

WHITE HOUSE FILES

FIRST TERM

FOLDER TITLE White House = Environment

S&T NUMBER	DATE	FROM/TO	SUBJECT
	12/19/69	DuBridge/Ehrlichman	Recom.to pursue non-conventional vehicle development
	12/18/69	DuBridge/Ehrlichman	Preliminary report on visit to General Motors
	12/18/69	DuBridge/Ehrlichman	Mngmt of Environ.Quality Council Aff.
1399	12/5/69	Ehrlichman/DuBridge	Low pollution vehicles
	12/4/69	Whitaker/DuBridge	Re "noise presentation"
	12/3/69	DuBridge/Ehrlichman	Automotive fuels
	12/1/69	DuBridge/Whitaker	Next mtg of EQC
1267	11/25/69	DuBridge/Ehrlichman	Res.on unconventional engines
1087	11/13/69	DuBridge/Chermak	Smog in San Juan Capistrano
1199	10/28/69	DuBridge/Cole	World food supply
1086	10/21/69	King/DuBridge	Comments on pesticide residues in tobacco
1009	9/23/69	Kelly/Buckley	Adv.Cttee on Environmental Quality
	9/11/69	DuBridge/Flanigan	Automotive noise
	8/29/69	DuBridge/Boe	Pres's population message
	8/29/69	DuBridge/Hardin	" " "
962	8/21/69	Flanigan/Stauffer	Req. mtg with Dr.DuBridge
	8/18/69	Flanigan/DuBridge	Req.to appt Wesley Hodge to CAQ
	8/14/69	Freeman/Whitehead	Power plant siting
	8/5/69	Pagnotta/Bull	Requirements for EQC
	7/25/69	Bloch/Buckley	Appt to Adv.Council on Env.Quality
	7/22/69	Pagnotta/Holland	Re John Muir Institute for Environment
	6/19/69	DuBridge/Whitaker	Natural guidelines on pollution
	7/18/69	DuBridge/Flanigan	Apptees for Adv.Cttee on Env.Quality
	6/17/69	DuBridge/Ehrlichman	Problem of air pollution
	7/16/69	Connors/Flanigan	Rockwell for Adc.Cttee on Env.Quality
	7/7/69	Flanigan/O'Connell	Murray " " "
	6/10/69	Train/Cole	Pres.Message on Airport and Airways
	6/4/69	Beckler/Cole	Message on population
	6/3/69	Ripley/V.P.	Re establ. Env.Quality Council
	6/3/69	Flanigan/Buckley	Cttee on Environment (Rockefeller Cttee
	6/2/69	Hennessey/Ehrlichman	Conflict between AEC & Minesota Pollution Control Agency
528	5/14/69	Finn/DuBridge	Proposed Pres.Message on Population and family planning
524		DuBridge/Wydler	Establishment of environment quality council
	2/12/69	DuBridge/Whitaker	Proposal for creation of Cabinet Cttee

Do Not

File After

DECEMBER 31, 1969

February 12, 1969

WHITE HOUSE

HH *Emm*

MEMORANDUM FOR

John C. Whitaker

I find that the development of a proposal for the creation of a Cabinet Committee on Total Environment and Natural Resources is an enormously complicated matter. Many agencies of government are involved and the scope of the whole problem of environment and natural resources covers a bewildering array of government and private activities and problems, including problems at local and State government levels. To select the proper membership of the Committee and to give it a proper charge expressed in an Executive Order requires most careful consideration and coordination with various individuals around the government. To announce a Cabinet Committee with a rather vague directive would, I fear, do more harm than good since it will leave so many questions unanswered regarding the scope and authority of the Committee.

Several members of my staff are actively at work on this problem and have already consulted the Bureau of the Budget, and we have received voluntary suggestions and comments from various government sources as a result of the announcement of the President's interest in this matter.

In view of all this, I fear that I must ask for a couple of weeks additional time to work out the intricacies of this problem. I fear that an inadequate charter for this group would be very confusing and embarrassing to the President.

I would like to have the privilege of discussing where we stand on this after we have coalesced some more thoughts on the subject.

Lee A. DuBridge
Science Adviser

LAD/eac

LAD File & Chron., S&T File & Chron., Mr. Beckler, Dr. Buckley, Mr. Pagnotta

Copies to: Attorney General Mitchell, Robert Mayo, Kenneth Cole, Mr. Moynihan

Mr. Bryce Harlow

MEMORANDUM

ACTION

THE WHITE HOUSE
WASHINGTON

February 10, 1969

MEMORANDUM TO

Dr. Lee Dubridge

FROM: John C. Whitaker

Jew

Bob Haldeman's memorandum of February 6 to me indicates the President's sense of urgency in announcing the creation of the Cabinet Committee on Total Environment and Natural Resources.

One further thought -- when you prepare the Executive Order creating this Department, please consult the Attorney General and the Director of the Bureau of the Budget.

cc: Attorney General, John N. Mitchell
Mr. Robert P. Mayo
Mr. Kenneth Cole
Dr. Dubridge, enclosures JCW memorandum 2/5/69

see you /
MEMORANDUM

February 5, 1969

TO: Dr. Lee DuBridge
FROM: John C. Whitaker
RE: Cabinet Committee on Total Environment
and Natural Resources

The President is ready to proceed with this Cabinet Committee per my memorandum to Bob Haldeman of February 1 (attached), and his reply memorandum of February 4, also attached, designating you as the key staffman.

After you have thought about a course of action and picked your staff, it seems to me we should review:

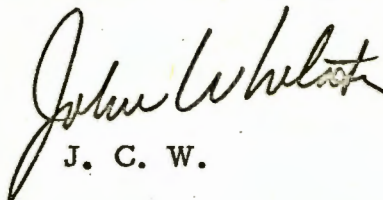
- should be
considered
w/ Bob's etc*
- (1) with John Ehrlichman - a draft Executive Order creating the committee
 - (2) with Bob Haldeman - a proposed scope of work for the first few months
 - (3) with Bob Mayo - on any possible budget implications resulting from recommendations likely to appear in the early stages of the program
 - (4) with Bryce Harlow - on any likely legislation implications resulting from the early stages of the program
 - (5) with Pat Moynihan - on areas of possible overlap with the Urban Affairs Council. I am thinking particularly of air and water pollution, as well as City planning.

Dr. Lee DuBridge

-2-

February 5, 1969

I would be glad to work with you and your staff on this project.


J. C. W.

cc:

Mr. Kenneth Cole

Mr. John Ehrlichman

Mr. H. R. Haldeman)

Mr. B. N. Harlow)

Mr. R. P. Mayo)

Dr. D. P. Moynihan)

Messrs.

Whitaker and Haldeman

respective memoranda

attached

CROSS REFERENCE INDEX

Date: February 28, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Progress Rpt of the Cabinet Cmt on the Environment

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

CROSS REFERENCE INDEX

Date: April 10, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Status of the Environmental Quality Council

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

CROSS REFERENCE INDEX

Date: April 29, 1969

INDEX: WHITE HOUSE-Envir.

To: Sen. Muskie

From: DuBridge/OST

Summary: Status of legislation dealing w/solid waste disposal

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

CROSS REFERENCE INDEX

Date: May 5, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: Du Bridge/

Summary: Council on Environmental Quality

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

CROSS REFERENCE INDEX

Date: May 6, 1969

INDEX: WHITE HOUSE-Envie.

To: The President

From: DuBridge/OST

Summary: Environmental Council Matters

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

CROSS REFERENCE INDEX

Date: May 9, 1969

INDEX: WHITE HOUSE-Envir.

To: Hickel/Sec. Interior

From: The President

Summary: Task force environmental protection of arctic Alaska related
oil exploration and development

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

May 14, 1969

WHITE HOUSE

HE Ennen

Dear Mr. Wydler:

The Environmental Quality Council, about which Mr. John Burdis inquired, has not yet been established. It is, however, under active consideration with the expectation that it will be chaired by the President and its members will include the Vice President and the Secretaries of Agriculture, Commerce, Health, Education, and Welfare, Housing and Urban Development, Interior, and Transportation. I will serve as Executive Secretary. The Council will be concerned with all forms of impacts on the environment and will assist the President in such matters.

I hope this information will be helpful to you in answering your constituent.

