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"CORRESPONDENCE TRACKING"

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DOCUMENT NUMBER: 9121435

FROM: DINGELL, John D.: U.S. HOUSE OF REPRESENTATIVES

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 05/01/91

SUBJECT: LETTER TO SECRETARY BAKER, ADMINISTRATOR REILLY AND
ADMIRAL TRULY REGARDING NEW & IMPORTANT INFORMATION
ON THE OZONE LAYER.

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Carl Bretscher
ENVIRONMENT
Ken Yale

Damar Hawkins
Maryanne Bach

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 05/15/91

FILE: P- CONGRESSIONAL

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U.S. House of Representatives
Subcommittee on Oversight and Investigations
of the
Committee on Energy and Commerce
Washington, DC 20515

May 1, 1991

The Honorable James A. Baker III
Secretary
Department of State
2201 C Street, N.W.
Washington, D.C. 20520

The Honorable William K. Reilly
Administrator
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

The Honorable Richard H. Truly
Administrator
National Aeronautics and
Space Administration
400 Maryland Avenue, S.W.
Washington, D.C. 20546

Dear Secretary Baker, Administrator Reilly, and Admiral Truly:

I had the opportunity to review the enclosed articles which report new and important information regarding the ozone layer. One article states:

The EPA administrator, William K. Reilly, said new estimates by his agency show there could be 200,000 more deaths from skin cancer in the United States over the next 50 years because of this ozone loss.

Eileen Claussen, head of the EPA's atmospheric and indoor air programs, called the new findings "frightening."

"We are alarmed," she said, "because we felt we had dealt with this in a fairly aggressive way, but obviously it's not aggressive enough," she said, referring to the Montreal Protocol, an international treaty that mandates elimination of the most damaging ozone-depleting chemicals by year 2000.

OFFICE OF THE
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The Honorable William K. Reilly
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* * * *

She noted that the Montreal Protocol gives developing countries an extra 10 years to phaseout chlorofluorocarbons, or CFCs, and other ozone-depleting chemicals. And, she added, some major countries such as China and India are not parties to this treaty.

"We can make an enormous difference," she said, "if we can move the developing countries closer" to the phase-out schedule for the United States and other industrial countries.

* * * *

In Claussen's view, the Montreal Protocol should be toughened. "We have to look again at the phaseout schedule and see if we can make it go even faster" for all nations.

Another article explains:

Although many years of CFC's are thus in the pipeline, the end of the steady increase in destructive chemicals that reach the high atmosphere may be in sight. Concentrations in the atmosphere will continue to grow until the end of the century, reaching a peak 12 to 30 percent above present levels, scientists say, and then start to subside. Once fewer CFC's reach the ozone layer, the shield should start to recover, regaining full strength after a century or so.

* * * *

It is uncertain how much more damage to the ozone layer will result before the new controls take effect. "We really don't know," said Eileen Claussen ***

An Inside EPA article notes that the data is preliminary and explains some options being considered:

The new data -- which NASA sources stress are preliminary and not yet presentable -- are likely to exact significant policy changes, including possible amendments to the newly enacted Clean Air Act and/or an opening up of the Montreal Protocol, EPA sources say. One NASA source says that Reilly's unveiling of the new scientific findings "caught us completely off-guard," since NASA officials had thought the data was too preliminary to release. But EPA sources say Reilly was alarmed by the new information and wanted to make it known.

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NASA will firm up the new data in the next few months in preparation for the upcoming international scientific assessment on the state of the ozone layer, required under the Montreal Protocol. NASA scientists have been studying the new data, and recently made a representation to EPA staff. Another NASA source labels the findings a "preliminary conclusion," but adds "we don't expect them to change."

EPA's Air Office is putting together an options package that will include economic incentives, such as a tax or fee that might be placed on the more detrimental chemicals that are still being used.

As you know, Congress, in passing the 1990 amendments to the Clean Air Act, established tighter requirements for reductions than are required worldwide by parties to the Montreal Protocol. Also, in section 606 of the Act a procedure was established for new regulations. The above information appears to raise doubts about the adequacy of efforts made by other nations to comply with the Protocol. I am particularly concerned that many nations, such as China and India, are still not parties to the Protocol and are not committed to any program to protect the ozone layer.

1. The Inside EPA article indicates that "NASA sources stress" that the new data "are preliminary and not yet presentable." I understand that the data was discussed in December at an American Geophysical Union meeting. Some of the data (see enclosed graphs) was provided informally by Ms. Claussen in discussions with our staff earlier this year. At that time, our staff understood that the NASA data was not ready, but would be ready for the next meeting of the Protocol Parties in June. While I think it is useful to provide such data to the public as soon as possible, I think it is also important that the data not be released in piecemeal form, particularly in light of the requirements of the law as noted above.

If EPA was "alarmed" by the data and believed it should be released early, it would seem reasonable that they should have communicated that alarm to the NASA Administrator and arranged for the early release of the data by NASA. Why was that not done? Why was NASA surpassed by EPA?

What is NASA suggesting by their comments in the above article? What data was made public by EPA if the NASA data was only "preliminary"? When will the new NASA data be "presentable"? Is NASA critical of the EPA for the early release? Please explain. Please provide the new data and explain its significance and its certainties and uncertainties. Is the data an "assessment" that

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could trigger action under section 606 of the Clean Air Act? Please explain. Is the data a Protocol assessment? What is the status of the assessments required by the Protocol for the fourth meeting of the Parties in 1992? When will the assessments be completed and made public?

Does the NASA data also provide the estimates of millions of skin cancer cases and thousands of deaths over 50 years as well as support for those estimates? Please explain. If not, please explain the origin and basis of these estimates. Are the estimates supported by the Texas scientist, Dr. Margaret Kripke, who is on the Science Advisory Board (SAB) and communicated with our Subcommittee several years ago about this question? Has the SAB reviewed the estimates? If not, I request the SAB review. How soundly based are these risk estimates, recognizing that even 10 cases and deaths may be too much?

Does the NASA data include ground-based data? If yes, please provide that data and provide an explanation thereof. If no, do NASA and EPA have such data? What does that data show regarding cancers caused from ozone depletion?

Does the data, estimates and analysis thereof consider the effect of the Protocol on future increases and decreases of chlorine and bromine? Please explain. What was the abundance of chlorine in the atmosphere in the 1970s and the 1980s? What is expected in this decade and in the first three decades after 2000? When will the man-made chlorine concentrations peak?

2. Enclosed are the State Department's letters to the Subcommittee of January 24 and June 26, 1990 concerning the status of the Protocol by all nations, including China and India and other developing countries. They also discuss establishment of a fund. I request an update of the matters discussed in the numbered paragraphs of the January 24 letter and the status of all contributions to the fund. I understand that contributions may be lagging. The update should also explain the status of adoption of the 1990 amendments to the Protocol and identify all countries not parties to the Convention and Protocol.

3. There is going to be another meeting of the Parties in June. What is the purpose of the meeting? Will the U.S. encourage further strengthening of the Protocol, such as reducing or eliminating the "extra 10 years" for developing countries? Has this been discussed in the CFC Advisory Committee? What is the projected use of CFCs under the existing Protocol by China, India, South Korea, and all developing countries over the next 20 years? Please note that the State Department's letter of January 24, 1990 stresses that while "there are now 23 developing country Parties to the Protocol," it is clear that "substantial developing country

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participation in a phaseout will be needed in order to limit future concentrations of atmospheric chlorine levels." The new NASA data appears to highlight that need. However, the time allotted to China, India, and other developing countries, which is really 20 years from now, seems long in light of the new preliminary data. Even with that much time afforded and a fund established, many of these countries have failed to be Protocol Parties and I have not heard any critical comments from anyone about this failure. Why? Quiet diplomacy to achieve the signature of these countries does not appear to be working.

In a March 13, 1990 letter from EPA, Administrator Reilly said that EPA does "not support changes to the Protocol provisions relating to developing countries." He said the provisions "draw a careful balance between economic and equity concerns and environmental needs." Is that still the Administration's and EPA's view?

What is the best way to get the biggest and earliest CFCs reduction in the U.S. and elsewhere? Please explain. What is the production and consumption of CFCs since the Protocol went into effect in the U.S. and elsewhere? Is the reported reduction real or is it related to economic downturns?

Please explain the legal commitments of other nations such as the European Community, Japan, Germany, Sweden, France, and Norway in regards to CFCs, Halons, HCFCs, methyl chloroform and carbon tetrachloride. Has the European Community eliminated "all aerosol uses of CFCs," which was the goal for the end of 1989?

4. Will the June meeting include trade matters under the Protocol, such as a discussion of the list of products containing CFCs? What is that list? Will representatives of the U.S. Trade Representative and Commerce be on the delegation? Will the meeting also cover recycling requirements?

5. Please explain the "options" EPA is considering. I presume that EPA is not suggesting that Congress re-open the Clean Air Act, since EPA has considerable authority. Enclosed are tables provided by the EPA for implementation of Title VI of the Clean Air Act. What is the current status of the implementation efforts? What is the role of the CFC Advisory Committee?

Please provide a detailed update of the status of Defense Department and EPA actions regarding the over "250 military specifications" that require the use of CFCs and halons."

6. What is the status of efforts to develop halon substitutes? I understand that halons are used by museums to guard against fires, such as at the National Air and Space Museum and its facilities in Maryland. Is that true? Is it a significant use?

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7. Please explain what, if any, long term effect on the atmosphere and international pollution can be expected from the oil fires in Kuwait. What monitoring is underway?

8. Enclosed is a portion of a recent comment by the Alliance for Responsible CFC Policy. Please explain to what extent each of you agrees or disagrees with these comments about installed equipment, the lack of "drop-in" substitutes, the values of the equipment, the threat of early retirement of that equipment and the impact thereof, the shortfall, the situation in Europe, and the comments about substitutes.

The State Department should please keep our staff counsel, Mr. David B. Finnegan, informed about the plans and schedule for the June meeting of the Parties so, as in the past, our staff may attend as part of the U.S. delegation in the same manner and to the same extent as in all other CFC meetings since 1986 and be briefed about the meeting.

Please respond to the above matters before May 30, 1991. EPA is late in replying to my enclosed letter of March 6, 1991. I request that reply now. In responding, EPA should also comment on the enclosed press release by the Alliance for Responsible CFC Alternatives.

With best wishes.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to read "John D. Dingell".

John D. Dingell
Chairman
Subcommittee on
Oversight and Investigations

Enclosure

cc: The Honorable Thomas J. Bliley, Ranking Republican Member
Subcommittee on Oversight and Investigations

The Honorable James D. Watkins, Secretary
Department of Energy

The Honorable Robert A. Mosbacher, Secretary
Department of Commerce

The Honorable Dick Cheney, Secretary
Department of Defense

The Honorable James A. Baker III
The Honorable William K. Reilly
The Honorable Richard H. Truly
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The Honorable Carla A. Hills
U.S. Trade Representative

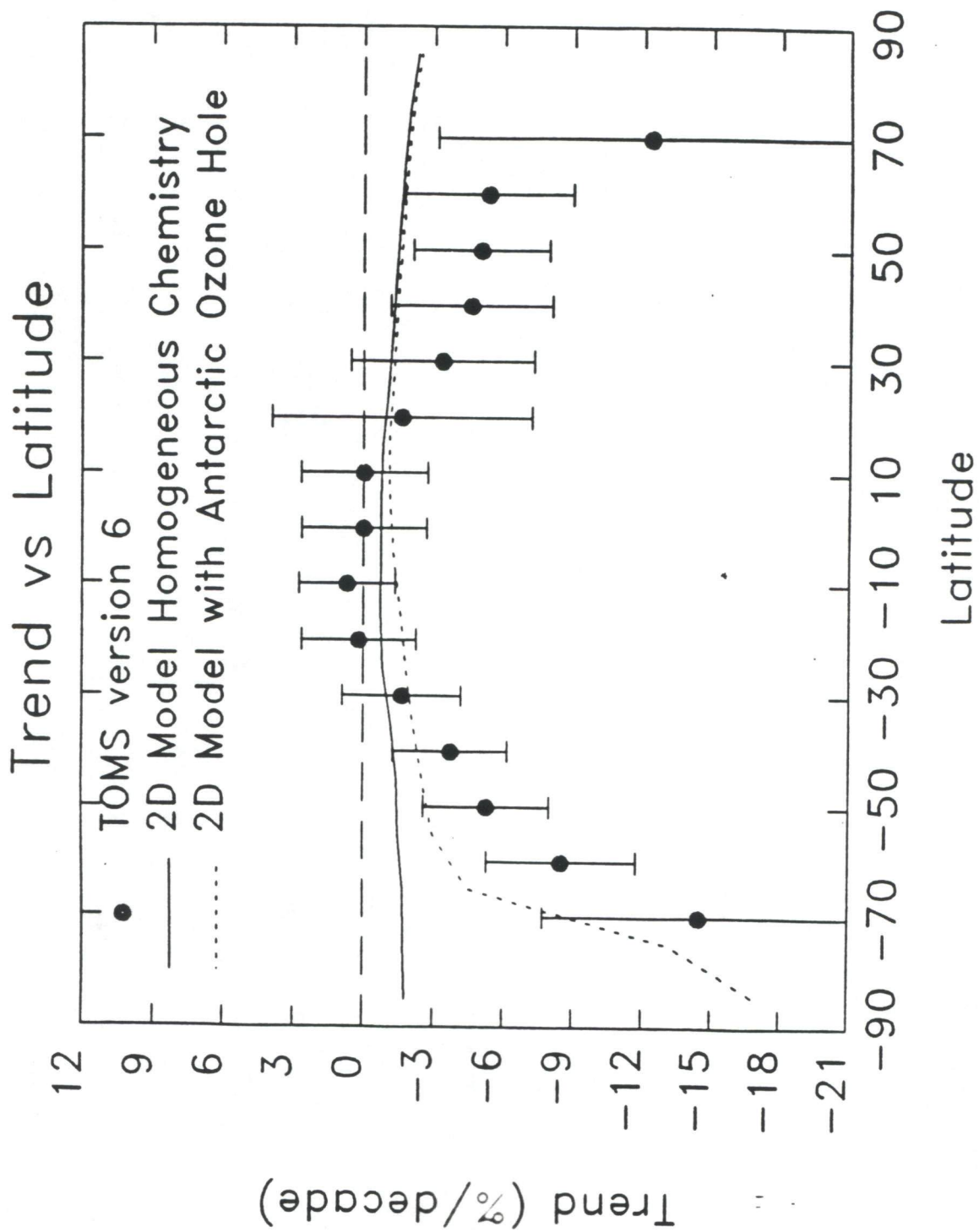
The Honorable John A. Knauss, Acting Administrator
National Oceanic and Atmospheric Administration
Department of Commerce

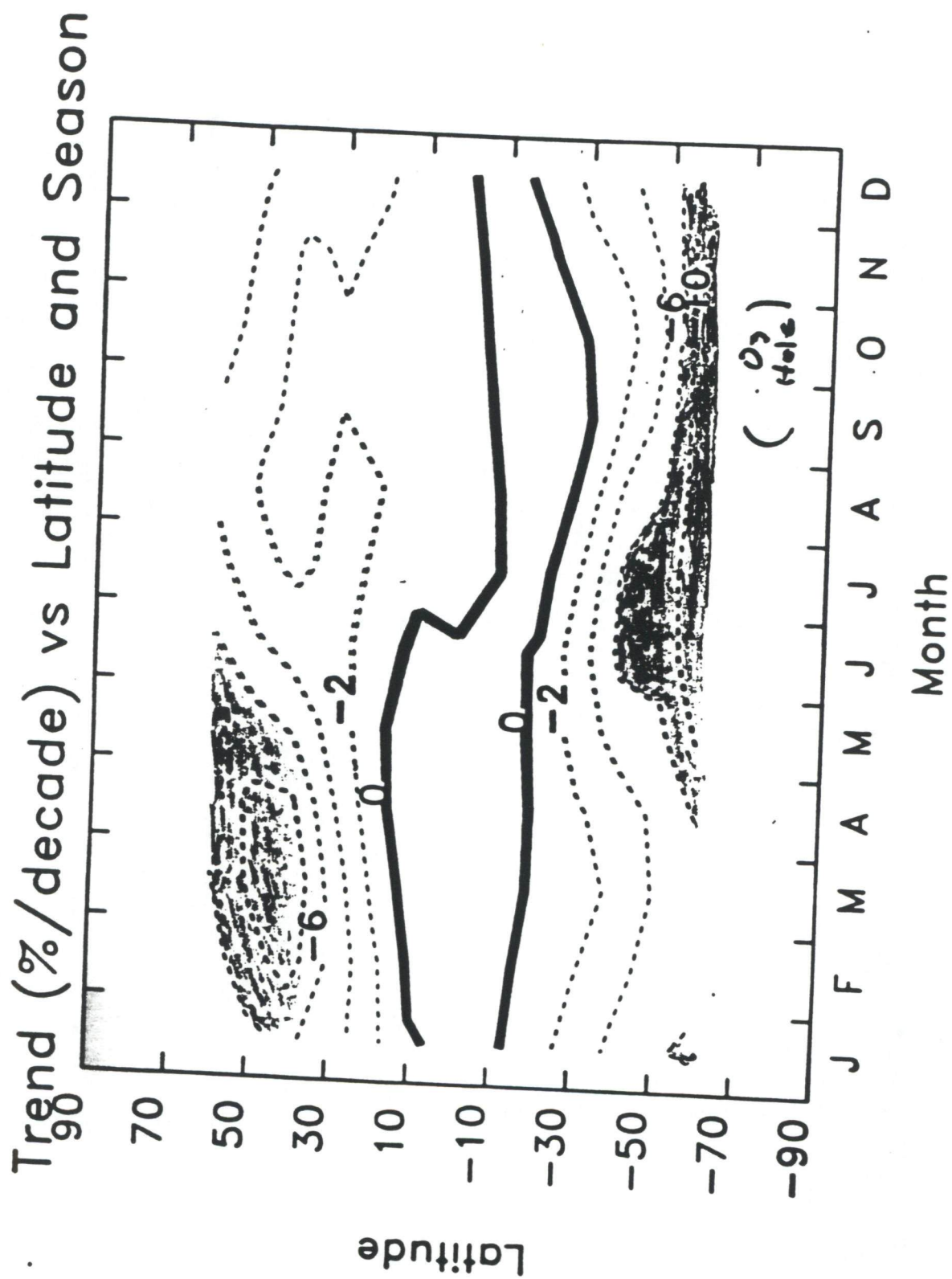
Mr. Boyden Gray, Counsel to the President
The White House

Mr. Roger Porter, Assistant to the President
for Economic and Domestic Policy
The White House

Dr. D. Alan Bromley, Assistant to the President on
Science and Technology
The White House

The Honorable Charles A. Bowsher, Comptroller General
General Accounting Office





Ozone Layer Thinner, But Forces Are in Place For Slow Improvement

Meanwhile, New Zealand children eat lunch in the shade.

