a dramatic benefit in reducing the total global warming impact for all CFC end-use applications.'

AFEAS is part of the chemical industry's increasingly vocal lobbying effort.

Business and Environment, Page 19

GRAPHIC: Picture, Joe Farman, discovered Antarctic ozone hole in 1986