Sincerely yours,

Lee A. DuBridge
Lee A. DuBridge
Director

Honorable John W. Wydler
House of Representatives
Washington, D. C. 20515

cc:
OST File & Chron
LAD File & Chron
Sally Studebaker /White House
Mr. Barlow
JLB File & Chron

JLBuckley:ew

S&T Cont. No. 524

THE WHITE HOUSE
WASHINGTON

May 9, 1969

Dear Mr. Wydler:

Thank you for your April 30 letter to the President of Mr. John Calbreath Burdis, who desires information on the establishment of an "environmental quality council."

We have forwarded your request to Dr. Lee DuBridge, Director of the Office of Science and Technology, and you may expect further reply shortly.

With cordial regard,

Sincerely,

William E. Timmons
Deputy Assistant to
The President

Honorable John W. Wydler
House of Representatives
Washington, D. C.

✓cc: Dr. Lee DuBridge w/incmg for DIRECT REPLY.

14

J-5/5

Congress of the United States

House of Representatives

Washington, D.C. 20515

JOHN W. WYDLER
FOURTH DISTRICT, NEW YORK

DISTRICT OFFICE:
150 OLD COUNTRY ROAD
MINEOLA, NEW YORK 11501
TEL.: CH 8-7676

COMMITTEES:
SCIENCE AND ASTRONAUTICS
SUBCOMMITTEES
NASA OVERSIGHT
ADVANCED RESEARCH AND TECHNOLOGY
GOVERNMENT OPERATIONS
SUBCOMMITTEES
SPECIAL STUDIES
LEGAL AND MONETARY AFFAIRS

April 30, 1969

BH

The President
The White House
Washington, D. C.

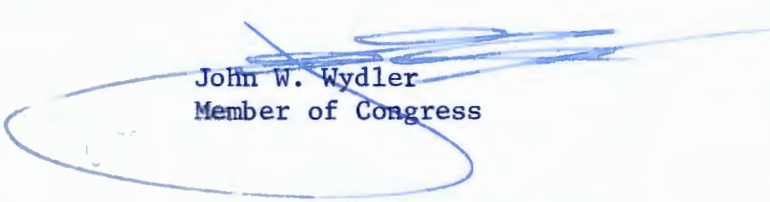
Dear Mr. President:

The Director of Planning for the Nassau County Planning Commission, Mr. John Calbreath Burdis, has expressed interest in the formation of a new "environmental quality council" and has asked my help in securing information concerning it.

It would be helpful, therefore, if you would advise me as to the procedures to be followed by those who are interested in participating in the council. In other words, information as to who will be appointed, periods of such appointments, qualifications, and specifics as to what may be expected of the council membership.

Any helpful information you may furnish will be appreciated as I would like to reply to Mr. Burdis' inquiry at an early date.

Respectfully yours,


John W. Wydler
Member of Congress

JWW:bh

524

J&T Cont. No. _____

THE WHITE HOUSE

WASHINGTON

May 14, 1969

WHITE HOUSE *FF Enni*

MEMORANDUM FOR DR. LEE DuBRIDGE

From: *CF* Chester E. Finn, Jr.

Pat Moynihan and I are scheduled to see you at ~~2:30~~ 3:00 p.m. tomorrow, May 15, in your office, to discuss our proposed Presidential Message on population and family planning.

I enclose a copy of the current draft of that Message. There may be changes by tomorrow, but there would not be time to get them to you, so I hope this draft will suffice.

I would suggest that your secretary arrange for Drs. Buckley and King and Mr. Anderson to sit in.

*1/ Hays - Sen
- former
- en*

Attachment

THE TECHNOLOGICAL
BUREAU OF SCIENCE
MAY 14 1 30 PM '69
RECEIVED

528

TO THE CONGRESS OF THE UNITED STATES:

A century and a half ago, the philosopher and economist Thomas R. Malthus predicted that the earth would soon fill up with people. His calculations told him that the world's population was growing so fast that it would rapidly outdistance the food supply, and move mankind to a permanent state of semi-starvation.

The opening of the American west, and other vast new agricultural territories, together with technological advances in agriculture distracted attention from Malthus' dismal forecast, but did not invalidate his arithmetic. In 1830, about the time he wrote, there were one billion persons on earth. One hundred years later there were two billion. Thirty years after that, three billion. Not quite a decade has elapsed since then, and there are already three and one half billion, with the total now growing by seventy million persons a year. At this rate, the world is moving toward seven billion or more persons at the end of the Century. We would then be adding one billion persons every eight years.

If the earth's food supply and economic development were able to keep pace, this dramatic population growth would seem less serious. But they are not. Despite remarkable progress in agricultural techniques, there is less food per person in the world today than there was thirty years ago. The planet's population has increased by one and a half billion in that time, and food production has not been able to keep pace. There is little basis for hoping that it will catch up to the even-faster population growth of the coming decades.

Population growth has made it impossible for many developing countries to raise their citizens' standard of living. Two thirds of the new capital invested by developing nations -- both from their own resources and from foreign assistance -- is absorbed by population growth. Only one-third is available to improve the lives and raise the hopes of the peoples of these

lands. As a consequence, although the national products of the developing countries have grown faster than those of the developed nations in recent years, the gain per person is far less. The catastrophic gap between the standards of living of the rich nations and the poor nations is growing wider.

Thus the Malthusian specter returns. Suddenly, the prospect of world starvation is real and immediate. Men of competence argue about the date when the phenomenon will become irreversible: some declare that date has already passed. Others are less certain, but call attention to food and population statistics that suggest the prospect is imminent.

Moreover, mankind's entire relationship to the environment is threatened by overpopulation. The world's rivers, lakes and estuaries and the very air we breathe are affected by population growth. Man's fundamental rights to clean air, pure water and unlittered land, to outdoor recreation and park areas and the right to privacy itself are all imperiled by the prospect of too many people. We must realize that the world's basic natural resources can be depleted too rapidly, and unplanned population growth with its attendant demand for those resources can devastate the ecology of our planet.

No industrial nation -- certainly not the United States, in industrial terms the largest and wealthiest of all -- can be indifferent to this looming biological catastrophe. The narrowest perspective of national self interest, or the widest vision of a shared and common humanity, lead to a single inescapable conclusion: America must engage herself with this crisis.

This must be done at home no less than abroad. There is, to be sure, no prospect of mass starvation in America. But to view the issue of population growth only in terms of biological survival is to miss the fundamental issue of the impact of population growth -- especially when it takes place in dense urban settlements -- on the quality of life and the nature of society.

The American birthrate has been declining since the 18th Century and is now down to a rate of increase of one percent a year. However, even this low rate can bring about an enormous growth in population in the course of a generation. The American population passed the 100,000,000 mark in 1917 after three centuries of steady growth from the days of colonization. In 1967 -- just half a century later -- the 200,000,000 mark was passed. Should the current rate of growth continue -- and most experts are confident that it will -- the next hundred million persons will be added to the population in merely three decades. By the year 2000, there will be 300,000,000 Americans.

There are two fundamental facts that will affect the lives of the next 100,000,000 Americans.

The first fact is that unless there are marked improvements in the availability and effectiveness of family planning, many millions of the children born between now and the year 2000 will be unwanted. Current estimates are that about 450,000 unwanted children are born in the United States each year. This represents almost one out of every seven infants.

A high rate of involuntary childbearing is a major cause of poor family health. It is related to the alarmingly high infant mortality rate in the United States, to malnutrition, poor educational attainment and high rates of illegal abortion. Unwanted childbearing is inseparably linked to the problems of poverty.

In my first Message to the Congress on domestic affairs, I called for a national commitment to providing a healthful and stimulating environment for all our children during their first five years of life. Nothing is more important in creating such an environment than that parents should have no more children than they hope to have or than they are capable of caring for.

The second fact is that unless great advances are made in the theory and practice of urban planning and development, this extraordinary flood of humanity will descend upon cities that are scarcely prepared. There is

no shortage of space as such in the United States. Half the counties of America lost population during the 1950's. But urban space -- the areas which received the population from the declining counties, the areas in which three quarters of the population now live and into which the great majority are now born -- is in very short supply, if supply is measured not just in feet or acres but also in the capacity of the economic, governmental and social structure to support additional people.

A measure of the pressure on urban space which will be created by the next hundred million Americans can be had by estimating what would be required to avoid increasing the population of existing urban areas. To do this would require that starting now, and for the rest of the Century, we build each month a new city of 250,000 persons. This would be the equivalent of building a city the size of Tulsa, Dayton, or Jersey City every thirty days for thirty years.