By WILLIAM K. STEVENS

THE life-protecting ozone shield in the high atmosphere has weakened by up to 5 percent since 1978 under the influence of industrial chemicals. That conclusion, based on direct satellite measurements, was announced last week by the Environmental Protection Agency, along with its calculations that many more Americans are now likely to die of skin cancer because of the higher doses of ultraviolet radiation that the weakened shield will let through.

How much worse will it get? The most important industrial chemicals that chew up the ozone layer are known as chlorofluorocarbons or CFC's. Used ubiquitously as solvents and to transfer heat in air conditioners and refrigerators, the CFC's take years to waft up from ground level to the height of the ozone layer.

Although many years of CFC's are thus in the pipeline, the end of the steady increase in destructive chemicals that reach the high atmosphere may be in sight. Concentrations in the atmosphere will continue to grow until the end of the century, reaching a peak 12 to 30 percent above present levels, scientists say, and then start to subside. Once fewer CFC's reach the ozone layer, the shield should start to recover, regaining full strength after a century or so.

This forecast assumes that the world's industrialized nations will stand behind the pledge they made at a meeting in London last June to halt the production of CFC's and other related chemicals, like halons, methyl chloride and carbon tetrachloride. Industrialized countries vowed to eliminate production of these chemicals by the end of the century, and developing countries by 2010.

The pledges were made after less stringent deadlines, adopted in Montreal in 1987, were later found inadequate to meet the threat.

Taking It Seriously

It is uncertain how much more damage to the ozone layer will result before the new controls take effect. "We really don't know," said Eileen Claussen, an ozone specialist at the

Environmental Protection Agency, which issued last week's report. Earlier attempts to forecast ozone depletion, based on mathematical models, were proved so inaccurate by events that "basically, we have thrown out the models," Ms. Claussen said.

Despite the uncertainty, or perhaps because of it, health authorities are re-emphasizing the need for protection from the sun. "There's no question that the ozone problem is really a problem that's not going to go away," said Dr. Clark Heath, chief epidemiologist for the American Cancer Society. "One should take sun exposure seriously, particularly in the middle of the day."

Ultraviolet radiation of a particular frequency, called UV-B, causes skin cancer and eye cataracts, and impairs the human immune system as well. Biologists fear that higher fluxes of UV-B would also at some point damage plants, crops and the phytoplankton in the ocean that are the basis of ocean food chains.

Dr. Heath advised people to avoid the sun in the middle of the day and to wear hats, don a sunscreen lotion and protective clothing such as long sleeves when they are exposed to the sun's rays. He said it was unclear at what point the ozone-depletion issue would become severe enough for the cancer society to develop more detailed suggestions.

Some pioneering countries have undertaken concerted public campaigns to get people to adopt good sun habits. In New Zealand, where ozone-depleted air from the wintertime ozone "hole" over Antarctica has been detected, the public campaign is aimed at getting people to abandon the ideal of a suntanned body. Children there are encouraged to wear cotton sunhats with protective visors and protective flaps in back. And they are urged, for instance, to sit under a tree when eating lunch in the playground. Television advertisements and posters extol the virtues of covering up.

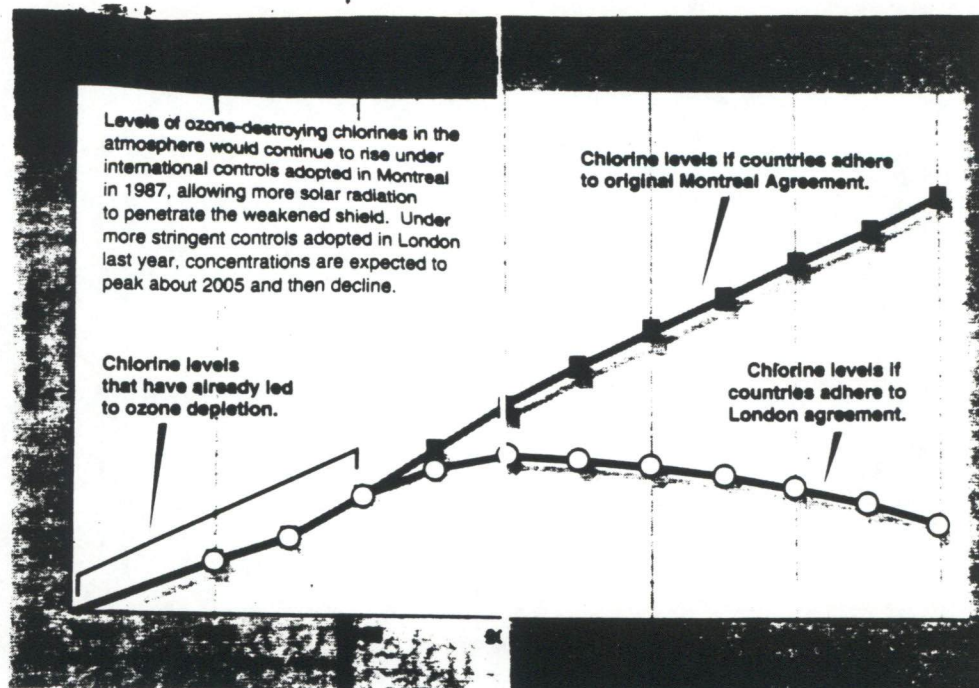
Findings Called Stunning

Last week, the Environmental Protection Agency reported that in addition to the Antarctic ozone hole, the ozone layer had been depleted in many other parts of the world. At the mid-latitudes where the United States is situated, it reported, the loss over the last decade was twice as great as had been suspected. The agency said the declines, measured in the late fall, winter and early spring, amounted to 4.5 to 5 percent over the decade. William K. Reilly, the E.P.A. administrator, called the findings stunning, unexpected and disturbing.

WP
LA

Boston Globe

f Dave



The New York Times

The same findings applied to the entire Northern Hemisphere temperate zone, with depletions growing more severe the farther one proceeds toward the North Pole. Even larger depletions were found in the Southern Hemisphere.

The findings were based on measurements made by special instruments aboard satellites, and scientists say that they were consistent with direct measurements of UV-B increases detected by different in-

struments at widely scattered ground stations in the Northern Hemisphere.

The measurements found no significant ozone depletion in the tropics. But because there is more sunlight in the tropics naturally, UV-B levels remain higher than in the mid-latitudes, even with greater ozone depletion in the mid-latitudes. Likewise, summertime UV-B exposure in the United States remains higher than that in the winter, even though ozone is more depleted in the winter.

But this is no cause for comfort, scientists say, since people and other organisms in the mid-latitudes are experiencing unaccustomed UV-B levels. "Organisms in the mid-latitudes have not adapted themselves," said Dr. Mark Schoeberl, an atmospheric scientist at NASA's Goddard Space Flight Center, which made the satellite measurements.

Although scientists are uncertain about the future severity of ozone depletion, they have come to a confi-

dent consensus on the essential scientific nature of the threat. Largely because of this consensus, there has been no factional argument within the Bush Administration on either the science of ozone depletion or the need to halt the production of the destructive chemicals.

Molecules of ozone-destroying chemicals, when released, spend most of their time — up to 100 years in the case of CFCs — below the stratosphere, said Dr. F. Sherwood Rowland of the University of California at Irvine who, along with Dr. Mario Molina, first reported that they destroy ozone. When a molecule reaches the stratosphere, he said, it gets zapped by ultraviolet radiation and chlorine is released, and that atom eats up 100,000 molecules of ozone. Eventually, it degrades, and that ends the process.

Ozone is constantly being created naturally, but this natural replenishment is incapable of keeping up with the destruction of ozone by the chlorine. Since ozone also blocks the penetration of UV-B to the earth, the chlorine weakens the shield.

Dr. Rowland says concentrations of another ozone-destroying chemical, methyl chloride, have remained constant, and it is believed a natural constituent of the atmosphere. Including methyl chloride, he said, atmospheric concentrations of the destructive chemicals have increased to 4 parts per billion in 1991 from 2 parts per billion, or just above natural levels, in 1950.

He forecasts an additional rise to 6 parts per billion by around the turn of the century, followed by a steady decline, if the controls pledged last year in London take effect as planned. That would be an increase of 12.5 percent.

The E.P.A. forecasts a similar trend, generally speaking.

Ozone Loss Figures Sharply Raised; 200,000 More Deaths Likely

By RUDY ABRAMSON
TIMES STAFF WRITER

WASHINGTON—The protective ozone in the Earth's upper atmosphere is being depleted much faster than scientists realized and the United States could suffer 200,000 more skin cancer deaths than previously expected over the next 50 years, the nation's top environmental official said Thursday.

Rather than thinning by 1% to 3% during the previous 12 years, as earlier studies indicated, the ozone layer over the United States apparently has been degraded 4% to 5%, according to William K. Reilly, administrator of the Environmental Protection Agency.

Reilly said that the new evidence suggesting greater depletion was gathered by the National Aeronautics and Space Administration.

In light of the new studies, Reilly is intensifying an EPA campaign to reduce the use of ozone-damaging chemicals and "exploring the full range of options" to help developing countries do the same, he told an audience in St. Paul, Minn.

According to the National Cancer Institute, U.S. skin cancer mortality is now about 8,500 a year. Eileen Claussen, director of the EPA's Office of Atmospheric and Indoor Air Programs, called the projections of an additional 200,000 deaths over the next half century "shocking."

The disclosure was made just

nine months after 53 signatories to an international treaty committed themselves to banning, by the year 2000, the chemicals that are the chief threat to the ozone layer.

Although ozone is one of the principal components of smog, its presence in the stratosphere protects life on Earth from the sun's destructive ultraviolet radiation.

Destruction of the atmospheric ozone is caused by a number of chlorine-containing chemicals—halons, which are used in fire extinguishers, and chlorofluorocarbons or CFCs, including refrigerants such as Freon.

Some environmentalists and EPA officials called the new evidence shocking. But UC Irvine Prof. Sherwood Rowland, one of

the scientists who first linked CFCs and depletion of the ozone, said he is not especially surprised, because chlorine levels in the atmosphere continue to increase.

When they reach the upper atmosphere, CFCs and halons are broken down by ultraviolet radiation and release chlorine, which in turn destroys ozone.

The phenomenon has been most pronounced during the dark winters in Antarctica, where a huge hole forms in the ozone layer each year. But evidence has steadily mounted that the assault on ozone also goes on over the northern latitudes.

Two years after the first binding agreement to address the problem, the international treaty was dra-

matically strengthened last year in London. Besides agreeing to ban CFCs and most halons by the year 2000, industrial nations agreed to phase out the use of the chlorine-containing solvents methyl chloroform and carbon tetrachloride.

The new NASA satellite data, compiled by Richard Stolarski at the agency's Goddard Space Flight Center in Greenbelt, Md., first was reported at a meeting of the American Geophysical Union last year, but the EPA analysis was only recently completed.

Claussen of the EPA suggested possible ways to strengthen efforts to hasten the demise of ozone-damaging chemicals.

Under last year's London agreement, developing countries were given an additional 10 years to stop the use of CFCs. Under the circum-

stances, Claussen said, they might be put on the same schedule with industrial countries—to ban the chemicals by the year 2000.

She suggested also the possibility of tightening controls and speeding the phase-out of so-called HCFCs—chemicals being produced as CFC substitutes. Although less damaging than CFCs, they contain chlorine and degrade the ozone. Under the present agreement, they are to be phased out in the year 2030.

"The current plan to eliminate these chemicals by the year 2000 is dangerously slow," said Liz Cook of the environmental group Friends of the Earth, "and these data should send a strong message to chemical companies not to develop substitutes that deplete the ozone, even if they are somewhat less harmful than CFCs."

NASA doubles estimates of ozone loss

By Dianne Dumanoski
GLOBE STAFF

The Earth's protective ozone layer has been disappearing over the past decade twice as rapidly as previously believed, according to a finding by NASA scientists who have been monitoring the ozone layer with satellites.

Federal environmental officials and NASA scientists called the finding a cause for alarm.

The EPA administrator, William K. Reilly, said new estimates by his agency show there could be 200,000 more deaths from skin cancer in the United States over the next 50 years because of this ozone loss.

Eileen Claussen, head of the EPA's atmospheric and indoor air programs, called the new findings "frightening."

"We are alarmed," she said, "because we felt we had dealt with this in a fairly aggressive way, but obviously it's not aggressive enough,"

she said, referring to the Montreal Protocol, an international treaty that mandates elimination of the most damaging ozone-depleting chemicals by 2000.

"Even after you do all the things we've agreed to do," she said, "you still, over the next 50 years or so, end up with another 12 million skin cancer cases and another 210,000 deaths." She added that the effects on ecosystems and crops are also "potentially terrifically damaging," but said that the EPA is less able to quantify what those effects might be.

Robert Watson, who heads the atmospheric ozone program for NASA, said the last major assessment on worldwide ozone trends in 1988 estimated that ozone was decreasing by 2 to 4 percent per decade. The new results, he said, show a peak depletion of 8 percent per decade. And, he added, it appears that the rate of ozone loss may be accelerating.

"That means the decreases are twice as large as we previously estimated," he said. "And they are not only confined to winter, they extend into the spring period."

According to Watson, the peak depletion occurs in late winter but the new data also show that a reduction of 3 to 4 percent persists over most of North America until late May. "Now we have significant, meaningful trends at the beginning of the growing season."

This is a cause for concern, he said, because elevated levels of ultraviolet B radiation are thought to pose a threat to crops, forests and ecological processes as well as to human health. The question is, he said, "Will it or will it not have an adverse effect on ecological productivity?"

While ozone gas poses a health threat on the ground, it is beneficial in the stratosphere, which extends roughly 10 to 30 miles above the Earth's surface. The ozone layer is a relatively concentrated belt of the

gas that blocks the sun's deadly ultraviolet B radiation. If the ozone layer disappeared entirely, life as we know it would cease to exist.

Richard McPeters of NASA's Goddard Space Flight Center said the findings are based on 12 years of satellite data. The data have become available, he said, because NASA scientists have figured out how to correct for changes caused by dirt in the measuring instrument. There is now high confidence in the recalibrated data, he said, because they have been tested against ground measuring instruments.

Although scientists have not yet shown that this broader ozone loss is linked to the man-made chemicals that have caused a hole in the ozone over Antarctica, Watson said, "You have to believe there is a strong likelihood" that these chemicals are involved.

If this is the case, Watson said, the problem "can only get worse" because the concentrations of ozone-destroying chemicals in the atmosphere are on the increase. Even with the latest actions to strengthen the Montreal Protocol, Watson noted that levels of ozone-attacking chlorine will rise from the current level of about 3 parts per billion to 4.5 parts per billion over this decade.

Later this year, a Harvard chemist, James Anderson, will be heading a scientific mission to discover how and why these ozone losses are occurring. Anderson said he is worried about an increase of chlorine in the atmosphere, because "it greatly increases the chances of North Pole ozone depletion." As concentrations escalate, he noted, the chemical processes that destroy ozone get faster.

In light of the new findings, Claussen, of the EPA, said that worldwide efforts to eliminate the use of ozone-depleting chemicals must proceed more quickly and more aggressively.

She noted that the Montreal Protocol gives developing countries an extra 10 years to phase out chloro-

fluorocarbons, or CFCs, and other ozone-depleting chemicals. And, she added, some major countries such as China and India are not parties to this treaty.

"We can make an enormous difference," she said, "if we can move the developing countries closer" to the phaseout schedule for the United States and other industrial countries.

She said that would require technical assistance and making sure that money already pledged to help developing countries make this transition can be made available quickly.

Claussen also said there is a need to take a hard look at the chemical substitutes proposed as replacements for the most damaging CFCs. Many of the substitutes are ozone-depleting, she noted, adding that "this raises the question of whether they should be used at all. We have to look at this domestically and internationally."

In Claussen's view, the Montreal Protocol should be toughened. "We have to look again at the phaseout schedule and see if we can make it go even faster" for all nations. She said the treaty parties will be meeting in Nairobi in June, but that the first opportunity to renegotiate the treaty will probably be in June 1992.

Liz Cook, who has been tracking the ozone issue for Friends of the Earth, a Washington-based environmental group, said she was glad that the EPA is questioning the wisdom of the CFC substitutes, agreeing that "it's alarming data. It shows that our current plans to phase out these chemicals by the year 2000 is dangerously slow."

And, she added, "these findings should send a strong message to the chemical companies not to develop substitutes that deplete ozone, even if they are less damaging."

Cook said that the EPA should look to the new German ozone law, which phases out halons by 1993, CFCs by 1996 and HCFCs, a family of less damaging substitutes, by 2000.

A25

In the Nation

TOM WICKER

Bad News From Above

The news was very bad — not so heart-rending as the plight of the Kurdish refugees but more deadly for the future: The ozone layer, at the latitude of the United States, is disappearing more than twice as swiftly as scientists had thought.

That's no concern of yours?

It is if you're young enough to be living, or have children living, within the next 50 years. The new calculations mean that in the coming half-century, about 12 million Americans will contract skin cancer and probably 200,000 will die — nearly 20 times as many as formerly predicted.

Before the new findings, only a half-million additional cases of skin cancer and just over 9,000 deaths were expected from ozone depletion. Currently, there are only about 8,000 deaths a year from skin cancer.

But even with such rapidly worsening odds, what's the ozone layer got to do with you?

Plenty, if you're one of the tens of millions of Americans with a refrigerator or an air-conditioner, or both, in your house, or an air-conditioner in your car. In most of these machines,

5 percent over the U.S. in the last decade; previous, less reliable findings had suggested no more than a 2 percent loss from 1969 to 1986.

Even on the earlier, less alarming data, most of the world had committed itself to phasing out CFC's. In 1987, 57 nations meeting in Montreal adopted a treaty calling for a 50 percent cut in production of CFC's and other ozone-attacking chemicals. Last June, in London, most governments agreed that by the end of this century in developed countries, and by 2010 elsewhere, CFC production would be halted entirely.

Even the United States, which has not taken a strong lead against international environmental threats, was ready to move by the time of the London conference. President Bush, on the advice of his chief of staff, John Sununu, had been refusing to contribute a previously pledged \$25 million to a fund to help poor countries substitute "ozone-friendly" — but more expensive — chemicals for CFC's. Last year Mr. Bush overruled Mr. Sununu and put up the \$25 million.

But that was last year, and the new NASA measurements call all former assumptions into doubt. "In the next couple of decades, the level of ozone depletion could border on the disastrous," in the opinion of Dr. Michael Oppenheimer of the Environmental Defense Fund. The bad news, he said, "underscores the need to avoid taking risks with global life support systems like the ozone layer and also like the world's climate."

In fact, the "stunning" new information, said William K. Reilly, the administrator of the Environmental Protection Agency, means steps already taken to protect the ozone layer "may well turn out to be inadequate."

He may have a hard time convincing the Bush Administration, which responded to the drastically increased rate of ozone depletion with its accustomed ho-hum — this time from Michael Deland, the chairman of the President's Council on Environmental Quality: "I think that before we undertake a major overhaul of U.S. or worldwide policies, we need to very carefully scrutinize this and other reports to evaluate the accuracy in a deliberative and comprehensive scientific way."

How's that for gobbledegook? But what else would you expect from an Administration that thinks it need do nothing but study global warming, while carbon dioxide in the atmosphere continues to increase? □

Will the U.S. act on worsening ozone depletion?

chlorofluorocarbons — CFC's, for short — are the heat-transfer agent that provides the cooling effect.

Unfortunately, they're also the most prominent of the chemicals that, as they escape into the atmosphere, eat away at the ozone layer. And it's the ozone layer that protects the earth and its inhabitants from too much of the sun's ultraviolet light, a prime cause of skin cancer.

The less ozone, the more ultraviolet, at a rate of about 2 percent more ultraviolet for every 1 percent loss of ozone. Ample evidence suggests that that means more skin cancer, more eye cataracts, more damage to the human immune system and to crops, plants and the oceanic food chain.

The new measurements, recorded over a period of 11 years by the National Aeronautics and Space Administration, allow for changes caused by the solar cycle. They still identified an ozone loss of about 4.5 to

Dawe

U.S.A.

Du Pont Seeks Way To End Its Emissions Of Destructive Gas

By a WALL STREET JOURNAL Staff Reporter

WILMINGTON, Del. — Du Pont Co. said it is developing technology to "virtually eliminate" — within the next five years — its emissions of a nylon-production byproduct found to be environmentally harmful.

The chemical concern's disclosure follows the recent publication of a scientific study that identified the production of nitrous oxide in nylon making as the first known industrial source of the naturally occurring gas. Because the gas depletes protective ozone in the atmosphere, the study has focused environmentalists' attention on the estimated 750,000 tons of the gas — commonly called laughing gas — that nylon producers release annually into the air.

Du Pont, the world's largest nylon maker, said it currently removes about half the nitrous oxide generated during production through a combustion process used to eliminate more-conventional pollutants. But applying that system throughout all its plants would entail technical problems and require a "significant investment," a spokesman said; while doing so is feasible, he said, the expenditure would be "wasted," given the superior technology Du Pont is now fine-tuning.

Citing patent concerns, the spokesman declined to provide specifics, but said that the new technology will "recycle this nitrous oxide back into the [manufacturing] process," and thus save both energy and materials. The company is currently starting a one-year pilot program on the process in Texas, he noted.

While it had already undertaken development of the new process, Du Pont said, the recent study "raised our awareness" of the nitrous oxide issue.

Need to Replace CFCs in Refrigeration Revives Interest in 19th-Century Engine

By AMAL KUMAR NAJ

Staff Reporter of THE WALL STREET JOURNAL

Environmental concerns have revived interest in a long-abandoned 19th-century engine for use in modern, high-technology cooling and refrigeration.

United Technologies Corp.'s Carrier Corp. unit is expected to announce within weeks the first cooling system based on an 1816 design by the Scottish clergyman and inventor Robert Stirling. Others have produced prototypes in anticipation of marketing their own Stirling engines.

Called a "cryogenic cooler," Carrier's compact device can cool to minus 161 degrees Celsius, or minus 321 degrees Fahrenheit, and is designed to supercool components of large computers, medical diagnostic machines and magnetically levitating trains, said Gerald Robertson, director of advance electronics cooling.

The move by Carrier, which sees a \$100 million market for its device in five years, gives a major boost to new Stirling designs being developed for household refrigerators and air conditioners. Researchers say the technology is a promising alternative to current systems that employ chlorofluorocarbons, or CFCs, as coolants. These chemicals are suspected of destroying the Earth's protective ozone layer and are to go out of production by the year 2000 according to an international treaty.

The original Stirling engine wasn't developed as a cooling device but as a source of mechanical power. Heat applied to one end of the engine's gas-filled cylinder sends a piston to the other end. It competed with the steam engine, before both were displaced by the internal combustion engine early in this century. But it's the Stirling's ability to reverse the process—by applying power to the piston and causing the gas within the cylinder to absorb heat—that intrigues the refrigeration crowd.

Besides Carrier, which is working with Stirling Technology Co. of Richland, Wash., other companies developing Stirling engines include: General Electric Co., which has helped develop a Stirling engine with Sunpower Inc. of Athens, Ohio; Cryodynamics Inc. of Mountainside, N.J., and Japan's Kawasaki Heavy Industries Ltd.

"Stirling could replace [the machinery] in existing refrigerators," says Warren Bessler, a mechanical engineer at GE's research and development center in Schenectady, N.Y.

Part of Stirling's promise is that it eliminates the need for CFCs, made of chlorine, fluorine and carbon and introduced by Du Pont Co. in 1931 under the name Freon. Used in \$30 billion of cooling gear sold annually, they have the virtue of being non-corrosive and non-explosive.

In the typical cooling cycle, CFC gas is compressed to a liquid, then pumped into a pipe and allowed to evaporate. As it evaporates, it absorbs heat from the space to be cooled around the pipe. The gas returns to the compressor and repeats the cycle.

Prompting the search for alternative

technologies is the high corrosiveness and low efficiency of most CFC substitutes. Some are less harmful than CFCs, but they also risk being regulated or banned in the future. While helium used in the Stirling engine is inert and nontoxic, the enormous pressure and very low temperature required to liquefy it render it impractical in existing refrigeration.

In the Stirling engine, helium remains a gas. The Sunpower prototype consists of a hermetically sealed casing in which a piston moves back and forth in helium. The piston first compresses the gas and sends it to another section of the casing, where it's allowed to expand and in the process absorbs heat from its surroundings. The expanded gas then moves back to the compression side of the piston and the cycle repeats, with the piston constantly "pumping" heat out of a confined area.

The idea of using the Stirling engine as a "heat pump" was first suggested by a British inventor in 1873. But the piston had to be connected to a motor and the gas in the cylinder would leak out through the seals around the piston rod. That problem was solved by William Beale, Sunpower's founder, who, in the early 1960s, developed the hermetically sealed casing in which a magnet is embedded in the piston, which is moved remotely by an unattached motor.

"We have achieved efficiency that's very comparable to the current refrigerators," says David Berchowitz, Sunpower's design engineer. He says there's still room for improvement, which "would make Stirling technology more efficient" than conventional refrigerators. He says that for the same amount of electricity, the Stirling system can lower temperature to minus 50 degrees Celsius compared with minus 26 degrees for the current refrigerators.

While GE's Mr. Bessler is encouraged by Stirling's potential, particularly by Sunpower's system, he doesn't see any rush yet to commercialize the technology for household use. "Theoretically, Stirling is more efficient than the present refrigerators, but there is a big gap between theory and hardware. A refrigerator needs to last ten years or more without maintenance. We need to convince ourselves that Stirling can last that long," he says.

Moreover, says Mr. Bessler, current refrigerators are becoming more efficient, and chemical companies are spending huge sums to replace CFCs with safe and efficient substitutes. "If I was using my money, I would say Stirling is year 2000 type of technology."

Working in Stirling's favor are efforts by Cummins Engine Co., Columbus, Ind., and the German engineering concern Maschinen Fabrik Augsburg-Nürnberg AG, among others, to develop it as a power source. Stirling engines also power some U.S. satellites, and improvements made on the power generating side will benefit the engine's cooling side.

Sunpower's Mr. Berchowitz says his company is currently studying potential partnerships and licensing agreements.

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01a. Letter	To: John Dingell From: William Reilly Re: Response to request for further information (4 pp.)	5/13/90	(b)(1)	

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RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

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WASH. TIMES. 4/5/91 p. A3

Ozone is thinning faster than believed

By Ronald A. Taylor
THE WASHINGTON TIMES

The Earth's protective ozone layer is disappearing twice as fast as believed earlier, Environmental Protection Agency Administrator William Reilly said yesterday.

According to 1990 National Aeronautic and Space Administration data, between 4 percent and 5 percent of the ozone layer over North America has been destroyed in the last decade.

Unless the phase-out of ozone-depleting substances is accelerated, U.S. residents born before 2075 will face 11 million more skin cancers a year and 275,000 more cancer deaths each year, Mr. Reilly warned in a speech to the Rotary Club in St. Paul, Minn.

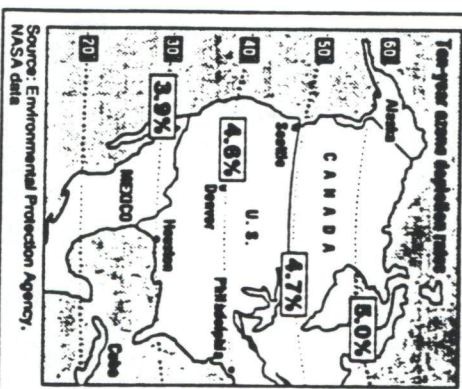
That means 5,000 skin cancer deaths a year and a doubling of skin cancer cases in the United States between now and the year 2040, EPA officials said.

Until now, scientists and policymakers believed that man-made activities over the last decade had resulted in only a 1.5 percent depletion of the ozone layer, a thin shield in the upper atmosphere that protects animals and plants from life-threatening ultraviolet radiation from the sun.

The new data suggest the prob-

THINNING OZONE LAYER

The protective ozone shield has thinned out faster than expected over the last decade. Ozone depletion is worse in the northern latitudes.



lem is "far more serious than we expected," Mr. Reilly told a reporter before the speech.

The data, gathered by satellite under NASA's Total Ozone Measurement System program, dramatically underscore the need to speed up the

scheduled worldwide phaseout of chlorofluorocarbon, halon and other ozone-depleting compounds used primarily as refrigerants, fire extinguishers and solvents, the EPA chief said.

Environmentalists say the data vindicate their call for regulation of such substances. "It's actually frightening. This is overdue, not at the poles," said Elizabeth Cook, ozone campaign director for Friends of the Earth.

"It shows that our current plans to phase out these chemicals are dangerously slow," she said. "It should send a strong message to chemical companies not to develop new substitutes that can deplete ozone, even if they are less damaging, because the ozone layer cannot tolerate any more ozone-destroying chlorine."

Under an international treaty, the 1987 Montreal Protocol, worldwide use of all ozone-depleting chemicals except methyl chloroform will be phased out by the year 2000. The use of methyl chloroform, a solvent used in the electronics industry, will be phased out by the year 2005.

Currently, the chief substitute for CFCs are hydrochlorofluorocarbon and non-chlorine hydrofluorocarbon compounds, which are up to eight times less ozone-depleting.

"At this point we don't have much to say. We have been aware of the

TOMS data and what it indicated," said Steve Resado, director of communications at the Halogenated Solvent Industry Alliance.

"We have some concerns about accelerating the development of substitutes and evaluating the benefits vs. costs," he said.

EPA officials are more concerned about the transition to less threatening compounds in developing countries than about U.S. industry's transition.

"We have to make sure developing countries don't use the worst HCFCs. We have to take a really hard look at the ones that are more ozone-depleting," said Eileen Clausen, director of EPA's atmospheric and indoor air programs.

"What is lacking is evidence that the level of ultraviolet radiation is increasing," said S. Fred Singer, director of the Washington Institute for Values in Public Policy. A comprehensive body of research is required, he said, before enacting any strategy to control ozone depletion or global climate change.

Mr. Singer cited research data, published in Science magazine in 1988, that show a slight decrease in the amount of ultraviolet radiation reaching the planet's surface between 1974 and 1985. "Let him [Mr. Reilly] put that in his pipe and smoke it," he said.

Ozone Layer Over U.S. Thinning Swiftly

Study Indicates Skin Cancer Deaths Could Double in 40 Years

By Michael Weisskopf
Washington Post Staff Writer

The protective ozone layer over densely populated areas of the United States has thinned twice as fast as previous projections, and heavier doses of dangerous ultraviolet rays are leaking to the ground for longer periods of the year, according to scientific data released yesterday.

Because the lost protection from nature's canopy now extends into warmer months when outdoor activity increases, Americans face a near-doubling of skin cancer cases and deaths over the next 40 years,

according to scientists who analyzed the data.

Both the rate and duration of ozone depletion surprised National Aeronautics and Space Administration scientists who did the study. They say they suspect an unforeseen chemical reaction caused by the rapid buildup of man-made chlorine in the stratosphere. Chlorine is released by such chemicals as chlorofluorocarbons (CFCs).

"If we find this is due to chlorine, and it's strongly suggested that it is, things can only get worse," said Michael Kurylo, manager of NASA's upper atmosphere research pro-

gram. "The problem is more serious than we thought," said William K. Reilly, head of the Environmental Protection Agency. "The implications for policy are unavoidable."

Seventy countries have ratified a treaty committing industrialized nations to phase out CFCs by the year 2000 and developing nations to follow suit 10 years later. But the latest findings, dramatically raising the odds not only of skin cancer but of climate change and crop damage, are expected to fuel momentum for an even speedier cutoff.

Reilly said the new data may

push the Bush administration to embrace European Community plans for a 1997 phaseout and to increase incentives to the Third World to accelerate its timetable.