Obviously, we are not going to do this. New towns can and should be built, and will play an important role in our policies for urban growth and development. But our capacity to do this is limited on every front: resources of men and materials; time; suitable sites; political and governmental inventiveness. Our experience with new towns thus far has shown them to be sociologically interesting, but tedious to plan, hard to finance, tremendously difficult to assemble land for, and unappealing to a great many Americans. While many new town experiments will continue, it is unrealistic to look to such enclaves to accommodate very much of our population increase.

Far the greatest numbers -- upwards at least of 75,000,000 -- of the next hundred million Americans will settle in existing urban areas. But if this tremendous influx should take place with the same atmosphere of indifferent chaos that has marked so much urban change of the past generation, is there any reason to suppose the present unrest of the cities will grow anything but more pronounced? If an additional fifty million or so

students will be seeking to pass through our institutions of higher learning in the next generation, can the strains which growth has already imposed on these institutions become anything but more severe? A catalogue of such concerns could readily be assembled. The prospect of adding one hundred million persons to the American population in thirty years simply demands a coherent and comprehensive response.

* * * * *

The United States is presently engaged in many programs intended to temper the problems of population growth. Our government cooperates with other nations and with international organizations in seeking to assist the agricultural production and bolster the economic growth of the developing countries. We assist our own citizens and those of the world in obtaining information and assistance to ensure that they have only those children whom they can love and support. We are engaged in research into new and different means of guiding population growth.

We will continue these efforts. But we cannot rest content with them. For to do so would be to ignore the fact that nothing so far attempted has significantly affected the inexorable growth of the world's population and its lessening ability to nourish and sustain its people at levels of decency and comfort. To do so would also be to ignore the fact that millions of children are born in the United States whose parents cannot provide for them or cannot be said to want them.

A wholly new level of effort is required if we are to face reality. If the masses of the developing nations are not to be consumed by their own fecundity, if the processes of democracy in the United States are not to be weakened or, indeed, overwhelmed by a furious and disoriented pace of urbanization, the United States government must respond.

I propose that we begin now.

As a first measure, the Federal government must organize itself to develop policies and carry them forward. I propose to launch the widest ranging enquiry into every aspect of population growth, and simultaneously to establish administrative machinery within the Federal establishment for the purpose of carrying out programs as they are developed.

I propose that the enquiry be conducted by a new Commission on Population Growth and Metropolitan Planning, which I now ask the Congress to establish. The task of the Commission will be to enquire into the whole range of issues of policy and administration, at home and abroad, that affect population growth or are affected by it. Its time perspective should be the entire next thirty years, for both the United States and for the world at large. The majority of its members should be laymen of demonstrated capacity to deal with matters of the highest public policy, but it should also include specialists in the disciplines of theology, the medical and social sciences, and the law, whose individual judgment and professional knowledge will add to the Commission's deliberations. In addition, the Commission should be empowered to create advisory panels on such subjects as it wishes and to include foreign nationals on such panels. Subjects of international importance will often require multi-national deliberation.

The object of the Commission on Population Growth and Metropolitan Planning should be to assemble the knowledge on which to base the policies not just of the United States but also those of all the nations in the world desirous of participating in the enquiry and of reaching conclusions from its results. This cannot be done in one year or two. Moreover, the Commission should undertake not only to assemble and issue new information, but also to monitor the response to that information in an effort to learn how the realities of this problem can be met. Accordingly, I ask that Congress authorize the Commission to remain in being for an initial term of five years.

In keeping with this extraordinary life span, I shall charge the Commission with extraordinary responsibilities:

1. The Commission will evaluate the adequacy of present knowledge and current research in population and family planning, and will recommend new directions and emphases for future research. It is my intention that "research in population" will come to show a grander and more basic consciousness of its central role in shaping the future of humanity, and that our research activities will reflect that awareness.

2. The Commission will examine our current programs in population and family planning, and will recommend both policies and procedures for future programs. It is my intention that our domestic programs should soon provide family planning information to every couple that requests it, and actual assistance to every such couple that cannot otherwise afford it. But with the galaxy of governmental and private agencies already engaged in this field, careful planning and intelligent policies are needed if we are to avoid duplication and accomplish our goals.

3. The Commission will examine the organization and structure of government agencies concerned with population and its consequences, and will recommend improvements, alterations, and worthy innovations.

4. The Commission will advise the President and his Cabinet, the National Security Council, the Council for Urban Affairs (and the proposed Environmental Council) on the many ways in which population considerations affect and are affected by the decisions of those bodies.

5. The Commission will inform the Federal departments and agencies of population considerations, will keep them abreast of new research findings, and will help them to achieve the world-wide perspective so necessary in this complex field.

6. The Commission will examine trends in the American and world populations in the broad context of public policy, urban development, economic planning, natural resource conservation and land use, with special attention to metropolitan planning.

7. It will assess international and private efforts in population and family planning, as well as those of the United States government, will evaluate their effectiveness, devise new means of judging them, and will recommend new measures on the basis of that evaluation.

8. The Commission will assist the American public to achieve full awareness of the seriousness and importance of population policy, especially in the context of urban development, and will inform our people of the complexities of that policy. In like manner, the Commission -- which will be broadly representative of the American people -- will convey the hopes and fears of our citizens into the councils of government, that our programs may be designed in keeping with the needs and wishes of the people who use them.

9. The Commission will advise the Federal departments, the Bureau of the Budget and the President concerning the levels and best allocation of resources needed to realize our policies.

The Commission on Population Growth and Metropolitan Planning will have an outstanding scientist and administrator as its Staff Director. In addition to assisting the distinguished members of the Commission, the Staff Director will serve as chairman of a new federal inter-agency committee on population growth and government operations, which I shall establish immediately.

This committee is intended to be a working group that will devote itself to the operations of government programs. In keeping with that mandate, and with the need for high-level coordination, the committee's members will be drawn from the Under Secretary level of the government departments. It will include the Under Secretaries of Agriculture; Health, Education and Welfare; Commerce; Housing and Urban Development; Labor; Interior; Transportation; State; the Deputy Director of the Office of Economic Opportunity; and the Administrator of the Agency for International Development. The committee may delegate specified portions of its work to sub-committees on the assistant secretary level, but the Under Secretaries will maintain a close watch over the entire enterprise.

The committee will coordinate and develop all existing government efforts in population and family planning, and will direct the design of new measures. Through its chairman -- the Commission's Staff Director -- the working agencies of the government will be linked to the experts and laymen responsible for proposing new policies and for defining the problems at hand. Thus, for example, the Department of Housing and Urban Development's plans for new housing will be tied directly to the Interior Department's plans for parklands and natural resource conservation. The Department of Health, Education and Welfare's many research activities can inform the international programs of the State Department and the Agency for International Development.

The Commission's Staff Director, aided as necessary by additional staff members and located in the Executive Office of the President, will share the responsibility for developing Federal policy and coordinating Federal activity in these critical fields. Through close cooperation with the members and staff of the many relevant councils and bureaus of the Executive Branch, he will bring his special perspective to bear on crucial decisions at the highest levels of government.

He and his staff will assist the agencies of government to improve their programs in population and family planning, and will bring them into closer contact with state and local government, with international organizations, and with the many dedicated private groups concerned with the same problems. In this executive capacity, he will help to develop an awareness of population policy and family planning -- throughout the nation, and to draw together the hundreds of disparate efforts already underway.

* * * * *

(SECTION ON RE-STRUCTURING AND REORGANIZATION OF GOVERNMENT AGENCIES)

* * * * *

The nation cannot launch these vital, expanded activities without also allocating the resources necessary to pay for them. I will, therefore, ask the Congress in the coming years to make available those resources.

In the Fiscal Year 1970, the Federal budget includes approximately \$116 million for population and family planning programs at home and abroad. Sixteen million will be devoted to research, and fifty million each to domestic and foreign direct service programs. These sums represent marked increases over comparable figures in previous years, and should adequately meet our needs in the coming year as the Commission on Population Growth and Metropolitan Planning undertakes its work.

In subsequent years, I expect that the government's budget figures will reflect the activities and recommendations of that Commission. As a guide for the present, I would anticipate the funding levels of our programs to grow, by fiscal 1973, to approximately \$275 million in federal dollars. In keeping with such a substantial increase, I will seek comparable growth in the funds devoted to these purposes by state and local governments, by private organizations, by other nations and by international organizations. It would be unrealistic and unfair to expect the United States government to shoulder the entire burden, but I commit this Administration to leading the way.