Widely used as coolants in refrigerators and air conditioners, as blowing agents to make plastic foam and as cleaners for computer chips, CFC gases are an environmental anomaly. In the lower atmosphere, they are benign because they are chemically inert, nontoxic and fireproof. But as CFCs waft into the stratosphere 10 miles above ground, they are exposed to intense solar rays and break down, releasing chlorine.

The chlorine then binds to an oxygen atom, stealing it from a molecule of ozone, which has three. This turns ozone into ordinary oxygen gas and dissolves the vaporous veil that screens out harmful ultraviolet radiation, protecting life on Earth.

Three years ago, an international study of the ozone layer during winter from 1976 to 1986 showed a decrease as high as 3 percent at latitudes between 40 and 52 degrees North, which includes the United States north of the latitude of Philadelphia. South of that line, where most of the rest of the nation lies, ozone levels fell 1.7 percent.

The latest NASA data reveal a depletion of 4 percent to 8 percent in the upper latitudes and 4 percent to 6 percent in more southerly regions, where Washington lies.

No readings were taken earlier in the spring because warm weather was believed to slow down the chemical reaction caused by chlorine. Indeed, data from summer months showed much smaller depletion of ozone.

But in the new NASA study, scientists recorded ozone decreases in

April and May of 6 percent in the higher latitudes and 4 percent in the lower latitudes.

The finding is especially ominous for skin cancer incidence because so many more people are outdoors in the spring and are less protected from the sun than in winter. According to the EPA, for every percentage point of ozone depletion, the number of skin cancer cases increases 5 percent to 7 percent.

Skin cancer cases are expected to increase from 500,000 to 800,000 a year under the latest estimate of ozone depletion, with the number of deaths doubling from the current

toll of 5,000 a year. NASA scientists have no precise explanation for the surprisingly high rate of depletion, although Kurylo said that as chlorine accumulates in the upper atmosphere, it may eat up ozone molecules faster than previously expected. The buildup also may stave off chemical reactions that inactivate chlorine during warmer periods, he said.

Kurylo said the trend is likely to continue as CFCs and other chlorine-producing chemicals in the lower atmosphere rise to higher altitudes. The 3 parts per billion (ppb) of chlorine in the stratosphere

today, up from natural levels of 1.5 ppb, is expected to rise to 4 ppb by the end of the century, regardless of the treaty.

NASA based its analysis on satellite data from 1979 to 1990 in the most uniform and comprehensive study of ozone depletion to date. The satellite monitors the amount of ultraviolet light reaching the ground.

After years of resistance, the struggle against CFCs is now so widely accepted that even the world's largest CFC manufacturer accepts NASA findings.

"Our policy is to phase out as soon as possible," said Tony Vogelsberg, environmental manager of E.I. du Pont de Nemours Fluorchemicals Division. "We think this reinforces the urgency to phase out."

Withdrawal/Redaction Sheet

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01b. Letter	To: John Dingell From: Janet Mullins Re: Response to request for further information (2 pp.)		(b)(1)	

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File Location: External Affairs Correspondence: Congressional [2 of 2] [1991]

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AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

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Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01c. Letter	To: John Dingell From: Janet Mullins Re: Response to request for further information (9 pp.)	1/24/90	(b)(1)	

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U.S. House of Representatives
Committee on Energy and Commerce
Room 2125, Rayburn House Office Building
Washington, DC 20515

March 6, 1991

The Honorable William K. Reilly
Administrator
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Dear Administrator Reilly:

Thank you for the enclosed letter of December 20, 1990 from Assistant Administrator Linda J. Fisher and the enclosed "External Review Draft" interim reports on "Aqueous and Terpene Cleaning" and "Hydrofluorocarbons and Hydrochlorofluorocarbons." They are helpful and I appreciate knowing that your agency is continuing to meet its commitments made to the Subcommittee at its hearing in May 1989 to make the toxic and other assessments promised under existing law and to ensure that substitutes are safe. I request a table of the actions concerning other substances not covered by these reports and the status of those actions taken since our hearing to carry out those commitments. Please also explain how and to what extent your agency is implementing section 612 of the Clean Air Act regarding safe alternatives and explain the application of this section to the substances covered by the above reports.

Your letter states:

These documents present EPA's evaluation of the potential hazards and exposures from the manufacture and use of these substitute chemicals based on currently available information. The database of information was not comprehensive enough to conduct a full risk assessment due to the fact that most of these chemicals are not yet used extensively in these applications. However, these reports will be updated as additional information is received by EPA.

Also, the reports state:

In reaching this conclusion, we must emphasize the interim nature of these assessments in two respects. First, as more and better information becomes available on the toxicity of the alternatives and their likely exposures, a more definitive assessment can be conducted. Second, the data used in these analyses are, in many cases, limited and assumptions are often based more on analogy than direct measurement.

Both of these statements and the "draft" nature of the interim reports indicate that further action by the Environmental Protection Agency is planned. Do these reports reflect all applicable requirements, if any, of the Endangered Species Act? Please explain what they are and when they will be completed. When will final or completed reports be issued? Please also explain the results of the 1990 International Conference in Baltimore. Enclosed are January 26, 1991 and February 18 articles from Automotive News regarding the substance "134a" which is also covered by the above reports. Please explain the status of this substance from the standpoint of your tests, taking into consideration that the enclosed articles indicate that the substance will soon be in use. Please explain the relationship of continued EPA actions pursuant to its 1989 commitments and the new "safe substitutes" provisions of the Clean Air Act. Please explain how and when EPA plans to use those provisions so as to avoid a "cloud" over some existing substances, in commercial use, and avoid creating competitive advantages and disadvantages regarding actual or potential competition substances and taking into consideration more recent scientific data about the "ozone hole" and the need to move to less ozone depleting and zero depleting substitutes in lieu of CFCs as contemplated by Congress in title VII of the Clean Air Act. Please provide an explanation of such data. Do you still agree that HFCs and HCFCs, taken as a whole, are significantly less depleting than CFCs, although some individual HFCs and HCFCs may have a somewhat greater ozone depletion value than others? Please explain. What are other Nations doing to match our actions on HFCs and HCFCs? Please provide details. Please explain the commercial status and uses of all HFCs and HCFCs mentioned in the above reports. What is their ozone depletion value?

Also, enclosed is EPA's September 13, 1990 letter concerning methyl chloroform used in adhesives and HCFC substitutes. The letter states:

The EPA encourages the careful selection of replacements for solvents, such as methyl chloroform. Non-flammable water-based technology, hot-melt adhesives and other emerging technologies can be used to replace methyl chloroform in various adhesive applications. In addition, HCFCs, some of which have an ozone depletion potential substantially less than methyl chloroform, are also a potential substitute in this particular application. HCFCs are expected to be commercially available within the next three to five years.

EPA has found that water-based adhesives are effective in some methyl chloroform applications. Although the performance of the water-based adhesives has not yet been proven as a substitute for all adhesives using methyl chloroform, in particular Columbia Cement's need for a contact-bond adhesive, research and development is in process.

Please explain the status of efforts to develop and test the "emerging technologies," including "flammable solvents." I am particularly interested in the progress toward achieving substitutes that also perform well.

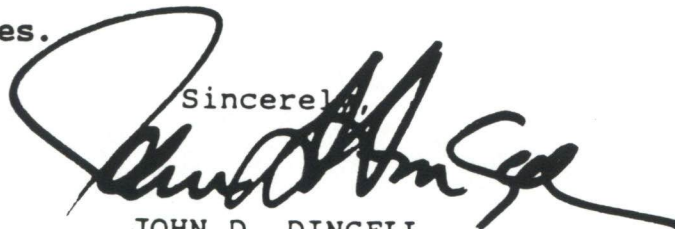
Finally, enclosed is an exchange between EPA and DuPont regarding HFC-152a which is described in the enclosures as a "flammable refrigerant." The letters suggest some disagreement over the assessment by EPA of this substitute. The DuPont letter also suggests that EPA may be in an "advocacy role" and the EPA letter suggests DuPont is not acting "objectively" and may be "delaying progress." The DuPont letter states its Division "will not sell flammable refrigerants or mixtures which may become flammable due to fractionation."

I am troubled about these comments and about the product safety and possible product liability implications. Please explain the nature and extent of the problem and the status of the assessments. Are there substitutes to 152a that do not raise this safety concern? Are the safety and product liability concerns significant? Please explain.

I request your reply within 30 days after receipt of this letter.

With best wishes.

Sincerely,



JOHN D. DINGELL

Chairman

Subcommittee on

Oversight and Investigations

cc: The Honorable Thomas J. Bliley, Ranking Republican Member
Subcommittee on Oversight and Investigations

The Honorable James D. Watkins, Secretary
Department of Energy

Mr. John H. Gibbons, Director
Office of Technology Assessment

The Honorable Charles A. Bowsher, Comptroller General
General Accounting Office

Ms. Linda Fisher, Assistant Administrator
Office of Pesticides and Toxic Substances
Environmental Protection Agency

Ms. Eileen B. Claussen, Director
Office of Atmospheric and Indoor Air Programs
Environmental Protection Agency



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 02 1991

DEC 20 1990

Honorable John D. Dingell
House of Representatives
2221 Rayburn House Office Building
Washington, DC 20515

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

Dear Mr. Dingell:

In anticipation of the upcoming worldwide phaseout of chlorofluorocarbons (CFCs) and other ozone-depleting substances under the authority of the Montreal Protocol on Substances That Deplete the Ozone Layer, the U. S. Environmental Protection Agency (EPA) has been working to evaluate the human health and environmental effects of some of the major chemical substitutes for the CFCs. Enclosed you will find a copy of the "Hydrofluorocarbons and Hydrochlorofluorocarbons Interim Report," as well as a copy of the "Aqueous and Terpene Cleaning Interim Report." These documents present EPA's evaluation of the potential hazards and exposures from the manufacture and use of these substitute chemicals based on currently available information. The database of information was not comprehensive enough to conduct a full risk assessment due to the fact that most of these chemicals are not yet used extensively in these applications. However, these reports will be updated as additional information is received by EPA.

EPA presented these documents at the 1990 International Conference on CFC and Halon Alternatives to be held in Baltimore, MD, November 27 - 29. At the conference, staff from the Office of Toxic Substances and the Office of Air and Radiation led a discussion on the major findings of the investigation into the CFC substitutes.

EPA has also prepared several technical support documents which provide greater detail on the biological effects and potential exposures used to develop the interim reports. Please let me know if you would like copies of the support documents.

Sincerely yours,

Linda J. Fisher
Assistant Administrator

Enclosures



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 13 1990

Honorable John D. Dingell
Chairman
Committee on Energy and Commerce
House of Representatives
Washington, D.C. 20515

SEP 13 1990
RECEIVED
THE ADMINISTRATOR

Dear Mr. Chairman:

This responds to your letter of March 8, 1990, in which you asked the U.S. Environmental Protection Agency (EPA) for further clarification on alternative to methyl chloroform used in adhesives as discussed in a letter from the Columbia Cement Company. Specifically, the letter states that some of the alternatives may not perform as well as methyl chloroform or that they may be flammable and therefore not acceptable substitutes. You also wanted to know what the impact S. 1630, which calls for a phase-out of methyl chloroform by the year 2000, and the U.S. position adding this chemical to the Montreal Protocol, will have on the adhesives industry.

The EPA encourages the careful selection of replacements for solvents, such as methyl chloroform. Non-flammable water-based technology, hot-melt adhesives and other emerging technologies can be used to replace methyl chloroform in various adhesive applications. In addition, HCFCs, some of which have an ozone depletion potential substantially less than methyl chloroform, are also a potential substitute in this particular application. HCFCs are expected to be commercially available within the next three to five years. More importantly, it should be noted that many adhesives commercially available today, including contact bond adhesives, are safely used by consumers and are manufactured with flammable solvents.

EPA has found that water-based adhesives are effective in some methyl chloroform applications. Although the performance of the water-based adhesives has not yet been proven as a substitute for all adhesives using methyl chloroform, in particular Columbia Cement's need for a contact-bond adhesive, research and development is in process.

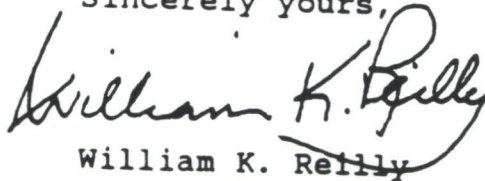
Columbia Cement is also concerned about the United States' unilateral regulation of methyl chloroform, as called for in S. 1630. In June 1990, the Parties to the Montreal Protocol met

and unanimously adopted substantially tighter controls on the chemicals listed in the 1987 Protocol. In addition, they added methyl chloroform to the list of regulated chemicals and set a phase-out date of 2005. Following the June meeting, the House and Senate Clean Air Act (CAA) conferees have agreed to a phase-out of methyl chloroform by 2002. Although the CAA amendments have not passed into law, it is doubtful that this date would change prior to enactment.

Restrictions on methyl chloroform may impact its overall cost but should not, in the first several years, limit the available supply. It is likely that in some use sectors, such as in solvents and aerosols, users can switch away from methyl chloroform at lower cost, and/or recycle, thereby leaving a sufficient supply for Columbia Cement and similar industries.

I hope this clarifies the issue, and I appreciate your continued interest in the Agency's stratospheric ozone protection program.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "William K. Reilly". The signature is fluid and cursive, with a large, stylized "W" and "R".

William K. Reilly



CHEMICALS AND PIGMENTS
Wilmington, Delaware 19898

October 22, 1990

Ms. Eileen B. Claussen
Director
Office of Air and Radiation
U. S. Environmental Protection Agency
401 M Street, SW
Washington, D.C. 20460

Fin

Dear Ms. Claussen:

This letter is a response to your letter of October 4, 1990, to me, in which you asked for clarification of Du Pont's position on flammable refrigerants.

Our current and long-standing policy is that the Freon® Products Division will not sell flammable refrigerants or mixtures which may become flammable due to fractionation. This policy stems from our concern over potential risks to the consumer, end users, and particularly service personnel in an industry that has recognized non-flammability as a key feature of product safety.

Du Pont has been a leader in the search for CFC replacements which offer the least environmental, economic, health and safety risk. As a result, we have worked with the AHAM consortium and others to evaluate the risks associated with HFC-152a. The risk assessment effort now in progress will presumably assign a quantifiable risk to the use of a flammable refrigerant in a variety of end use applications. With that information in hand, equipment manufacturers will make future unilateral decisions on choice of refrigerants in a competitive, free market environment, encumbered only by the uncertainty of future regulations and laws. Similarly, chemical manufacturers will make future unilateral decisions to supply, or not to supply.

Du Pont truly supports objective assessment of the risks and benefits for HFC-152a and all other proposed alternative products. We trust that EPA Staff will likewise support an objective risk assessment and defer its advocacy role in support of HFC-152a until the risk assessment is complete. We will continue to make the product available for evaluation purposes. Our decision on the future sale of HFC-152a as a refrigerant will depend first on the choice of design options by our customers, and will consider the results of the risk-benefit assessment compared to other available refrigerant options.

Note that Du Pont has already offered a commercial line of refrigerant products which employs 152a in mixtures with non-flammable HCFC and HFC compounds, such that the resulting mixture is non-flammable, even after fractionation. This approach takes some advantage of the desirable thermodynamic properties of 152a while avoiding the risk of flammability.

Sincerely,

A handwritten signature in cursive script, appearing to read "Joseph P. Glas".

J. P. Glas, Director
Freon® Products Division

JPG:sbm

CC: Congressman John D. Dingell



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 4 1990

OFFICE OF
AIR AND RADIATION

Mr. Joseph Glas
Director
Freon Products Division
E.I. du Pont De Nemours & Company
Chemicals and Pigments Department
1007 Market Street, B-13212
Wilmington, Delaware 19898

Dear Mr. Glas:

I am writing to follow up on a letter I sent to DuPont on August 7, 1990 regarding the potential use of R-152a as a substitute for CFCs.

EPA is currently conducting overall assessments of the environmental impacts of using various CFC alternatives. These assessments will consider such risks as flammability, chlorine, toxicity, energy use and greenhouse warming potential and should provide useful information for decision-makers.

One important element of the risk assessment is to evaluate flammable refrigerant substitutes, including analysis of the relative safety risks of R-152a. DuPont representatives have taken part in EPA-sponsored meetings addressing our various safety analyses, including the fault tree risk assessment and Underwriters Laboratories small and large scale flammability testing on refrigerators.

My staff and I have had numerous discussions with John Bray and others at DuPont regarding the potential use of R-152a as a CFC substitute and the need for a thorough and objective analysis to determine its suitability as an alternative refrigerant. DuPont had verbally agreed to support an objective analysis of the relative risk of flammability associated with 152a in home appliances.

I am enclosing a letter I sent to John Bray August 7, 1990, asking for clarification of DuPont's position with respect to using R-152a as a substitute for CFCs. Because of DuPont's leadership in the past on identifying CFC substitutes, I know you share EPA's concern that all potential options receive a fair review to determine all potential impacts from various alternative choices. Since we have not yet received a reply to the August 7 letter, I was interested in having you expedite a response that reestablishes the policy of objectivity DuPont has orally agreed to pursue.

We are concerned about statements we have heard from some of your customers that they perceive an even handed policy is not being followed. There is also some concern that even though we have a verbal agreement to objectively assess R-152a, DuPont representatives state that 152a will never be sold in the refrigeration market and that 152a has not been widely available for testing purposes.

We know that DuPont's objective, like EPA's, is to ensure that the alternatives with the least overall environmental, economic, and health and safety impacts be selected to replace CFC refrigerants. Given the high level of cooperation we've had and the strong leadership DuPont has often exercised, it would be a real set back for DuPont to be perceived as delaying progress in this important area.

Thank you for consideration on this important matter.

Sincerely,



Eileen B. Claussen
Director, Office of Atmospheric
and Indoor Air Programs

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 7 1990

OFFICE OF
AIR AND RADIATION

Mr. John C. Bray
Market Manager - Refrigeration
Freon Products Division
E.I. Du Pont De Nemours & Company (Inc.)
Chemicals and Pigments Department
B-13212
Wilmington, Delaware 19898

Dear Mr. Bray:

I am writing to you because of my concern over the position that DuPont has taken with respect to R-152a as a substitute for CFCs.

As you are aware we met last year with Dwight Bedsall and Tony Volgelsberg of DuPont to discuss alternative chemicals and technologies at a meeting hosted by World Resource Institute. At that meeting, DuPont pledged to support an objective analyses of the risk of flammability associated with R-152 so as to help evaluate the relative risks posed by flammability in an overall risk assessment of refrigerator refrigerant alternatives. That assessment would also consider chlorine, toxicity, energy and greenhouse potential. At that time, we all agreed on the need to do a thorough analysis to assess 152a's risks so that its relative dangers could be determined, and a rational decision made.

However, since then a number of troubling situations have arisen. Several refrigerator and compressor manufacturers have told us that DuPont has refused to ship them 152a for experimental purposes. DuPont has also been quoted as having told manufacturers that it will never sell 152a for refrigerators. Their statements, if true, run counter to what we believe was a clearly stated position -- that DuPont would await the analysis being conducted by UL, NFPA, EPA, and other members of the refrigerator industry before making a decision on the acceptability of the use of R-152a in refrigerators. This situation is not confined to the U.S. In Germany, at a public meeting, DuPont made similar statements. Recently delegates from China made similar reports.

After the meeting in Germany we discussed this situation with you. You agreed that DuPont did not want to appear to be precluding consideration of 152a before objective tests were

finished and a fair risk assessment could be completed. You promised to send EPA a letter stating that DuPont would support experimental work on 152a and would decide on its position after objective testing and analysis had been completed.

Since that discussion, my staff has contacted you a number of times and you promised to forward the letter. During this period, however, we have been that DuPont representatives have continued to inform potential users that 152a would never be sold for refrigeration purposes.

One aspect of the situation that we find particularly discouraging is that within the last two weeks DuPont representative have met with EPA staff to seek help in winning acceptance for its use in blowing foam. Clearly DuPont is actually seeking factory use of 152a for that situation.

We would very much appreciate it if DuPont would forward us a letter indicating where it stands on providing 152a in experimental quantities to the refrigeration industry and where it stands on constructive participation to participate constructively in an objective evaluation of 152a's relative risks.

Like DuPont and the refrigerator companies, EPA believes safe substitutes are needed. The question of how significant a fore risk 152a poses, whether the risk can be mitigated if it does exist, and how that risk (and benefits) compare to those of other chemicals can only be established by objective scientific analysis. We very much hope to receive a letter of clarification that reestablishes the policy DuPont agreed to pursue at our early meeting on the subject as soon as possible. We believe it is important to the industry that we all make it clear that a careful, objective assessments will be made of all options, so that decisionmaking can test enhance national health, welfare and safety.

Sincerely,


Eileen B. Claussen
Director, Office of Atmospheric
and Indoor Air Programs

LATE NEWS

DuPont says GM will redesign air conditioners for new coolant

DuPont Co. said General Motors will redesign vehicle air-conditioning systems to use C134A, a new, non-ozone-depleting chlorofluorocarbon recently developed by DuPont.

DuPont said the switch is expected to start with 1994 models, providing engineers can redesign the present system and find a new lubricant to mix with the coolant by that time.

DuPont last week unveiled a new line of refrigerants and said they are less harmful to the ozone layer than traditional coolants.

— Greg Bowens



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NEWS



Safe air conditioning gas heads toward back shops

By Diana T. Kurylko
AUTOMOTIVE NEWS STAFF REPORTER

The environmentally friendly air conditioning refrigerant expected to be in most cars by 1996 will start reaching service departments of dealerships this summer, ahead of the first wave of cars to require it.

The new refrigerant, SUVA Trans A/C, was introduced to dealers at the convention. IG-LO Inc. of Lexington, Ky., will begin distributing the product in small amounts to the aftermarket this summer.

SUVA Trans A/C, known generically as HFC-134a, is produced by Delaware-based DuPont Chemicals BMP as a substitute for CFC-12, an ozone depleting chlorofluorocarbon. DuPont provides the product to manufacturers and has given IG-LO exclusive aftermarket distribution rights.

Demand will be minimal for the next several years because only a few cars will have air conditioning systems that can use the new refrigerant, said Ron Materniak, a senior DuPont account manager. Auto air conditioners, designed around CFC-12 since the 1930s, have to undergo extensive redesign to use the new product.

European and Japanese manufacturers are expected to begin using SUVA Trans A/C later this year, Materniak said. Domestic manufacturers will begin switching to SUVA in 1992.

CFCs will be banned from use by 2001. To discourage its use, the federal government has imposed a tax of \$1.37 per pound on CFC-12; the tax increases progressively each year.

DuPont is the first U.S. chemical manufacturer to announce a substitute. Because of the more than

\$1 billion development cost, SUVA will cost three to five times more than CFC-12, which runs about \$3 a pound, said H.B. Wilder, president of IG-LO.

A separate product will be used during the transition between CFC-12 and SUVA.

DuPont has produced a blend of hydrochlorofluorocarbons and hydrofluorocarbons that are 97 percent less ozone depleting than CFC-12, Materniak said. The blend can be used in today's vehicles and in the machines dealers use during servicing to keep CFC-12 from escaping into the air.

The service units will require retrofitting to handle the blended refrigerant, but they will have to be replaced when SUVA Trans A/C comes on line, Materniak said.

SUVA Trans A/C will be available to dealerships in 12-ounce and 15-pound canisters.

FRAUD

Set up procedures now to keep fraud from leaching profits

By Mary Beth Vander Schaaf
NEWS EDITOR

The current economic downturn could foster a new era of dealership fraud and could leach profits from struggling dealers.

Fraud worsens during difficult times. And as the U.S. economy continues to be depressed, fraud could become an epidemic — especially for less-structured businesses like car dealerships.

David Jarrett, a partner at the South Bend, Ind., accounting firm Crowe, Chizek & Co., told a capacity crowd attending his workshop. Minimizing Dealer Fraud, that fraud was a hush-hush topic in the past. He said the rationale has been "if we just don't talk about it, maybe no one will do it."

He defined fraud as intentional perversion of truth to get something of value.

To illustrate the increase in fraud, Jarrett cited a study done in 1964 in which 12 percent of employees tested admitted to stealing

from their employers. In 1985, he said, 32 percent admitted to fraud. Today, he said, 40 percent of employees are honest, 30 percent will steal and 30 percent will steal if conditions are right.

Several factors make dealerships vulnerable to this white collar crime, Jarrett said. They are: ownership of more than one store, the information explosion, time poverty and changing economic conditions.

The key to controlling fraud is the element of surprise, Jarrett told the dealers. He recommended once-a-month investigations that employees don't expect, such as counting petty cash and asking to see invoices for randomly selected checks.

As the very least of measures, dealers should have bank statements mailed to them at home instead of the store. "Look through the checks and see who they are made out to, who signed it and make sure you are familiar with

each check," Jarrett advised.

To avoid hiring someone who is in the 30 percent of people who will steal, Jarrett recommends integrity testing (which includes drug testing), credit checks and reference checks. To circumvent the 30 percent who will steal if conditions are right, dealers should remember that motivation, rationalization and opportunity combine to equal theft. Dealers can influence those three factors.

Dealers should watch for clues that motivation for fraud is present, such as employees with alcohol and drug abuse, gambling and extravagant lifestyles.

Dealers have the most control over the opportunity element. To influence opportunity, Jarrett said dealers should keep one person from being involved in all aspects of an operation, controlling several areas and being indisposed.

"If you suspect fraud in your dealership, don't play it off. Get legal advice," Jarrett

Manage sales staff to thwart recession

But I've Done... At the last one more unit sale per standards, establish...

4-5-91

Ozone Layer Damage Double What Previously Thought

By JOHN MAGGS

Journal of Commerce Staff

WASHINGTON — Damage to the earth's ozone layer over the United States is twice as bad as previously thought, according to Environmental Administrator William Reilly.

Preliminary government data show that 4% to 5% of the protective ozone layer has eroded over the United States since 1978, according to an advance summary of a speech Mr. Reilly was to deliver in St. Paul last night.

Mr. Reilly said that based on this new information he will intensify the government's efforts to stop the use of chlorofluorocarbons, a family of gaseous chemicals blamed for the ozone layer damage.

Officials for the Environmental Protection Agency say that no decision has been made about what further action will be taken to accelerate the phase-out of CFCs, which will be banned by 2000 under the Montreal Protocol, an international treaty.

The new data on ozone depletion was collected by NASA and was reported at a scientific meeting last fall.

But one official said it was likely that any effort to speed up the phase-out would be an international initiative.

Under the current Clean Air Act the United States will phase out the use of those chemicals by 2000 at a rate that will bring larger reductions earlier than under the Montreal Protocol.

It is also likely that the Bush administration would consider additional efforts to cajole chemical companies into voluntarily hastening research and development of chemical alternatives to CFCs.

Mr. Reilly has been successful in

negotiating voluntary reductions in toxic air pollution from large chemicals companies, consistent with the administration's philosophy of less compulsory regulation.

C. Anthony Vogelsburg, a spokesman for Du Pont Co.'s Freon division, said that his company had pledged to halt production of CFCs as soon as possible, but could only move as fast as the rest of society.

The chemicals are used in refrigeration, cleaning and plastics manufacturing, and Mr. Vogelsburg said Du Pont's production of alternatives will necessarily lag behind the equipment innovations required to handle them.

The new data on ozone depletion was collected by the National Aeronautics and Space Administration, and was reported at a scientific meeting last fall.

EPA officials said that the results were not widely publicized at the time, and Mr. Reilly had only recently found out about them.

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01d. Report	Alliance for Responsible CFC Policy Comments (5 pp.)	4/16/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: Correspondence Files
WHORM Cat.:
File Location: External Affairs Correspondence: Congressional [2 of 2] [1991]

Date Closed:	3/3/2010	OA/ID Number:	62023-011
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
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 (b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
 (b)(9) Release would disclose geological or geophysical information

"CORRESPONDENCE TRACKING"

TYPE: CONGRESSIONAL

DOCUMENT NUMBER: 9121175

FROM: BROWN, George E.: COMMITTEE ON SCIENCE, SPACE & TECHNOLOGY

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 04/16/91

SUBJECT: THE HEARING VOLUME FROM THE R&D POSTURE HEARING ON
02/20/91.

ASSIGNED TO:

DAB
IS a "thank-you"
necessary?
yes (circled)
1 (circled)

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Damar Hawkins
Ken Yale

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 04/22/91

FILE: P-CONGRESSIONAL

THE WHITE HOUSE

April 22, 1991

Dear George:

Many thanks for the copies of the
R&D posture hearings.

It is a very real pleasure working
with you; I am convinced that we can
accomplish some good things both
in science and technology for the

Nation.

Your staff have been extremely
helpful.

I am hoping that you will be able
to join us in Moscow - as well
as Baikonur and Novosibirsk
should you have the time.

Again thanks and all best
wishes.

Sincerely Alan

GEORGE F. BROWN, JR., California, CHAIRMAN

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U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE,
AND TECHNOLOGY

SUITE 2320 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-6371

April, 16, 1991

9121175
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Republican Chief of Staff

Dr. D. Allan Bromley, Director
Office of Science and Technology Policy
Executive Office of the President
Washington, D.C. 20506

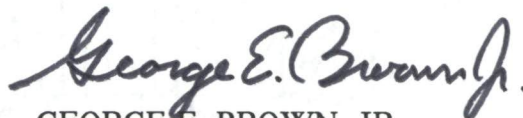
Dear Dr. Bromley:

The hearing volume from the R&D Posture hearing on February 20th at which you testified has just arrived from the printers, and I am glad to send you several copies.

As I told you immediately following that hearing, your testimony was most useful to all of us on the Committee, and it is a pleasure to express to you, again, our thanks for the fine contribution you made.

In the event you find that you would like to have additional copies, my Committee staff will be glad to arrange to have them sent to you.

Sincerely,


GEORGE E. BROWN, JR.
Chairman

GEB/Htm
Attachment

OFFICE OF THE
DIRECTOR

91 APR 22 A 9:35

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"CORRESPONDENCE TRACKING"

TYPE: CONGRESSIONAL

DOCUMENT NUMBER: 9120847

FROM: GIBBONS, John H.: OFFICE OF TECHNOLOGY ASSESSMENT

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 03/22/91

SUBJECT: OTA'S PAPER, "SEEKING SOLUTIONS: HIGH PERFORMANCE
COMPUTING FOR SCIENCE"

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Dr. Wong
Ken Yale
Damar Hawkins

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS: Enclosure to Dr. Wong.

DATE RECEIVED: 03/22/91

FILE: *p* CONGRESSIONAL

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9120847
JOHN H. GIBBONS
DIRECTOR

Congress of the United States
OFFICE OF TECHNOLOGY ASSESSMENT

WASHINGTON, DC 20510-8025

March 22, 1991

RECEIVED
MAR 22 P 5:04
OFFICE OF THE
DIRECTOR

Dr. D. Allan Bromley
Assistant to the President for
Science and Technology
Old Executive Office Building
17th & Pennsylvania Avenues, N.W.
Washington, DC 20506

Dear Allan:

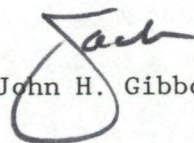
I am pleased to enclose OTA's Background Paper, *Seeking Solutions: High-performance Computing for Science*. This study was done at the request of the Senate Committee on Commerce, Science, and Transportation and the House Committee on Science and Technology.

The Background Paper explores the role of high-performance computing in maintaining the pre-eminence of the United States in science and technology. Supercomputers are important tools for maintaining the competitiveness of U.S. industry and contribute substantially to our defense and security. Many of the massive world problems that we face, such as global environmental change and weather and crop forecasting require high-performance computers. Our greatest scientific challenges, like mapping the human genome, exploring the origin of the universe, and modeling complex molecules would be nearly impossible to tackle without the assistance of supercomputers.

The Background Paper assesses the historical role the Federal Government has played in promoting the development and supporting the use of high-performance computing. It assesses current programs and projects the needs for the future. Finally, it considers the value of a national research and educational network that can link researchers in far flung locations through out the United States with supercomputers and information systems.

I hope you will find the Background Paper useful and informative.

Sincerely,


John H. Gibbons

Enclosures:
Background Paper

SEEKING SOLUTIONS: HIGH-PERFORMANCE COMPUTING FOR SCIENCE

BACKGROUND PAPER



CONGRESS OF THE UNITED STATES OFFICE OF TECHNOLOGY ASSESSMENT

"CORRESPONDENCE TRACKING"

TYPE: CONGRESSIONAL

DOCUMENT NUMBER: 9120598

FROM: HATFIELD, Mark O.: U.S. SENATE

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 02/22/91

SUBJECT: DISCUSSION ON THE CURRENT FCCSET REPORT, MATH &
SCIENCE EDUCATION AND THE POSSIBILITY OF A FULL
APPROPRIATIONS COMMITTEE HEARING.

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley, MB
Ken Yale
Damar Hawkins
Thomas Ratchford

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 03/04/91

FILE: CONGRESSIONAL*EDUCATION

RECEIVED
United States Senate

WASHINGTON, DC

91 MAR 4 P 2:40

February 22, 1991

OFFICE OF THE
DIRECTOR

Dr. D. Allan Bromley
Assistant to the President
for Science and Technology
Office of Science and Technology Policy
Old Executive Office Building
Washington, D.C. 20506

Dear Allan:

I want to thank you for visiting with me this morning to discuss the current FCCSET report, future activities in your Office, and possible strategies for improving America's mathematics and science education process.

I have had an opportunity to discuss with Senator Byrd to explore the possibility of a full Appropriations Committee hearing. Because the interagency report involves a number of subcommittees, Senator Byrd feels that a full committee hearing is plausible. He will further consider the matter. Meanwhile, my staff will be in contact with the committee staffs to explore the possibilities.