As we move toward the third century of our national life, every citizen must heed the seriousness and immediacy of these questions, and the government must, at last, assume its responsibility for helping to answer them. The Commission that I now ask the Congress to authorize will start by charting the terrain and planning excursions into it. But within a year, the Commission's work will begin to evolve into careful yet ambitious measures by this Administration to master the issues posed by population growth, to plan our metropolitan development with full awareness of their complexity, and to assist our families to have only as many children as they can care for.

A single Commission report and a single Message will not suffice. I therefore ask the Congress -- as I will ask the members of the Commission itself -- to plan on prolonged and intensive attention to these matters. We can do no less, if we are to fulfill our responsibilities to the future generations of mankind.

THE WHITE HOUSE,

May 29, 1969

WHITE HOUSE

Handwritten signature

MEMORANDUM FOR

Ronald Ziegler

Attached for your information is a copy of a press release which has been issued today by the Office of Science and Technology. It has been closely coordinated with the Department of State.

Robert Barlow
Special Assistant
to the Director

Attachment

RBarlow:md 5/29/69

cc: RB file and chron
LAD for info

FRP

OST file and chron

Press release attached on "OECD Tunneling Technology Conference"

DRAFT 4/15/69

FOR IMMEDIATE RELEASE

DATE: _____

Office of the White House Press Secretary

THE WHITE HOUSE

The President today signed an Executive Order creating the Environmental Quality Council, a Cabinet level advisory group, presided over by the President and in his absence by the Vice President. Dr. Lee A. DuBridge, Science Adviser to the President, is Executive Secretary of the Council.

The Executive Order also provides for a 15-man Citizens' Advisory Committee on Environmental Quality, to be appointed by the President. The Committee will be chaired by Laurance S. Rockefeller, who has served as Chairman of the Citizens' Advisory Committee on Recreation and Natural Beauty since its creation in 1966.

Members of the Cabinet-level Council, in addition to the President and Vice President, are Secretary of Agriculture Clifford M. Hardin, Secretary of Commerce Maurice H. Stans, Secretary of Health, Education, and Welfare Robert H. Finch, Secretary of Housing and Urban Development George W. Romney, Secretary of the Interior Walter J. Hickel, and Secretary of Transportation John A. Volpe.

Representatives of other agencies may be invited to participate in the deliberations of the Council when matters affecting their agencies are under consideration.

In signing the Order, President Nixon commented on his own deep and personal interest in environmental quality and the strong leadership he expects to exert in restoring and improving the quality of our environment. "All mankind," he said, "is tied together by its dependence on a habitable environment. Each of us needs clean air to breathe, fresh water to drink, wholesome foods to eat. We also need pleasant, varied surroundings in which to work and live. Each of us individually alters, to some small degree, the quality of his surroundings. Together, our influence may be so great as to obviously damage our surroundings. This is the case with the smog from our cars or the wastes from our cities and industries.

"Some of our actions have effects beyond our borders such as changes in the waters and the atmosphere. This Council that I create today offers an opportunity for increased cooperation among nations, as well as the improved management of our domestic environment. It will permit us to deal more effectively with today's problems

and at the same time help us foresee more clearly, and thus avoid, many problems in the future. "

The Council was created to advise and assist the President with respect to Environmental Quality and will be called upon to perform other duties as prescribed by the President.

Specific duties of the Council include assisting the President:

- in development of Federal policies for the environment,
- in reviewing the adequacy of systems for monitoring and predicting environmental change,
- in furthering intergovernmental cooperation in environmental programs,
- in advancing scientific knowledge of effects of man's activities on the environment, recycling and other facets of waste management,
- in assessing new and changing technologies for their effects on the environment.

The Council will take over those functions previously performed by the President's Council on Recreation and Natural Beauty, which

include review of plans affecting outdoor recreation or natural beauty, ^{It} and will make recommendations on matters of policy in these spheres. ^A

^{Also}
[Lastly] the Council will assist the President in preparing periodic reports to the Congress on the status of our environment and our progress in environmental management.

The new Presidentially appointed Citizens' Advisory Committee on Environmental Quality is created by expanding the membership and scope of the Citizens' Advisory Committee on Recreation and Natural Beauty, whose members will continue to serve on the new Committee until their respective terms expire. Laurance Rockefeller's chairmanship, together with the continuity in membership, will ensure that the valuable contributions made by the Citizens' Advisory Committee on Recreation and Natural Beauty will be continued on an expanded scale dealing with a whole range of problems inherent in environmental quality.

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EXECUTIVE ORDER

ESTABLISHING THE ENVIRONMENTAL QUALITY COUNCIL AND THE CITIZENS' ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY

By virtue of the authority vested in me as President of the United States, it is ordered as follows:

PART I. ENVIRONMENTAL QUALITY COUNCIL

Section 101. Establishment of the Council. (a) There is hereby established the Environmental Quality Council (hereinafter referred to as "the Council").

(b) The President of the United States shall preside over meetings of the Council. The Vice President shall preside in the absence of the President.

(c) The Council shall be composed of the following members:

The Vice President of the United States
Secretary of Agriculture
Secretary of Commerce
Secretary of Health, Education and Welfare
Secretary of Housing and Urban Development
Secretary of the Interior
Secretary of Transportation

and such other heads of departments and agencies and others as the President may from time to time direct.

(d) Each member of the Council may designate an alternate, who shall serve as a member of the Council whenever the regular member is unable to attend any meeting of the Council.

(e) When matters which affect the interests of Federal agencies the heads of which are not members of the Council are to be considered by the Council, the President or his representative may invite such agency heads or their alternates to participate in the deliberations of the Council.

(f) The Director of the Bureau of the Budget, the Chairman of the Council of Economic Advisers, and the Executive Secretary of the Council for Urban Affairs or their representatives may participate in the deliberations of the Environmental Quality Council as observers.

(g) The Science Adviser to the President shall be the Executive Secretary of the Council and shall assist the President in directing the affairs of the Council.

Section 102. Functions of the Council. (a) The Council shall advise and assist the President with respect to environmental quality matters and shall perform such other related duties as the President may from time to time prescribe. In addition thereto, the Council is directed to:

(1) Recommend measures to ensure that Federal policies and programs, including those for development and conservation of natural resources, take adequate account of environmental effects.

(2) Review the adequacy of existing systems for monitoring and predicting environmental changes so as to achieve effective coverage and efficient use of facilities and other resources.

(3) Foster cooperation between the Federal Government, State and local governments, and private organizations in environmental programs.

(3) Seek advancement of scientific knowledge of changes in the environment and encourage the development of technology to prevent or minimize adverse effects that endanger man's health and well-being.

(5) Stimulate public and private participation in programs and activities to protect against pollution of the Nation's air, water, and land and its living resources.

(6) Encourage timely public disclosure by all levels of government and by private parties of plans that would affect the quality of environment.

(7) Assure assessment of new and changing technologies for their potential effects on the environment.

(8) Facilitate coordination among departments and agencies of the Federal Government in protecting and improving the environment.

(b) The Council shall review plans and actions of Federal agencies affecting outdoor recreation and natural beauty. The Council may conduct studies and make recommendations to the President on matters of policy in the fields of outdoor recreation and natural beauty. In carrying out the foregoing provisions of this subsection, the Council shall, as far as may be practical, advise Federal agencies with respect to the effect of their respective plans and programs on recreation and natural beauty, and may suggest to such agencies ways to accomplish the purposes of this order. For the purposes of this order, plans and programs may include, but are not limited to, those for or affecting: (1) development, restoration, and preservation of the beauty of the countryside, urban and suburban areas, water resources, wild rivers, scenic roads, parkways and highways, (2) the protection and appropriate management of scenic or primitive areas, natural wonders, historic sites, and recreation areas, (3) the management of Federal land and water resources, including fish and wildlife, to enhance natural beauty and recreational opportunities consistent with other essential uses, (4) cooperation with the States and their local subdivisions and private organizations and individuals in areas of mutual interest, (5)

interstate arrangements, including Federal participation where authorized and necessary, and (6) leadership in a nationwide recreation and beautification effort.

(c) The Council shall assist the President in preparing periodic reports to the Congress on the subjects of this order.

Section 103. Coordination. The Secretary of the Interior may make available to the Council for coordination of outdoor recreation the authorities and resources available to him under the Act of May 28, 1963, 77 Stat. 49; to the extent permitted by law, he may make such authorities and resources available to the Council also for promoting such coordination of other matters assigned to the Council by this order.