I look forward to working with you to make this hearing a reality. I congratulate you again for establishing the process of collaboration among federal agencies and pursuing a similar relationship with the Congress.

With kind regards,

Sincerely,



Mark O. Hatfield
United States Senator

MOH/jyk

"INVITATION FOR DR. BROMLEY"

TYPE: CONGRESSIONAL

DOCUMENT NUMBER: 9120215

SPEECH: YES NO

FROM: PORTER, JOHN AND GEORGE BROWN

DATE OF EVENT: 02/11/91

LOCATION OF EVENT: ROOM H-137 OF THE CAPITOL

TIME OF EVENT: 12:00PM

SUBJECT: INVITATION TO A LUNCHEON REGARDING DEVELOPMENT OF A
NEW TOOL FOR SCIENCE EDUCATION FOR PUBLIC TELEVISION

RSVP: 02/06/91

CONTACT PERSON: JOEL

CONTACT NUMBER: X5-4835

INVITATION ACCEPTED? YES NO

COPIES TO: Thomas Ratchford

REMARKS:

DATE OF LETTER: 01/31/91

DATE RECEIVED: 02/04/91

FILE: *ERC* *P-* CONGRESSIONAL-EDUCATION

9/20215

RECEIVED

Congress of the United States

House of Representatives

Washington, DC 20515

91 FEB 4 AM : 01

OFFICE OF THE
DIRECTOR

January 31, 1991

Dr. Allan Bromley
Assistant to the President for Science and Technology
Old Executive Office Building, Room 358
725 17th Street, NW
Washington, D.C. 20506

Dear Dr. Bromley:

An important new tool for science education has been developed for public television. It can be especially effective in attracting minority students to careers in science.

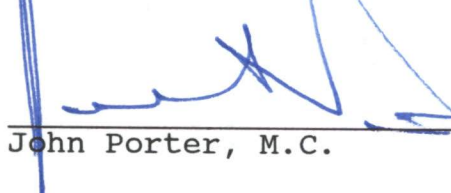
This is an invitation to a Monday, February 11 luncheon at which you can learn more about the project. The special guest will be Bill Kurtis, who hosts an exciting new public television series "The New Explorers." The 13-part series, which premiered locally on Sunday, January 20, features 13 different "explorers" who are making momentous expeditions to the frontiers of science, nature and the environment.

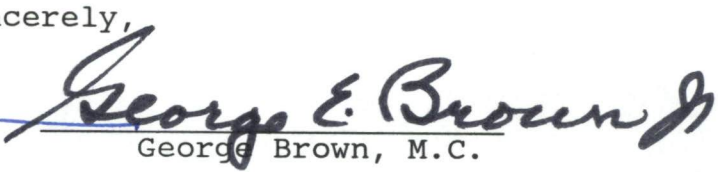
This is more than just a television program, however. One of the things Bill wants to share with you is the contribution "The New Explorers" is making to science education. The Department of Energy has funded educational materials for the series, which Argonne Labs in Chicago has developed, including a teacher workbook for each episode.

Bill Kurtis will have clips from the series and talk about some of the success he's had so far in reaching the targeted kids.

The luncheon will be held at 12 noon, Monday, February 11, in room H-137 of the Capitol. It is hosted by the Association of America's Public Television Stations (APTV). We hope you'll be able to attend. Please call Joel in Congressman Porter's office, at x5-4835, by February 7 with your reply.

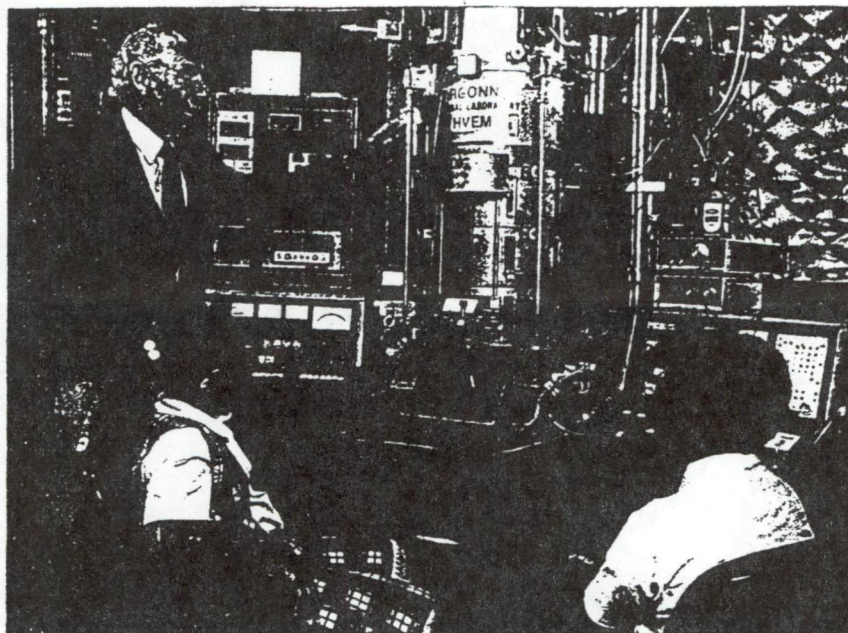
Sincerely,


John Porter, M.C.


George Brown, M.C.

A Spark for Little Explorers

A new PBS series makes science education fun



DAVID WALBERG

Farewell to soporific lectures: Chicago students on a field trip at Argonne

The little explorers sit, transfixed, in a nuclear-research lab where ordinary field trips do not tread. Harold Myron, an Argonne National Laboratory physicist, has posed the most crucial of questions: "Did your true love give you gold? Or mere brass?" Twenty-six children record data as an X-ray fluorescence spectrometer—a machine so sophisticated that some physics grad students never encounter it—analyzes the necklace in question. Connie Taylor has spent two months preparing her inner-city Chicago pupils for this moment. Using new classroom materials as unorthodox as they are exciting, Taylor's seventh graders have readied themselves not just to identify the elemental components of jewelry but to work with something quite rare back in Holy Angels Parish: a scientist. The bond is instant. "Look at these faces," Taylor murmurs. "There's been a spark."

Farewell to soporific lectures on Madame Curie. Farewell, too, to textbooks and memorization as the unchallenged pillars of science education. Next Sunday night, PBS launches a brisk, 13-part series, "The New Explorers." The episodes let viewers taste the thrill of the knowledge chase with 13 different scientists; this is "Nov.," with an adrenaline rush. And there is even life after television. The 13 shows will be received in schools nationwide as one part of a

holistic, three-pronged approach that also includes imaginative classroom tools and working visits like those that Connie Taylor's students have already made to a place like Argonne. The goal of "The New Explorers" is to make stars of scientists, the oft-portrayed nerds who, the project asserts, lead pretty fascinating lives. A subtler goal is to lure minority students in particular to careers in the hard sciences, where they're woefully underrepresented.

"The New Explorers" sprang from a chance meeting in the spring of 1989. Chicago television anchorman Bill Kurtis, who has his own production company, had completed a series on scientists for his CBS affiliate. He vaguely hoped to see his work used in an educational setting. Argonne director Alar Schriesheim had just been asked by James Watkins, head of the U.S. Department of Energy, to seek out groundbreaking science-education projects that DOE might fund. Soon Argonne, a DOE lab famed for its energy research, began recruiting Chicago zoos, museums and other institutions to "adopt" one of Kurtis's episodes. Working with specialists from the institutions, teams of teachers extracted the scientific principles from each video and assembled 13 thick workbooks of corresponding classroom exercises. Each institution also agreed to host "working" field

trips for students who had viewed its adopted videotape and marched through its accompanying workbook.

Kurtis's "New Explorers" videos are vivid catalysts. In the first we meet Mark Plotkin, a young ethnobotanist studying how primitive Indians extract medicines from exotic plants in the jungles of Surinam. In later episodes we join a treetop ornithologist who is nose-to-beak with baby eaglets in Ontario and dive with environmental engineers tracking pollutants at 1,000-foot depths in Lake Superior. The accompanying workbooks are imaginative: no cutting articles out of newspapers. "We kept asking what the scientist does that children can do," says Argonne physicist Sam Bowen. For example, some of the 20,000 Chicago youngsters who have already served as "New Explorers" guinea pigs have rebuilt their classrooms as miniature rain forests. Because science teachers often lack specialized training, the workbooks are designed to be self-explanatory. A few Chicago instructors have found ways to make "New Explorers" more than a learning supplement. After adding her own materials to one workbook, Connie Taylor substituted the resulting alloy for one quarter of the year's regular curriculum. "With this much advance knowledge of atomic structure," Taylor says, "the kids move through their science texts in half the time."

Schmooze time: Expeditions outside the classroom include informal schmooze time between scientists and kids. Curious students come to see that the pros were once much like themselves—often in the doghouse with parents for tearing apart radios or spilling noxious compounds on the linoleum. Questions tend to range from the practical ("How did you pay for college?") to the more practical ("Did you ever flunk anything?"). Not every community has world-class research institutions willing to accept little explorers, but the program's designers think teachers in any locale can find a worthy substitute. "The point is to introduce kids to someone who works with science," Bowen says. "It doesn't matter whether that happens at a museum, a chemical company or the local soil-test office."

One allure of "The New Explorers" is its cost. Any school is free to tape the PBS programs and buy a full set of workbooks for \$130. Organizers hope the project will mushroom; Kurtis is already hustling sponsors to back 13 more episodes. Breathing life into science education is its own reward, but Argonne's Sam Bowen recently got another. Word filtered back that the project had inspired a Chicago student to become a biologist. The victory was especially sweet: before experiencing "The New Explorers," she'd considered becoming a lawyer.

JOHN MCCORMICK in Chicago

97730000

"CORRESPONDENCE TRACKING"

TYPE: CONGRESSIONAL

DOCUMENT NUMBER: 9120006

FROM: GEORGE MILLER

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 01/03/91

SUBJECT: TESTIFY BEFORE SUBCOMMITTEE ON JANUARY 17 RE: DRAFT
REPORT POTENTIAL CARCINOGENICITY OF ELECTROMAGNETIC
FIELDS

ASSIGNED TO: D. Allan Bromley

ACTION REQUIRED: DAB SIGNATURE

SENDER'S DUE DATE: 01/08/91

OSTP DUE DATE: 01/07/91

DATE COMPLETED:

JAN 16 1991

Partial response

COPIES TO: Ken Yale
Damar Hawkins

to

Michelle Van Cleave
red 1/11 8 100

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 01/04/91

FILE: *P- Congressional*
BROMLEY TESTIMONY

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

January 16, 1991

Dear Mr. Chairman:

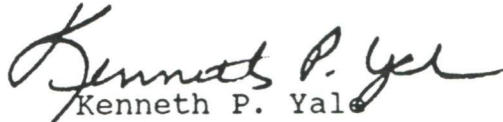
In response to your letter of December 21, 1990, requesting certain documents in connection with the Environmental Protection Agency (EPA) draft report titled "Evaluation of the Potential Carcinogenicity of Electromagnetic Fields," we enclose the following:

May 25, 1990 Memo from James B. Wyngaarden, M.D., to
Roger B. Porter
June 30, 1990 CIRRPC Sixth Annual Report excerpt, page 11
July 18, 1990 Memo from Robert Grady to D. Allan Bromley
July 20, 1990 Memo from D. Allan Bromley to Alvin L. Young
July 24, 1990 Memo from Alvin L. Young to D. Allan Bromley
September 21, 1990 Letter from Erich W. Bretthauer to
D. Allan Bromley
November 26, 1990, Briefing for Dr. D. Allan Bromley
prepared by U.S. Environmental Protection Agency: U.S.
Environmental Protection Agency's Evaluation of the
Potential Carcinogenicity of Electromagnetic Fields
December 6, 1990 Memo from Alicia K. Dustira to
D. Allan Bromley
December 14, 1990 Memo from William H. Farland, Ph.D. to
Interested Federal Agencies

Please note that we do not read your request for documents to include communications between D. Allan Bromley, in his capacity as Assistant to the President for Science and Technology, and other members of the White House staff, because such communications are not between "the Office of Science and Technology Policy and any other federal agency or entity." In any event, it is our understanding that such internal White House communications are highly confidential and are not made public or shared with Congress. For the same reasons, we are not making available a deliberative memorandum from the Science Advisor to the Administrator of EPA, dated July 17, 1990. Finally, an

August 2, 1990, memorandum from Dr. Bromley to Administrator Reilly remains under review. We will endeavor to reach a decision on its status prior to your hearing.

Sincerely,


Kenneth P. Yale
Chief of Staff

The Honorable George Miller
Chairman
Subcommittee on Water, Power
and Offshore Energy Resources
Committee on Interior and
Insular Affairs
U.S. House of Representatives
Washington, D.C. 20515

Enclosures

bcc: Boyden C. Gray, w/o enc.

MKVAN CLEAVE:pn:1/16/91:9120006

MORRIS K. UDALL, ARIZONA, CHAIRMAN

GEORGE MILLER, CALIFORNIA
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PETER A. DEFazio, OREGON
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JAMES A. McDERMOTT, WASHINGTON

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CRAIG THOMAS, WYOMING
JOHN J. DUNCAN, JR., TENNESSEE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515

January 3, 1991

STANLEY SCOVILLE
STAFF DIRECTOR
AND COUNSEL

ROY JONES
ASSOCIATE STAFF DIRECTOR
AND COUNSEL

LEE McELVAIN
GENERAL COUNSEL

RICHARD AGNEW
CHIEF MINORITY COUNSEL

Dr. Allan Bromley
Science Advisor to the President
Director
Office of Science and Technology Policy
Executive Office Building
Washington, D.C. 20506

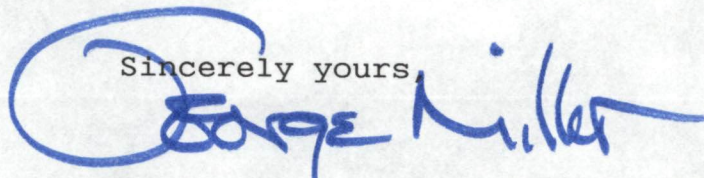
Dear Dr. Bromley:

This is to notify you that the Subcommittee's January 10, 1991 hearing concerning the draft report Evaluation of the Potential Carcinogenicity of Electromagnetic Fields has been rescheduled, and will occur on January 17, 1991. The hearing will begin at 9:30 a.m. in a room to be announced later. A copy of the initial letter of invitation to you dated December 21, 1990 is attached.

I request that you testify before the Subcommittee on January 17 in accordance with my letter of December 21, 1990. In addition, I reiterate my request that OSTP provide all documents requested in my letter of December 21, 1990 by January 8, 1991.

Thank you for your cooperation.

Sincerely yours,



GEORGE MILLER, Chairman
Subcommittee on Water, Power
and Offshore Energy Resources

MORRIS K. UDALL, ARIZONA, CHAIRMAN

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515

December 21, 1990

STANLEY SCOVILLE
STAFF DIRECTOR
AND COUNSEL

ROY JONES
ASSOCIATE STAFF DIRECTOR
AND COUNSEL

LEE McELVAIN
GENERAL COUNSEL

RICHARD AGNEW
CHIEF MINORITY COUNSEL

GEORGE MILLER, CALIFORNIA
PHILIP R. SHARP, INDIANA
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RON DE LUGO, VIRGIN ISLANDS
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ENI F.H. FALEOMAVAEGA, AMERICAN SAMOA
JAMES A. McDERMOTT, WASHINGTON
TIM JOHNSON, SOUTH DAKOTA

DON YOUNG, ALASKA
ROBERT J. LAGOMARSINO, CALIFORNIA
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ROBERT F. SMITH, OREGON
JIM LIGHTFOOT, IOWA
CRAIG THOMAS, WYOMING
JOHN J. DUNCAN, JR., TENNESSEE

Dr. Allan Bromley
Science Advisor to the President
Director
Office of Science and Technology Policy
Executive Office Building
Washington, D.C. 20506

Dear Dr. Bromley:

I am writing to request that you testify before the Subcommittee on January 10, 1991 at a hearing concerning the Environmental Protection Agency's draft report entitled Evaluation of the Potential Carcinogenicity of Electromagnetic Fields. The hearing will begin at 9:30 a.m. in a room to be announced later.

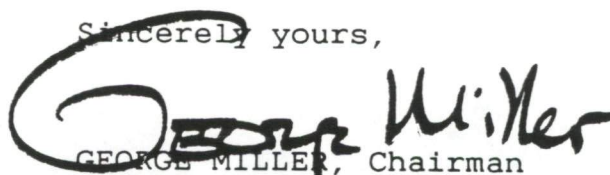
The purpose of this hearing is to review both the content of the report and the Administration's procedures associated with the drafting and release of the report. I am requesting that you personally appear before the Subcommittee because of your involvement in the preparation of the report.

In addition, I request that you provide the following documents to the Subcommittee prior to January 8, 1991:

(1) any and all correspondence and communications (draft and final) including, but not limited to, memoranda, letters, and notes of meetings, dated subsequent to January 1, 1990, between and among, the Office of Science and Technology Policy and any other federal agency or entity, concerning any and all drafts of EPA's report Evaluation of the Potential Carcinogenicity of Electromagnetic Fields.

Thank you for your cooperation.

Sincerely yours,



GEORGE MILLER, Chairman
Subcommittee on Water, Power
and Offshore Energy Resources

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY

WASHINGTON, D.C. 20506

May 25, 1990

MEMORANDUM FOR ROGER B. PORTER

FROM:


JAMES B. WYNGAARDEN, M.D.

SUBJECT:

CIRRPC ACTIVITIES ON ELECTROMAGNETIC RADIATION

The Committee on Interagency Radiation Research and Policy Coordination (CIRRPC) was established in 1984 by the Director of OSTP to address radiation issues of national interest under the broad legislative responsibilities of FCCSET. The Committee's purpose is to coordinate multiagency issues involving radiation policy and/or science and advise on the formulation of radiation policy and Federally supported radiation research, as requested by the Federal agencies, OSTP or the CIRRPC Executive Committee. The Committee's membership consists of senior managers from 18 Federal agencies. The Committee's scientific interests are carried out by a Science Panel, comprised of senior scientists representing 14 Federal agencies. Working groups are established, as needed, to address specific science and policy issues. Administrative and technical assistance to the Committee is provided by multiagency funding.

The issue of health detriments from exposure to electromagnetic (EM) radiation was recently brought to the attention of CIRRPC by the DOL, following a series of articles in The New Yorker in June 1989 that alleged serious hazards occur from electric power lines, word processing terminals (VDT) and electric household appliances. As a result of DOL's request to examine the scientific merit of these articles and the shared concern over this issue by other Federal agencies, the CIRRPC Executive Committee and Science Panel reviewed the articles, discussed the issue in general, and established an ad hoc group to develop a work statement for an external study, by an independent group of experts, of the health risks to humans from exposure to EM fields. EPA, DOD, DOL, HHS and DOE are represented on the ad hoc group.

At their first meeting on April 25, 1990, the ad hoc group agreed that while both policy and science issues were involved, the external study group would address only the scientific questions involved in the allegations of harm and would not be asked to develop a research agenda or make policy recommendations. The scope of work would focus on concerns with exposures to electric power lines and appliances (15-150 Hertz frequency range) and would separately address concerns with VDTs.

At its next meeting on June 19, 1990, the agenda for the group is to summarize the Federal agencies' concerns, research and programs in this area, develop the draft work statement, and identify the experts who might undertake the tasks in the work statement.

I am requesting CIRRPC to give priority to this issue and to solicit experts who are willing to devote the time and effort to expeditiously complete the task within 6 months following assembly of the group.

CIRRPC
SIXTH ANNUAL REPORT

June 30, 1990

Alvin L. Young, Chairman

**Committee on Interagency Radiation
Research and Policy Coordination**

**Office of Science and Technology Policy
Executive Office of the President
Washington, D.C. 20506**

Priorities for Occupational Radiation Protection Research. This report represents the culmination of an extensive canvass of government, professional society, commercial, state and local level occupational radiation protection concerns. The four broad areas of radiation research identified as being especially important to worker protection are:

- Reduction of uncertainties in health risk coefficients;
- Improvements in external personal dosimetry techniques applicable to workplace exposures and limits;
- Improvements in internal bioassay techniques applicable to workplace exposures and limits; and
- Advanced techniques for health physics instrumentation.

The Subpanel proposes that these research needs should be expedited by multiagency focus, priority emphasis and possible joint funding. To help in obtaining the focus, the Subpanel proposes that a series of scientific workshops (one on each research area) be held. In addition, the Subpanel proposes that it continue to meet to help coordinate and channel information; review possible interagency funding mechanisms; update the research priorities; and interact with other groups interested in occupational radiation protection research. The draft report is being revised in response to comments received as a result of review by the CIRRPC Science Panel.

G. Ad Hoc Group to Develop a Work Statement on the Health Effects of EM Radiation

Based on a request from the Department of Labor (DOL), an ad hoc group was formed by the Science Panel to develop a work statement for an external study, by an independent panel of experts, of the reported health hazards exposure to electromagnetic (EM) fields, especially reports of carcinogenesis, and reproductive and neurophysiologic effects. The review will focus on power frequencies (15 to 180 Hz) and video display terminal frequencies (10 to 30 KHz) because these sources appear to be of greatest public concern. The panel is specifically requested to provide conclusions concerning any associated health hazard as to the adequacy of the available data upon which to base reasonable quantitative risk assessments. While the work statement does not specifically task the panel to identify research needs, it does request what additional information is required to develop such assessments. The work statement is currently under review by the Science Panel. OSTP requested CIRRPC to give priority to this issue and, thus, solicitation of panel members is concentrating on experts willing to devote the time and effort needed to complete their task within six months.



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

18 JUL 1990

Memorandum to Dr. D. Allan Bromley, Assistant to the President
for Science and Technology

From: Robert Grady, OMB Associate Director for
Natural Resources, Energy and Science

Subject: Electromagnetic Fields

Recently there have been a number of reports in the media concerning the health effects of electromagnetic fields. Some agencies have ongoing research programs in this area but others have raised questions about gaps in the existing research. I am concerned that the issue be handled in a manner which is based on our best scientific understanding. Would you please assign your Committee on Interagency Radiation, Research, and Policy Coordination (CIRRPC) to investigate this subject to identify additional research needs, recommend agency research roles, and suggest policy alternatives where appropriate.

The House Subcommittee on Natural Resources, Agriculture Research and Environment has called a hearing for Wednesday, July 25th, at 9:30 a.m. in room 2318 of the Rayburn House Office Building. In addition to representatives from the private sector, DOE and EPA officials have been asked to testify. It is expected that Dr. Robert L. San Martin, DOE Deputy Assistant Secretary for Utilities Technology, Conservation and Renewable Energy, will announce CIRRPC's review at this hearing.

Thank you in advance for your assistance. My staff and I are available to provide clarifying information at your request.

THE WHITE HOUSE

WASHINGTON

July 20, 1990

MEMORANDUM FOR ALVIN L. YOUNG, CHAIRMAN
CIRRPC

FROM:

D. ALLAN BROMLEY



SUBJECT:

LOW FREQUENCY ELECTROMAGNETIC FIELDS

There has, as you know, been growing public concern as to the possible harmful effects of exposure to low frequency (<100Hz) electromagnetic radiation--fanned in some cases by press over-reaction to poorly controlled studies and experiments.

The attached memorandum from Robert Grady is self-explanatory and I am requesting that your Committee undertake the requested study on an accelerated basis.

In particular, I would ask you to focus not on the relatively well understood effects of ionizing radiation or on phenomena that involve thermal effects of electromagnetic radiation but rather on the reported possibility of non-ionizing, non-thermal phenomena that may result in possible carcinogenesis under exposure to low frequency, low intensity electromagnetic fields.

Please respond by COB Wednesday, July 25. If either OMB or OSTP can be of assistance, please let me or Bob Grady know.

Attachment

cc: Robert Grady

COMMITTEE ON INTERAGENCY RADIATION RESEARCH
AND POLICY COORDINATION
1019 Nineteenth Street, NW, Suite 700
Washington, D.C. 20036

MEMORANDUM

FROM: Alvin L. Young, *Al Young* Chairman
TO: Dr. D. Allan Bromley
DATE: July 24, 1990
SUBJECT: CIRRPC's ACTIVITY REGARDING ALLEGED HEALTH HAZARD FROM
EXPOSURE TO LOW FREQUENCY ELECTROMAGNETIC FIELDS

I am pleased to respond to your July 20, 1990 memorandum requesting that the Committee on Interagency Radiation Research and Policy Coordination (CIRRPC) undertake a study to identify research needs, recommend agency research roles, and suggest policy alternatives regarding the above radiation issue.

CIRRPC has a continuing interest in the issue of possible serious health consequences following exposure to sources of electromagnetic radiation characterized as "nonionizing radiation." Our initial effort to identify research needs related to nonthermal effects following exposure to radiofrequencies was conducted at the request of the U. S. Environmental Protection Agency. A draft report was prepared by an interagency Science Subpanel, under the chairmanship of Dr. Ross Adey (VA), but was rejected by the Science Panel for publication because of its lack of balance in examining the scientific issues. The report focused on "nonthermal" effects primarily. Attempts to revise the draft and reach a consensus were unsuccessful. Enclosure 1 contains copies of the correspondence sent to EPA stating this final action.

Currently, at the request of the Department of Labor, CIRRPC has an Ad Hoc Working Group under the Science Panel addressing the issue of health detriments from exposure to low frequency electric and magnetic fields, especially reports of carcinogenesis and reproductive and neurophysiologic effects. DoD, DoE, DoL, HHS and EPA (chair) are represented on the ad hoc working group. The group was charged to develop a draft work statement for a possible study by a panel of independent scientists, who have knowledge relevant to the issue but not directly involved. The Science Panel has been briefed on the draft statement and it is now out for final review and comment. (Enclosure 2.) Also, a listing of potential members of the expert panel is being developed, a criterion for selection being a willingness to devote the time and effort to complete the task within 6 months following assembly of the group. This time frame was provided to Mr. Roger Porter in a memorandum from Dr. Wyngaarden dated May 23, 1990. (Enclosure 3.)

As you will note from the work statement, the review will focus on power frequencies (15 to 180 HZ) and video display terminal frequencies (10 to 30 KHz), as these sources appear to be of greatest public concern. In its report, the panel is specifically requested to provide conclusions concerning any associated health hazard as to the adequacy of the available data upon which to base reasonable quantitative risk assessments. While the work statement does not specifically task the panel to identify research needs, it does request what additional information is required to develop such assessments. We believe that upon completion of this work effort, we will be in a better position to investigate, if necessary, specific research needs and to consider agency roles and policy alternatives, as may be appropriate and as noted in Mr. Robert Grady's memorandum dated July 18, 1990. (Enclosure 4.)

Your support of CIRRPC in this undertaking is appreciated and will assist us greatly in expediting completion of the effort. I will ensure that OSTP is kept fully aware of our progress.

ALY/cdl

cc: R. Grady (OMB)
J. Mason (HHS)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 21 1990

OFFICE OF
RESEARCH AND DEVELOPMENT

Dr. D. Allan Bromley
Science Advisor to the President
Office of Science and Technology Policy
Old Executive Office Building
17th Street & Pennsylvania Avenue, N.W.
Washington, D.C. 20506

Dear Dr. Bromley:

Thank you for suggesting additional reviewers for our assessment of potential carcinogenicity of electromagnetic fields. In response to your August 2 memorandum to William Reilly, we are soliciting the comments of experts you identified. We have also shared your recommendations with our Science Advisory Board (SAB) for their consideration as they select the panel of scientists to review our document this Fall. The SAB is composed of leading scientists primarily from the academic community, industry, and non-EPA Federal sector. The SAB has a statutory mandate to advise the Administrator on major environmental science issues and the merit of Agency science work. Apart from SAB activities, we will send each of the experts on your list a copy of the external review draft of the document and invite their comments. The draft document is expected to be released for public comment in mid-October. We will revise the document in light of comments made by the SAB and members of the public, and we plan to publish the final version next Spring.

Members of my staff have been in contact, through the course of our work, with Dr. William Guy of the University of Washington and Dr. Kenneth Foster of the University of Pennsylvania. We are committed to obtaining broad and balanced perspectives on the interpretation of studies reviewed in our document.

Sincerely yours,

Erich W. Bretthauer

Erich W. Bretthauer
Assistant Administrator
for Research and Development

9/12/90

CURRENT STATUS OF EPA'S ELECTROMAGNETIC FIELDS
CARCINOGENICITY DOCUMENT

The EPA document entitled, "Evaluation of the Potential Carcinogenicity of Electromagnetic Fields" is being prepared by the Office of Research and Development (ORD) at the request of EPA's Office of Air and Radiation.

It is being reviewed in three stages: 1) within ORD and key government agencies; 2) by a panel of scientists; and 3) by the general public and EPA's Science Advisory Board. Following the internal review, the panel of scientists met on June 28, 1990; and their comments are now being incorporated into an external review draft.

This external review draft is scheduled for public release in mid-October in order to begin the third stage of review, and the Science Advisory Board meeting is tentatively scheduled for mid-November 1990.

The final document is scheduled for public release March 1, 1991 and will incorporate all comments received from the public and the Science Advisory Board.

The document describes and evaluates the published literature relevant to the human carcinogenicity of alternating electric and magnetic electromagnetic fields in the frequency range from 10 Hz to 10 GHz, which includes electrical power frequencies at the lower limit of the range to radio and microwave communications at the higher limit. It includes reports of human studies, long-term animal studies and biological laboratory experiments pertinent to carcinogenic effects of these fields.

The current draft report concludes that there is a small but statistically significant correlation between electromagnetic fields and cancer and this correlation is suggestive, but not conclusive, of a cause and effect relationship. The draft report only reviews the science underlying this correlation and does not present any policy recommendations.

U.S. Environmental Protection Agency's Evaluation of the Potential Carcinogenicity of Electromagnetic Fields

Briefing for
Dr. D. Allan Bromley
November 26, 1990

Prepared by:
U. S. Environmental Protection Agency
Office of Research and Development



Historical Perspective

- Public concerns.
- 1984 assessment of Biological Effects of Radiofrequency Radiation.
- Guidelines for Public Exposure to RF Radiation - Proposed 1986.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Evaluation of Potential Carcinogenicity of Electromagnetic Fields

- Begun in 1986.
- Developed in collaboration with scientists at the Oak Ridge National Laboratory.
- Originally focussed on RF Fields.
- Evaluation of emerging epidemiology data on ELF fields.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Topics for Discussion

- Mechanisms of interaction.
- Evidence of the relationship between EM fields and cancer.
- Biological effects potentially related to carcinogenesis.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Mechanisms of Interaction

Two approaches for making bridges between external fields and observed effects:

- 1- Estimate internal field and currents from external fields;
- 2- Infer internal processes from observed effects.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Infer Internal Processes

- Plasma membrane is involved -
 - ~ Hormone receptors in cell membranes;
 - ~ Ion binding to tissue.
- Intracellular enzymes connected with cell proliferation -
 - ~ Ornithine decarboxylase, tumor promoters ?
- Neuroendocrine system is involved -
 - ~ Pineal melatonin;
 - ~ Sensory receptors ?
- Resonance effects -
 - ~ Frequency and intensity "windows" for several effects.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Evidence of the Relationship Between EM Fields and Cancer

- Human data.
- Laboratory Studies -
 - ~ Animal data.
 - ~ Phenomenological / mechanistic information.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Human Studies - Childhood Cancer

- Seven residential studies of exposure to 50 / 60 Hz electrical power distribution:
 - ~ Six show associations;
 - ~ Three are statistically significant.
- Two studies of parental occupations showed associations.
- Positive associations were found in Denver, London, Sweden, Tiawan.
- Excess risks were seen for all cancer sites combined, leukemias, brain cancer and lymphoma.
- Confounding exposures cannot be ruled out as causative agents, but no likely confounders have been identified.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Human Studies - Adult Cancer

Radiofrequency Exposures

- Eight studies of various designs.
- Locations in US, Hawaii, Moscow, Poland.
- Findings are inconsistent, exposures are unknown and possibly confounded by other chemicals.
- Mixed results: leukemia, Hodgkin's disease, lymphoma and other sites.
- One study of radio ham operators shows a significant excess of leukemia.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Human Studies - Adult Cancer

Mixed Frequency Exposures

• Occupational studies -

- ~ Over 30 studies of various designs.
- ~ Many are positive, but mixed statistical significance.
- ~ Poor understanding of exposure.
- ~ Mostly leukemias, lymphomas, brain and other nervous system cancers, and occasionally skin cancer.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Human Studies - Adult Cancer

Mixed Frequency Exposures

• Residential studies -

- ~ Five studies, both case control and cohort.
- ~ Inconsistent results: one is significantly positive.
- ~ Evidence is weak: occupational confounding is possible.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Animal Studies

- **Extremely low frequency fields -**
 - ~ No lifetime animal studies.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Animal Studies

• Pulsed radiofrequency fields -

~ Guy, et al. (1985) rat study -

- Benign adrenal medulla tumors;
- No malignant tumors at any one site, but malignant tumors found at all sites combined.

- Significance uncertain -

-- Incidence not large;

-- No increase in benign tumors.