Section 104. Assistance for the Council. In compliance with provisions of applicable law, and as necessary to serve the purposes of this order, (1) the Office of Science and Technology shall provide or arrange for necessary administrative and staff services, support, and facilities for the Council, and (2) each department and agency which has membership on the Council under Section 101 (c) hereof shall furnish the Council such information and other assistance as may be available.

PART II. CITIZENS' ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY

Section 201. Establishment of the Committee. There is hereby established the Citizens' Advisory Committee on Environmental Quality (hereinafter referred to as the "Committee"). The Committee shall be composed of a chairman and not more than 14 other members appointed by the President. Appointments to membership on the Committee shall be for staggered terms, except that the chairman of the Committee shall serve until his successor is appointed.

5

Section 202. Functions of the Committee. The Committee shall advise the President and the Council on matters assigned to the Council by the provisions of this order.

Section 203. Expenses. Members of the Committee shall receive no compensation from the United States by reason of their services under this order but shall be entitled to receive travel and expenses, including per diem in lieu of subsistence, as authorized by law (5 U.S.C. 5701-5708) for persons in the Government service employed intermittently.

Section 204. Continuity. Persons who on the date of this order are members of the Citizens' Advisory Committee on Recreation and Natural Beauty established by Executive Order No. 11278 of May 4, 1966, as amended, shall, until the expirations of their respective terms and without further action by the President, be members of the Committee established by the provisions of this Part in lieu of an equal number of the members provided for in section 201 of this order.

PART III. GENERAL PROVISIONS

Section 301. Construction. Nothing in this order shall be construed as subjecting any department, establishment, or other instrumentality of the executive branch of the Federal Government or the head thereof, or any function vested by law in or assigned pursuant to law to any such agency or head, to the authority of any other such agency or head or as abrogating, modifying, or restricting any such function in any manner.

Section 302. Prior bodies and orders. The President's Council on Recreation and Natural Beauty and the Citizens' Advisory Committee on Recreation and Natural Beauty are hereby terminated and the following are revoked:

- (1) Executive Order No. 11278 of May 4, 1966.
- (2) Executive Order No. 11359A of June 29, 1967.
- (3) Executive Order No. 11402 of March 29, 1968.

THE WHITE HOUSE,

THE WHITE HOUSE
WASHINGTON

June 6, 1969

TO: Dr. DuBridge

FROM: Stephen Hess

6/4/69
FROM

John D. Ehrlichman

TO

~~Mohrman~~

State
is his
ours?

Dr. DuBridgeⁱⁿ

WHITE HOUSE *Enver*

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C.

OFFICE OF
THE GENERAL COUNSEL

June 2, 1969

John D. Ehrlichman, Esq.
Counsel to the President
The White House
Washington, D.C. 20500

Dear Mr. Ehrlichman:

I am attaching a memorandum that will serve to advise you of the jurisdictional conflict that has arisen between the Atomic Energy Commission and the Minnesota Pollution Control Agency. It seems likely that this matter may result in a confrontation in the U.S. District Court in Minnesota.

If there is any further information you would like to have, please let me know.

Sincerely yours,

Joseph F. Hennessey
Joseph F. Hennessey
General Counsel

Attachment:
Memorandum
as above

CONTROVERSY WITH THE STATE OF MINNESOTA

This will bring to your attention a matter in controversy between AEC and the Minnesota Pollution Control Agency in which Governor LeVander of Minnesota has participated.

Northern States Power Company has under construction a nuclear power plant of approximately 1470 mw capacity at Monticello, Minnesota. AEC has issued a construction permit permitting Northern States to proceed with construction of the plant. Under Minnesota law Northern States is also required to obtain a permit from the Minnesota Pollution Control Agency. That Agency has recently approved a permit for Northern States which includes express conditions governing the operation of the plant with respect to the release of radioactive effluents from the plant. The conditions imposed by the State are substantially more severe, with respect to the level of radioactivity release permitted, than the conditions imposed by AEC. The State conditions are so stringent that Northern States believes that it might be unable to operate under the permit if it had to conform to those conditions.

AEC's General Counsel has published an opinion that, under the provisions of the Atomic Energy Act of 1954 as amended, AEC has exclusive authority, as between AEC and the States, to regulate and control the release of radioactive effluents from nuclear power plants and we had so advised the State of Minnesota prior to the action of the State Pollution Control Agency. The position that the Federal Government has preempted the field of control of radiological health and safety is one that has been universally approved in court decisions to date, in the opinions of competent legal authorities that have examined the question, and in formal opinions by the Attorney Generals of Michigan and South Dakota. It is particu-

larly worthy of note that the Assistant Attorney General of the State of Minnesota published an opinion arriving at essentially the same conclusion and that the State Board acted despite the advice of the State Assistant Attorney General. This position is further supported in a formal opinion by staff counsel of the Congressional Joint Committee on Atomic Energy which has been placed in the Senate Record on S. 7, a bill to amend the Water Quality Act.

We are advised that Northern States is considering contesting the action of the State agency, both in the Federal District Court in Minnesota, where it would assert the preemption issue and the lack of authority of the State agency in the area of radiological health and safety, and in the State court where it would raise that issue and others. AEC proposes to participate in any action in the Federal District Court, either as an intervenor or amicus curiae, in support of the Northern States position. Discussions have been initiated with the Department of Justice toward that end.

AND TECHNOLOGY
OFFICE OF SCIENCE
JUN 2 10 00 AM '82

MEMORANDUM

THE WHITE HOUSE

WASHINGTON

June 3, 1969

TO: JOHN BUCKLEY

FROM: PETER FLANIGAN

WHITE HOUSE *Enver*

Would you please keep me informed as to possible openings on Laurance Rockefeller's Committee on the Environment. We are most anxious that appointments to that Committee be made from the White House. Among the outstanding candidates is Henry McKnight of Minneapolis.

AND TECHNOLOGY
OFFICE OF SCIENCE
JUN 2 8 30 AM '69
RECEIVED

For Your Information



SMITHSONIAN INSTITUTION

Washington, D.C. 20560
U.S.A.

June 3, 1969

WHITE HOUSE

Emm

The Vice President
Executive Office of the Vice President
Washington, D. C.

Dear Mr. Vice President:

It was a pleasure to learn from Mr. Jerome B. Wolff's response to my May 1st letter to you that the Environmental Quality Council is soon to be established by Executive Order. I was somewhat disappointed that it was not practical for me to be a full member of the Council, however, I understand the desirability of maintaining as small a membership as possible.

My concern with involvement in council activities stems from two points. When I had the honor to serve as a member of President-elect Nixon's Task Force on the quality of the environment, under the chairmanship of Mr. Train, in our meeting with Mr. Nixon we were encouraged by him personally to continue to be in touch with him, and to offer comments and suggestions in the light of our special competence, for which presumably we had been selected to be members of the Task Force. I believe that the members of the Environmental Quality Council will be in a most useful position to express their concerns.

In the second place, as Statutory Vice-Chancellor of the Smithsonian Institution, I believe that you have a special interest in learning of the Institution's activities in the realm of environmental quality. We already have a number of ecologically related programs under way which are implicitly of great concern to the nation. The Institution on its private side now possesses some one thousand acres in the state of Maryland and is currently acquiring nearly a thousand more in order to develop a complete watershed with its own estuary where, with the aid of a consortium consisting among others the

June 3, 1969

Johns Hopkins University scientists and the University of Maryland's scientists, we are able to conduct meaningful long-term testing of the effects of run-off from lands that are being used in a diversified manner on the surrounding water mass in the Chesapeake Bay. In addition, since 1946 we have been developing the nation's unique tropical laboratory in Panama for ecological studies that are related to an assessment of the effects of oil spills and the proposed Interoceanic Sea Level Canal Commission. We also operate the Smithsonian Oceanographic Sorting Center and the Mediterranean Marine Sorting Center to give a basic capability for evaluation of marine populations as relatable to environmental changes.

Three others, the Laboratory of Radiation Biology, the Smithsonian Astrophysical Observatory and the National Museum of Natural History, devote much of their time to measurement of physical, chemical and biological aspects of the environment.

Although we share common areas of concern with the other federal agencies and departments, there are broad areas of interrelationships of terrestrial and aquatic environments where the Smithsonian represents the only federal competence.

The Smithsonian is in an unique position to innovate, coordinate, and administer projects in basic ecology abroad. We have important programs already under way in Ceylon, India and Israel under Public Law 480 appropriations from Congress to this Institution. I might add that much of what is accomplished in foreign aid through AID, now oriented on short-term economics, could be redirected to long-term ecological studies of long-term economic significance to the countries we are trying to help. We already have one such contract with AID for basic research in the Mekong River area in Thailand and Laos, and another will be completed within the next month or so through the East African Agricultural and Forestry Research Organization for terrestrial ecology. This new ecological approach could help us revitalize the U.S. AID program, along the lines of the President's recent message to Congress on AID support for research.

June 3, 1969

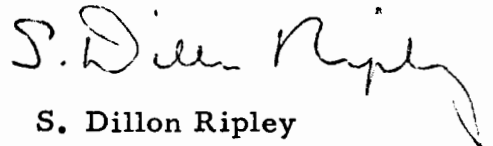
If I can help clarify any of these points further, please let me know.

In order to continue to provide an appropriate input, may I suggest that I be considered an official observer on the Environmental Quality Council? This has been an acceptable alternative in a number of past instances where the composition of a Council was "cabinet level." I believe that the Smithsonian contribution to Council meetings would be significant from the national viewpoint.

In addition, I and my staff would welcome an opportunity to brief you and your principal staff assistants on the Smithsonian's activities related to maintaining the quality of the environment. May I prepare a briefing for you on the Smithsonian's ecologically oriented research programs?

With best wishes,

Sincerely yours,


S. Dillon Ripley
Secretary



OFFICE OF THE VICE PRESIDENT
WASHINGTON

14355

May 20, 1969

The Honorable S. Dillon Ripley
Secretary
Smithsonian Institution
Washington, D. C. 20560

Dear Mr. Secretary:

Vice President Agnew has asked me to respond to your May 1 letter commenting on the President's proposal for an Environmental Quality Council. Decision was made some time ago that the Council would be made-up of Cabinet-level people, but that heads of other agencies would be drawn into the activities of the Council whenever appropriate.

Thus, even some agencies with major programs that affect the environment are not part of the Council. Furthermore, it was the President's desire that the Council be kept as small as possible to promote its effectiveness.

Because the Smithsonian Institution is not a Cabinet-level department, it was not considered for membership and thus not asked to comment on the Executive Order. Since that Order is now ready for the President's signature, we are not in a position to provide you with a copy at this time.

I am sure the Council will recognize the capabilities that exist within the Smithsonian and will draw on these capabilities whenever it seems appropriate.

Sincerely yours,

Jerome B. Wolfe
Assistant to the Vice President
for Science and Technology

INDEXED

File *Council on Environmental Quality*

File

May 1, 1969
White House

FILE COPY
Surname

The Vice President
Executive Office of the Vice President
Washington, D. C.

My dear Mr. Vice President:

As a member of one of President Nixon's pre-Inaugural task forces, in this case on the environment, I had the honor to serve and to counsel with its Chairman, Russell Train. Possible mechanisms were considered by which our government might weigh matters that have to do with preservation of environmental quality, not only for our people, but also of course, inevitably, for kindred world populations as the interactions of problems over land, sea, and air dictate. I served not only as a biologist and a student of ecology, but also as a representative of the Smithsonian. For nearly a century this Institution has taken the closest interest in what can now be understood as long-range studies of changes in the environment. Our collections and our research are oriented into what are now known as "tabulations" of environmental change. We are in the area then of strategic studies, rather than tactical ones. By measuring long-term changes, utilizing our vast collections of scientific specimens (that can serve as a means for determining environmental "baselines") we can help to marshal facts and figures in regard to long-term predictions of ecological conditions.

It is in this spirit that the Task Force recommended that the Smithsonian perhaps be included in any eventuating council. In any case may I respectfully request that you might consider asking that our Institution be invited to comment officially on the proposed Environmental Quality Council draft Executive Order.

COPY FOR SECRETARY'S FILE # Ref. _____

May 1, 1969

FILE COPY

Surname

• May I say that, as a former member of the administration of Yale University, I did greatly enjoy reading about your speech at the Governor's Conference.

Best wishes,

Sincerely yours,

/s/ Dillon

S. Dillon Ripley
Secretary

SDRipley:mm

c.c. Mr. Bradley, Dr. Galler

WHD ALL INFORMATION
OFFICE OF SCIENCE

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RECEIVED

COPY FOR SECRETARY'S FILE # Ref. _____

OST file

June 4, 1969

WHITE HOUSE

Handwritten signature/initials

MEMORANDUM FOR

Kenneth Cole

SUBJECT: Message on Population

As a general comment, the Message presents the population problem very well and outlines initial steps of a program for coping with it. Dr. DuBridge is particularly pleased with the idea of establishing a Commission.

We have prepared the following specific comments which we feel would improve the text.

Page 2 - Paragraph 1 - Change first sentence to read: "But the same population growth which results from such progress retards their future progress and adversely affects the quality of life. For even though the national product of many of these countries grow very rapidly --"

The present sentence is not clear, nor is the meaning of the term "development."

Paragraph 2 - Add the following at the beginning of the third sentence: "Improved agricultural production systems based on" new varieties of seed grain. . . "

The improvement has resulted from increased use of fertilizers, pesticides, mechanical equipment, irrigation which made the use of new varieties possible.

Paragraph 2 - Change next to last sentence to read:
 "And the physical and mental potential of millions of youngsters
 is not realized because of lack of proper food."

Page 4 - Paragraph 1 - It would be well to see the reference to the
 UN expressed in a more forceful "action oriented" manner.
 As it now reads, the President refers to the report of a private
 organization, the U.N. Association, and commends it. Why
 not add that he intends to introduce a resolution in the UN.
 General Assembly recommending the creation of this post and
 the framing of a coordinated UN program on population growth.

Page 5 - Paragraph 2 - Add the following to the end of the paragraph:
 "We must also recognize that, over the long term, even our
 population growth cannot continue indefinitely. This will
 require a new awareness of the potentially serious
 consequences of inordinate increases in population."

The question of the total population should be addressed in the
 Message.

Page 6 - Paragraph 3 - Change last sentence to read: "The
 ecological system upon which we depend may seriously
 deteriorate, if our efforts..."

Tipping the balance sounds as though we are in imminent danger
 of upsetting a static situation which does not in fact exist.

Page 7 - Paragraph 2 - Change first sentence to read: "Finally
 we must ask: How can we better assist American parents;
 first, to consider the factors involved in determining the
 number of children they would like to have; and second,
 how they can keep from having more than the desired
 number?"

There are two tasks here rather than one. Such restraints as the
 future cost of education should be pointed out to parents.

Page 11 - Paragraph 2 - Change second sentence to read: "The Center for Population Research...which currently conducts the major Federal research effort..."

Other agencies have relevant research. An FCST group is currently assessing our present efforts in this area and will report around July 1.

Paragraph 4 - Change second sentence to read: "I am therefore asking the Environmental Quality Council to give high priority to actions that may be taken to safeguard our environment and to assure that environmental impacts are considered in the development of Federal programs."

In addition, it might be useful, if appropriate for this Message to include the following action item.

"I am calling upon the Department of Agriculture and the Agency for International Development to develop specific proposals for adapting and extending our vast agricultural experience and capabilities to improve the food production and nutrition of developing countries."

There has been a complaint of long standing that USDA has the capability and AID has the money. Progress would be improved by involving USDA more directly in foreign agricultural technical assistance programs.

Page 12 - Paragraph 1 - The fourth sentence should be changed: perhaps deletion of the word "Disproportionately" would be enough. Large families are also common among the very rich, and this statement could be construed as discriminatory.

This Message will receive considerable scrutiny because of the amount of current interest in the area of population growth. I hope these suggestions will be useful.

(Signed in the absence of Dr. DuBridge)

/s/ David Z. Beckler
David Z. Beckler

Assistant to the Director

cc: Dr. DuBridge file and chron
Chester Finn, WH, EOB 194

DKing:gg 6-4-69
DKing file and chron
OST file and chron
DBeckler file



*Bob Barlow - has there been one
do there are in draft?*

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

*White House
Calvin Ermer*

June 10, 1969

MEMORANDUM TO KENNETH R. COLE, JR.
SPECIAL ASSISTANT TO THE PRESIDENT

The draft of the proposed Presidential Message on the Nation's Airport and Airways System should place more emphasis on the environmental consequences of major jetports. I think it is time we begin thinking of planning where airports should and should not be built. Otherwise, crises such as the Everglades/Miami Jetport problem will continue to overtake us. The Presidential message may not be an appropriate time to discuss national planning, but I would recommend that the following language be considered for inclusion:

The increasing damage to our environment caused by unplanned airport development and congestion, suggest the need for comprehensive planning to assure orderly air travel which is compatible with environmental values. The increasing emphasis on large jetports connected to multiple cities by high speed ground transportation, while removing jet noise and exhaust from urban areas, necessarily adds them to our non-urban environment. Pressed by limited funds to seek jetports where land is cheapest, our local authorities often select locations which are most damaging from an environmental standpoint.