~ Prausnitz & Susskind (1962) mouse study -

- No carcinogenic effect.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

NOV-26-1990 11:00 FROM EPA CHEM. REPLY TO 70 00000001 P.10

Animal Studies

• Unmodulated Radiofrequency Fields -

~ Szmigielski, et al. (1982) mice studies -

- Stimulated growth of transplanted lung tumor tissue;
- Accelerated growth of spontaneous breast cancer;
- Accelerated growth of B(a)P induced skin cancer.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Biological Effects Related to Carcinogenesis

- No gene mutations, DNA damage or sister chromatid exchange.
- Mixed results with induction of DNA synthesis.
- Chromosome aberrations occasionally seen with both RF and ELF.
- ELF magnetic fields enhance transcription of RNA and alter patterns of protein synthesis. Effects are different for:
 - Pulsed vs sinusoidal fields;
 - 60 Hz vs 72 Hz.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

1001-26-1990 11:00 FROM EPA OHEA W. FARLAND TO 33953261 P.15

Biological Effects Related to Carcinogenesis

- Transformation of C3H/10T1/2 cells from normal to malignant is initiated by ELF-modulated RF.
- Release of calcium from brain tissue by ELF and modulated RF shows "windows" of frequency and intensity and sensitivity to earth's static field.
- Pulsed ELF magnetic fields block the effect of parathyroid hormone at the membrane of bone cells.
- ELF electric and magnetic fields decrease nocturnal melatonin blood circulation. Since melatonin inhibits tumor growth, the ELF fields may be stimulating growth by removing an inhibitor. Prostate and breast cancers may be effected.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Summary

1. Several studies have shown positive associations between cancer mortality and children living in homes near electrical power distribution and transmission lines. Relative risks are not high. Evidence for causal relationship is too strong to dismiss as chance and not strong enough to be regarded as proof of causality.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Summary

2. In adults living in homes near the same type of lines, no conclusions can be made because of small populations and poorly characterized exposures.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Summary

3. Additional, but weaker evidence of an elevated risk of leukemia, cancer of the nervous system and perhaps other sites comes from occupational studies of EM field exposure. Lack of exposure measurements and increased probability of confounding is troublesome.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Summary

4. No lifetime animal carcinogenicity studies of ELF fields have been reported. One rat study of pulsed RF Fields showed a suggestion of a carcinogenic response. One mouse study of unmodulated RF radiation showed growth stimulation of tumors.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Summary

5. Phenomena at all biological levels from chromosome breaks to neuroendocrine function are affected by ELF fields. This makes the human findings biologically plausible, but cause-effect explanation is not understood.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Findings

- Weight - of - evidence suggests "causal link."
- No quantitative estimates of risk.
- Further study needed:
 - ~ Mechanism of interaction with cells.
 - ~ Characteristics of exposure leading to effects.



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

Next Steps

- Public comment period.
- Review by EPA's Science Advisory Board (SAB).
- National Research Agenda.
- Interaction with the Federal Coordinating Council for Science, Engineering and Technology (FCCSET).



Briefing for:
Dr. D. Allan Bromley
November 26, 1990

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

December 6, 1990

MEMORANDUM FOR D. ALLAN BROMLEY

FROM: ALICIA K. DUSTIRA 

SUBJECT: Briefing on EPA report on electromagnetic fields and cancer.

ATTENDEES: Eric Bretthauer, EPA; James Mason, Nancy Silva, PHS;
Mark Kerrigan, Curt Klunder, DOE; Ken Yale, Maryanne
Bach, and Alicia Dustira, OSTP

A meeting was called by EPA yesterday to discuss the next steps in the review process and public release of EPA's draft report evaluating the potential carcinogenicity of electromagnetic fields.

The logistics of public release, and the content of the Federal Register notice of EPA's science advisory board (SAB) meeting to consider the draft document, were explored. It was noted that the SAB is scheduled to meet on January 14 to 16. The SAB must receive the document one month prior to the meeting, and the document becomes public when that meeting takes place.

Three options were discussed, reflecting different levels of control over the review process:

- 1) delay SAB review until after CIRRPC reviews the draft.
- 2) have the SAB and CIRRPC reviews occur in parallel. EPA would modify the draft based on those comments, and then ask for public comment.
- 3) not involve any other government agencies or departments in the review process, with EPA proceeding with SAB review and public comment as originally planned.

The DOE and PHS representatives had many questions and concerns about the draft executive summary, which contained statements that were inconsistent with the comments submitted by DOE, CDC and NCI on an earlier draft version of the report. As a result of this discussion, EPA decided this group should meet again on Thursday, December 6 with some of EPA's scientific staff to address the concerns of PHS and DOE before any decision was made regarding the next steps in the review process.

cc: Dr. Ratchford
Ms. Levinson
Dr. Yale
Ms. Bach



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

December 14, 1990

OFFICE OF
RESEARCH AND DEVELOPMENT

MEMORANDUM

SUBJECT: External Review Draft of the Evaluation of the
Potential Carcinogenicity of Electromagnetic Fields

FROM: William H. Farland, Ph.D. *William H. Farland*
Director
Office of Health and Environmental
Assessment

TO: Interested Federal Agencies

This is to advise you of the actions related to the release of the U.S. Environmental Protection Agency's (EPA) External Review Draft of the Evaluation of the Potential Carcinogenicity of Electromagnetic (EM) Fields.

We are asking the advice of the Agency's Science Advisory Board (SAB) on the accuracy and completeness of the EM Fields document, as well as on the question of whether the interpretation of the available information reflects current scientific opinion. The SAB is an independent group of expert scientists and engineers who provide advice and guidance to the EPA Administrator on the scientific and technical aspects of environmental issues. The dates for the SAB meeting are January 14, 15, and 16, 1991. An announcement concerning the times and place of the SAB meeting will be published in the **Federal Register** next week. We are also requesting review by the Federal Coordinating Council for Science, Engineering and Technology's (FCCSET) Committee on Interagency Radiation Research Policy Coordination (CIRRPC).

The draft report reviews the available evidence relating to the potential carcinogenicity of EM Fields between 3 Hz and 30,000 MHz. This evidence includes epidemiological studies, chronic lifetime animal tests, and laboratory studies of biological phenomena related to carcinogenesis. While there are epidemiological studies that indicate an association between EM fields or their surrogates and certain types of cancer, other epidemiological studies do not substantiate this association. There are insufficient data to determine whether or not a cause and effect relationship exists. The document clearly reveals the need for further research.

The EM Fields document was prepared by EPA in response to increasing public concerns as to the potential carcinogenic effects of electromagnetic fields. This evaluation was based on publications in the peer-reviewed literature and was conducted in accord with the EPA Guidelines for Carcinogen Risk Assessment. These Guidelines were developed through broad consensus of the relevant scientific community.

An Internal Review Draft of the EM Fields document was submitted to several federal agencies for review in March 1990. Written comments were received from the Department of Energy (DOE), the National Cancer Institute (NCI), and the Centers for Disease Control (CDC). Comments from the Department of the Air Force were received recently.

As an interested federal agency, you received a copy of the Workshop Review Draft of the EM Fields document. The Workshop Review Draft was evaluated by a panel of experts at a peer-review workshop on June 28, 1990. All comments from the peer reviewers have been addressed, with the exception of one reviewer whose comments were five weeks late. Because of time constraints in revising the document, this reviewer's comments are not reflected in the External Review Draft.

On December 6, 1990, Erich W. Bretthauer, Assistant Administrator for Research and Development, met with Dr. James O. Mason, Assistant Secretary for Health, Department of Health and Human Services, to discuss review of the draft report. Officials representing NCI, CDC, DOE, and the Office of Science and Technology Policy (OSTP) also attended the meeting.

At the meeting, it was clear there was disagreement among the reviewers from various agencies about the weight of evidence and the conclusions presented in the six-page executive summary. Dr. Mason expressed reservations that the executive summary did

not reflect the body of the report in that it did not adequately describe the uncertainties and limitations of the various studies. Officials from OSTP and DOE agreed with Dr. Mason. In order to respond to these concerns, a Notice to Reviewers was added to the draft report. The draft report will be available to the public on Monday, December 17, 1990.

The comments and recommendations from the SAB and CIRRPC committees will be taken into consideration in revising the EM Fields report. An opportunity for public review and comment will be provided before the Agency develops the final version of the report.

Please contact me at 202/382-7315 if you have any questions or would like additional information.

Attachment

NOTE TO REVIEWERS

The scientific issues concerning the relationship between EM fields and adverse health effects are very complex and difficult to interpret. Epidemiologic data are limited and many results to date are based on small studies with methodological limitations. As a result, there are large differences in the way that these studies are evaluated and interpreted, both within the scientific community in general, and among scientists and Agencies within the Federal government in particular. This draft document on electromagnetic (EM) fields reviews and evaluates published information pertaining to the potential carcinogenicity of EM fields. The information includes epidemiology studies, chronic lifetime animal tests, and laboratory studies of biological phenomena related to carcinogenesis. **While there are epidemiological studies that indicate an association between EM fields or their surrogates and certain types of cancer, other epidemiological studies do not substantiate this association. There are insufficient data to determine whether or not a cause and effect relationship exists. The document clearly reveals the need for further research.**

The draft document on EM fields has been reviewed previously by scientists with EPA's Office of Research and Development, and, at a June 1990 workshop, by a panel of scientists from outside the Agency. The draft document is now being sent for review by both the EPA Science Advisory Board (SAB) and the Federal Coordinating Council for Science, Engineering, and Technology's (FCCSET) Committee on Interagency Radiation Research and Policy Coordination (CIRRPC).

The document stating the Agency's findings and conclusions will consider and address comments made by these groups. Currently, there is disagreement among the reviewers from various Agencies about the weight of evidence and the conclusions presented in the Executive Summary. EPA will provide an opportunity for public review and comment before developing the final version of the report.

Given the controversial and uncertain nature of the scientific findings of this report and other reviews of this subject, this review draft should not be construed as representing Agency policy or position.



Erich W. Bretthauer
Assistant Administrator for
Research and Development

12/13/90

U.S. ENVIRONMENTAL PROTECTION AGENCY
SCIENCE ADVISORY BOARD
NONIONIZING ELECTRIC AND MAGNETIC FIELDS SUBCOMMITTEE
Open Meeting
January 14, 15, 16, 1991

AGENCY: U.S. Environmental Protection Agency

ACTION: Pursuant to the Federal Advisory Committee Act, Public Law 92-463, notice is hereby given that the Nonionizing Electric and Magnetic Fields Subcommittee of the Science Advisory Board's Radiation Advisory Committee will meet January 14-16, 1991, at the National Museum for Women in the Arts, 1250 New York Avenue, N.W., Washington, DC, in the Auditorium. The meeting will begin at 9:00 a.m. Monday and adjourn on Wednesday no later than 5:00 p.m.

SUMMARY: On January 14, 1991, the Subcommittee will begin its review of a draft document prepared by the EPA's Office of Health and Environmental Assessment entitled "Evaluation of the Potential Carcinogenicity of Electromagnetic Fields" (EPA/600/6-90-005B). The draft document on EM fields reviews and evaluates published information pertaining to the potential carcinogenicity of EM fields. The information includes epidemiology studies, chronic lifetime animal tests, and laboratory studies of biological phenomena related to carcinogenesis. While there are epidemiological studies that indicate an association between EM fields or their surrogates and certain types of cancer, other epidemiological studies do not substantiate this association. There are insufficient data to determine whether or not a cause and effect relationship exists. The document clearly reveals the need for further research.

DATES: The meeting will be held January 14, 15, and 16, 1991. In accordance with Public Law 92-463, the meeting is open to the public, and members of the public may provide comments to the SAB

Subcommittee. However, seating is limited and is on a first-come basis.

ADDRESSES: To obtain a single copy of the draft document on EM fields, interested parties should contact the ORD Publications Office, CERI-FRN, U.S. Environmental Protection Agency, 26 W. Martin Luther King Drive, Cincinnati, OH 45268, telephone (513) 569-7562 or FTS/684-7562. FAX: (513) 569-7566 or FTS/684-7566. Please provide your name and mailing address and request the document by title and EPA number. A copy of the document will be sent to those individuals who have previously requested it.

The draft document will be available for public inspection and copying in the Public Information Reference Unit of the EPA Library, U.S. Environmental Protection Agency Headquarters, Waterside Mall, 401 M Street, S.W., Washington, DC 20460.

A limited number of copies will be available at the meeting. The document is not available from the SAB.

FOR FURTHER INFORMATION CONTACT: Members of the public wishing to provide written comments or to present oral comments at the meeting should contact Mrs. Kathleen Conway, Designated Federal Official, at (202) 382-2552 by 3:00 p.m., January 2, 1991. Written comments to be mailed to the Subcommittee in advance of the meeting must be given to Mrs. Conway by noon Friday, January 4, 1991. Written comments may also be submitted at the Subcommittee meeting. If possible, please provide at least 20 copies for distribution to the Subcommittee. Oral comments should not duplicate written materials and opportunity for oral comment is limited.

SUPPLEMENTARY INFORMATION: The draft document on EM fields has been reviewed previously by scientists within EPA's Office of Research and Development and several federal agencies, and, at a

June 1990 workshop, by a panel of scientists from outside the Agency. These reviewers' comments have been addressed and many incorporated into the current draft. There are no changes in the conclusions between the workshop review draft and the current draft. There is, however, disagreement among the reviewers from various Agencies about the weight of evidence and the conclusions presented in the Executive Summary. This report is now being submitted to the Agency's SAB for review. In addition, the Agency is requesting comments from the Federal Coordinating Council for Science, Engineering and Technology's (FCCSET) Committee on Interagency Radiation Research and Policy Coordination (CIRRPC). Based on these reviews, the draft report will be revised as necessary and EPA will provide an opportunity for public review and comment before developing the final version of the document.

The scientific issues concerning the relationship between electromagnetic (EM) fields and adverse health effects are very complex and difficult to interpret. The final document stating the Agency's findings and conclusions will consider and address comments made by the groups mentioned above. Given the controversial and uncertain nature of the scientific findings of this report and other reviews of this subject, the external review draft should not be construed as representing Agency policy or position.

December 13, 1990

Date

Arnold B. Barnes

Staff Director
Science Advisory Board

December 13, 90

Date

Eric Butterhous

Assistant Administrator
for Research and Development

"CORRESPONDENCE TRACKING"

TYPE: ACTION

DOCUMENT NUMBER: 9120011

FROM: HENRY A. WAXMAN

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 01/02/91

SUBJECT: TESTIMONY BEFORE SUBCOMMITTEE ON HEALTH AND THE
ENVIRONMENT RE GLOBAL CLIMATE CHANGE ISSUE

ASSIGNED TO: Nancy Maynard

ACTION REQUIRED: ACCEPTANCE LETTER

SENDER'S DUE DATE: OSTP DUE DATE: 01/11/91

DATE COMPLETED: -----

COPIES TO: D. Allan Bromley
Ken Yale

WHITE HOUSE TRACKING #: CONTACT PERSON:

REMARKS:

DATE RECEIVED: 01/04/91

FILE: *P-Congressional* *P-Environment*
~~BROMLEY TESTIMONY~~ - *Global Change*

HENRY A. WAXMAN, CALIFORNIA, CHAIRMAN

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KAREN NELSON, STAFF DIRECTOR

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON HEALTH AND THE ENVIRONMENT

2415 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC 20515

PHONE (202) 225-4952

January 2, 1990

Dr. D. Allan Bromley
Assistant to the President for Science and Technology
Executive Office of the President
Washington, D.C. 20500

Dear Dr. Bromely:

I am writing to request that, as White House Science Advisor and head of the inter-agency group developing U.S. policy on global climate change, you present testimony before the Subcommittee on Health and the Environment concerning the global climate change issue, and international efforts to grapple with this problem.

The hearing will be held on Thursday, January 31 at 10:00 a.m. in a room to be announced in the Rayburn House Office Building.

Please include in your testimony your views on the nature and severity of global climate change expected as a result of the release of anthropogenic greenhouse gases. Please include your evaluation of the most recent data on global climate in 1990 and the prior decade, as well as your views on the possibility that we may already be experiencing an altered global climate as a result of anthropogenic emissions, and your evaluation of the potential health and environmental impacts from climate change induced by man-made emissions. Please include in that evaluation consideration of indirect impacts, such as increases in tropospheric pollution levels, and contamination of drinking water supplies by salt water intrusion.

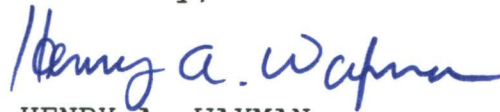
Please provide the subcommittee with a complete description of the position which the U.S. will take at next month's United Nations' sponsored negotiations on climate change, to be held here in Washington. Please provide your views regarding the importance of international efforts to address the global climate change problem. Please summarize the commitments and policies that other nations have adopted, or are planning to adopt, to reduce emissions of greenhouse gases, CO₂ in particular. Please describe leading proposals for multilateral action to address the climate change policies, and please indicate nations supporting and nations opposing such proposals. In addition, please describe the Administration's views on the domestic policies the U.S. should implement to reduce the U.S. contribution to global warming.

Committee rules require that 100 copies of your written testimony be filed with the subcommittee office no later than noon on January 29, 1991. Your written testimony may be of any length; however, I must ask that you confine your oral presentation to no longer than ten minutes.

Thank you for your cooperation. I look forward to your testimony. If you have any questions please contact Greg Wetstone or Phil Barnett of the subcommittee staff at 202-226-7620.

With every good wish, I am,

Sincerely,



HENRY A. WAXMAN
Chairman, Subcommittee on
Health and the Environment

HAW/gwm