If we are to protect what is left of our dwindling landscape, we must establish national criteria now to guide airport planning and location. A study team to evaluate this question will soon be announced.

Russell E. Train
Russell E. Train
Acting Secretary of the Interior

*LAD
we have
seen this
message
for
I know.
Somehow
we should
get like
to routinely
let us
see draft
Presidential
messages
which may
be of
concern
(This would
probably be
50% or so
of them!)
etc*

*Bill satire
Rm. 124
x 2840*

700 11 1 TO WH-33

Do Not Detach This Slip

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY

To:

~~Mr. Bush~~ (1)

Date:

2/11/69

Dr. Buckley (1)

For:

_____ Appropriate Action

_____ Information

_____ Direct Reply

_____ Note and Return

_____ Comment

_____ Concurrence

_____ Recommendation

_____ Official Files

_____ Prepare Reply for _____

Remarks:

Please return for follow
up - or provide copy for file

From:

Payne

THE WHITE HOUSE
WASHINGTON

July 7, 1969

WHITE HOUSE *Enrico*

Mr. Raymond D. O'Connell
Raymond D. O'Connell & Associates, Inc.
400 Madison Avenue
Suite 1600
New York, New York 10017

Dear Ray:

Thank you very much for your letter of June 30 recommending Mr. Thomas E. Murray, Jr. for appointment to the President's Advisory Council on Environment. You can be assured that he will receive the most careful consideration for this important post.

With warm personal regards,

Sincerely yours,

Peter M. Flanigan
Assistant to the
President

bcc w/incoming to Dr. Lee DuBridge

cc: Central files
file cy

ms/7/7/69

*Std. Reply
see w/incoming to Du Ridge*

RAYMOND D. O'CONNELL & ASSOCIATES, INC.

400 MADISON AVENUE (SUITE 1600)

NEW YORK, N. Y. 10017

CABLE ADDRESS: "RAYOCONNAS NEWYORK"

(212) 421-3400

June 30, 1969

Mr. Peter M. Flanagan
Special Assistant to the President
White House
Washington, D. C.

Dear Peter:

I have never met this man but he was brought to my attention by Thomas E. Murray, Jr. From the attached you can see that he was on President Nixon's Task Force on Research and Environment. He is most anxious to become a member of President Nixon's Advisory Council on Environment.

Our specialist on Venezuela is around and may be we will come down and see you in the next week or so.

Sincerely yours,

Ray

RAYMOND D. O'CONNELL

RDO'C:mm
Enclosure

MR. JOHN H. MEIER
Executive Aide
Hughes-Nevada Operations
3120 Las Vegas Blvd. So.
Las Vegas, Nevada 89109

Birthdate: September 28, 1933

Mr. Meier was born, raised, and educated in New York City.

Entered U. S. Army in 1952, where he served in the Far East during the Korean conflict.

1954-1958 he was with the U. S. Marine Corp. Reserves.

During 1955 he was one of the youngest Chaplins in the American Legion while working with New York Life Insurance Company in New York City.

Mr. Meier has held managerial and executive positions with --

New York Life Insurance Co. --

Remington Rand Univac --

Hughes Aircraft Company --

Hughes Tool Company --

and is now Executive Aide to Howard Hughes' Nevada Operations.

In 1966 Mr. Meier received the Aerospace Man of the Year Award.

In 1967 he received the Distinguished Service Award from the Las Vegas Junior Chamber of Commerce, in addition to the Outstanding Young Man of the Year Award from the Las Vegas Junior Chamber of Commerce.

In 1968 Mr. Meier received the Governor's Award for the State of California for technical achievement in data processing which was presented to him at the National Conference of the Association for Computing Machinery.

Mr. Meier is presently serving on the following:

Gaming Industry Task Force for Nevada's Governor
Paul Laxalt,

Director and Second Vice President of the Greater
Las Vegas Chamber of Commerce,

Member of the Las Vegas Chamber of Commerce's vital
Impact Priority Committee,

Member of Clark County's Child Advisory Committee,

Trustee of the Nevada Essential Environmental
Development Surveys Foundation,

Director and Vice President of the Nevada Taxpayer's
Association,

Advisor to the Inter-Agency Water Pollution Control
Task Force for Clark County,

Member-at-large of the Board of Directors for the
Frontier Council, Girl Scouts of America,

Special Assistant to Governor Paul Laxalt on
Environmental and Data Processing Studies,

Member President Richard Nixon's Task Force on
Resources and Environment,

Board of Advisors - Manhattan Tribune,

Member of Las Vegas Council for American Society
for Public Administration,

Member Las Vegas Rotary Club,

Selected to appear in the 1969 Edition of OUTSTANDING
YOUNG MEN OF AMERICA,

Member of League of Women Voters of the United States'
1969 Mens' Finance Advisory Committee,

Member, Board of Directors, International Eye Foundation.

Presently resides with wife, Jennie; son, John, Jr.; and daughters,
Jeannie and Joanne at:

120 Stonewood Court
Las Vegas, Nevada 89107

HUGHES-NEVADA OPERATIONS

EXECUTIVE OFFICES

3120 LAS VEGAS BOULEVARD SOUTH • LAS VEGAS, NEVADA 89109 • (702) 735-9182

June 23, 1969

MEMORANDUM of the basic program on Resources and Environment under
JOHN H. MEIER

John H. Meier, Hughes-Nevada Operations has conducted extensive background studies in ascertaining the joint development of resources and preventing the deterioration of the environment. Preserving the integrity of the natural environment from air pollution, water contamination and soil depletion, as well as elimination of noise, urban sprawl, physical and mental deterioration, and social disorganization has been a prime concern of studies under Meier's direction.

Meier was selected for President Richard Nixon's Task Force on Resources and Environment chaired by Russell Train, then President of the Conservation Foundation and more recently Undersecretary of the Interior. Meier is also a Board of the Environmental Clearing House, Inc. popularly known as the "Ottinger" Committee from Congressman Richard Ottinger's initiation of this ecological effort.

Meier first served on Governor Paul Laxalt's Task Force on Gaming when first coming to Nevada with the Hughes-Nevada Operations program. Work by this Task Force resulted in increased revenue from taxation of over

MEMORANDUM

June 23, 1969

Page 2

25% accruing to the State of Nevada. His next task was the organization of the Nevada Essential Environmental Development Surveys Foundation (NEEDS), a non-profit corporation under Nevada Laws, concerned with ascertaining the many problems of Nevada in areas from air and water pollution to the sociological analysis of the current issues in public life. After initial comprehensive surveys of the environmental problems in Nevada, the basic concern for preserving the integrity of the environment was extended to include a preliminary review of the basic problems in the 13 Western States of: Nevada, Utah, Idaho, Montana, Wyoming, Colorado, New Mexico, Arizona, California, Oregon, Washington, Alaska, and Hawaii. Further intensive investigation of the environmental problems in these 13 Western States is now being planned to completely inventory the evidences of the deterioration of the natural resources, and ways to rehabilitate them.

PARTICIPATION IN NATIONAL CONFERENCES ON ECOLOGY:

1. John H. Meier has equipped and directed his staff in order to provide active participation in numerous conferences and seminars such as the Growth Cities Seminar held in 1968 in Tulsa, Oklahoma to examine the problems in the 20 most rapidly growing cities in the United States.
2. He was the Las Vegas Chairman of the University of Airzona Community Review Seminar (20 representatives from Seattle, Sacramento, Great Falls, Phoenix, and Las Vegas--100 in all) to discuss methods for

MEMORANDUM

June 23, 1969

Page 3

constructive change in these five cities. Meier participated as
3 a special guest at the National Conference of the League of Women
Voters Western Water Conference in Salt Lake City. The water prob-
lems of the Columbia River Basin, the Colorado River Basin, and
other regional water problems of the Western States were covered
by Federal, State, and local authorities with full participation
of 40 delegates from these states. He likewise participated in
4 the regional seminar sponsored by the Conservation Foundation at
the University of Denver under the Rocky Mountain Center on Environ-
ment (ROMCOE) headed by Roger P. Hansen, in which the conservation
problems of the eight Rocky Mountain States were examined. Meier
has also been the director of the scientific program of Hughes-
Nevada Operations in urging the Atomic Energy Commission to more
safely monitor the underground nuclear testing program in Southern
Nevada, in regard to earthquake, water contamination, and atmospheric
venting dangers. This has been a strictly scientific consultative
program without publicity, and warmly commended by civic groups.
Meier has participated in the seminars for injection disposal of
5 waste by underground pumping at the American Institute of Mining
Engineers' annual conference. Meier has participated actively in
6 the North American Wildlife Federation National Conferences; like-
7 wise in the American Wildlife Federation National Conference. At

MEMORANDUM

June 23, 1969

Page 4

these conferences he has joined with State Conservation organizations to consider nationwide organization in ecological studies and constructive programs. He participated in the 50th Anniversary Meeting of the American Geophysical Union, including its day-long seminar on the "Triggering of Earthquakes" and other basic scientific research in hydrology, seismology, and atmospheric contamination problems. He has been an active participant in the Nevada Open Spaces Council, a federation of conservation organizations in Nevada. He participated in the Sierra Club 1968 Conference on Alaska Environmental Problems. Also in the University of Arizona-Atomic Energy Commission Conference on the Engineering Aspects of the Peaceful Uses of Atomic Energy, held to plan the curricula of nationally recognized schools of engineering, to consider the problems in the future uses of atomic energy for desalinization, electric power production and engineering methods. Meier participated in the U. S. Public Health, National Conference on the Peaceful Uses of Atomic Energy, held in Las Vegas, April 7-11, 1969. In addition numerous conferences held by the California Institute of Technology concerning seismological studies in the Western States under the Earthquake Associates Program, were participated in by Meier. The yearly meeting of the American Physical Society was attended to develop the technical aspects of nuclear energy and its uses. The 1969

MEMORANDUM

June 23, 1969

Page 5

- 15 Civil Defense and Earthquake Problems Conference, organized under the Office of the President, was actively participated in by Meier.
- 16 Meier was asked by the Puerto Rico Government to conduct a study on the problems of environment and the use of advanced technology in Government operations. This study was prepared and Meier was cited by Governor Ferre for his assistance in the completion of the study and aid to Puerto Rico.

GENERAL

Under the personal direction and supervision of John H. Meier, his Hughes-Nevada Operations Office has completed an exhaustive inventory of the various State Industrial Development Programs in most of the states of the Union. Detailed interviews were conducted with the Directors of these State Industrial Commissions in depth to evaluate their feasibility studies. In addition, the major Industrial Development Engineering firms with national reputation have supplied basic information on their areas of competence in research, feasibility studies, capability and future potential in assisting in major programs for investment in new industries and agricultural development in the U.S.A.

Meier has been responsible for the Nevada Mining Program of the Hughes-Nevada Operations in the investment of tens of millions of dollars. He

MEMORANDUM

June 23, 1969

Page 6

has also prepared a very exhaustive analysis of the new mining potentialities for revival of this basic industry in the Rocky Mountain States to the new Administration of President Richard Nixon. Meier has also paid particular attention to conservation and restoration of the environment after completion of mining operations, by insisting on development of conservation uses for wastes and by-products as an internal part of all mining efforts.

Meier recently completed at the request of the Las Vegas Chamber of Commerce a very comprehensive "prototype" study for the correction of the continued contamination of Lake Mead from the algae produced by the Las Vegas Wash carrying waste water into the Lake. The Meier Report demonstrated the profitable way to remove pollution in Lake Mead drinking water by utilizing this waste water for agricultural development of Eldorado Valley, south of Boulder Dam in Nevada, and the development of an industrial-agricultural complex on the 105,000 acres set aside by the Colorado River Commission of Nevada. Meier has emphasized the scientific fact-finding basis and then the development of constructive alternatives to continued pollution of the environment.

CROSS REFERENCE INDEX

Date: June 16, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Agenda-First Meeting, Environmental Quality Council

FILED: WHITE HOUSE-President

Indexer:vg

Remarks:

THE WHITE HOUSE
WASHINGTON

Date 23 June 1969

TO:

FROM: Peter Flanigan

FYI ✓

Draft reply

Please Handle

File

Other remarks

Russel Train + John Tully
both say no !!

AND TECHNOLOGICAL
OFFICE OF SCIENCE
JUN 23 1 55 PM '69
RECEIVED

THOMAS E. MURRAY, JR.

2650 VIRGINIA AVENUE, N.W. • WASHINGTON, D. C. 20037 • (202) 965-2300

6/16/69

WHITE HOUSE

Encl

Dear Mr. Rose;

Many many
thanks for your kindness
All the best.

Sincerely,
Tom

John
Backley's
Dr. Dubinsky's
office

Council
on the
Environment

JOHN H. MEIER
Executive Aide

OFFICE: Hughes-Nevada Operations
3120 Las Vegas Boulevard South
Las Vegas, Nevada 89109

ACTIVITIES SINCE ARRIVAL IN LAS VEGAS:

1966 Aerospace Man of The Year Award,

Trustee of Nevada Essential Environmental Development
Surveys Foundation,

Member of the Child Welfare Advisory Committee,

Director and Second Vice President of the Las Vegas
Chamber of Commerce,

Member of the Impact Priority Committee,

Member of the Governor's Gaming Task Force,

Distinguished Service Award - 1967 - Las Vegas Jaycees,

Outstanding Young Man of 1967 by the Las Vegas Junior
Chamber of Commerce,

Advisor to the Inter-Agency Water Pollution Control Task,

1968 Governor's Award for Technical Achievement in Data
Processing, State of Nevada,

Special Advisor to Governor Laxalt on Environment and
Data Processing Studies,

Member President Richard Nixon's Task Force on Resources
and Environment,

Board of Advisors - Manhattan Tribune,

Member of Las Vegas Council for American Society for
Public Administration,

Member Las Vegas Rotary Club,

Director and Vice President - Nevada Taxpayer's
Association,

Member-at-large of the Board of Directors for the
Frontier Girl Scout Council,

Selected to appear in the 1969 Edition of OUTSTANDING
YOUNG MEN OF AMERICA,

Member of League of Women Voters of the United States'
1969 Mens' Finance Advisory Committee.

MEMORANDUM

THE WHITE HOUSE
WASHINGTON

July 16, 1969

WHITE HOUSE

*Pls give
me to
Buckley call*

Emm

MEMORANDUM FOR

PETER FLANIGAN

Your memo of July 15th regarding Mr. W. F. Rockwell for the Citizens' Advisory Committee on Environmental Quality arrived just after Dr. DuBridge had left for vacation. He will be out at the Bohemian Grove in San Francisco for the next two weeks. I will bring your memo to his attention as soon as he returns, and in the meantime I am making a copy available to Dr. John Buckley for his information and consideration. Dr. Buckley is collecting names of candidates for the Citizen's Advisory Committee, although I understand at present there are only three vacancies on the Committee.

E. G. Connors

Eleanor Connors
Secretary to Dr. DuBridge

cc: Dr. John Buckley

Environmental Quality per Ex. Order
5/21/69

Three-year terms

Laurance Rockefeller (Chairman) - Chairman, Rockefeller Brothers, Inc. of New York.

Harry M. Weese - Architect, Harry Weese & Associates, of Chicago, Illinois.

Grace Hamilton - Community Relations Counselor of Hamilton Associates of Atlanta, Georgia.

John Ben Shepperd - President, Texas Historical Survey Committee, of Odessa, Texas.

Two-year terms

Joseph H. Davis - President, Washington State Labor Council, AFL-CIO, of Seattle, Washington.

Jean Fassler - Supervisor, San Mateo County of Coastsides, California.

James H. Evans - Chairman of the Board, National Recreation and Park Association, of New York.

Gordon K. Zimmerman - Executive Secretary, National Association of Soil and Water Conservation Districts, of Washington, D. C.

One-year terms

Dewitt C. Greer - former State Highway Engineer, of Austin, Texas.

Reappointed
Edmund N. Bacon - Executive Director of Philadelphia City Planning Commission, of Pennsylvania.

Charles E. Fraser - President, The Sea Pines Plantation Company, of Hilton Head Island, South Carolina.

No
Marvin B. Durning - Lawyer, Conservationist of the Year, of Seattle, Washington.

7 3 to be appointed

June 17, 1969

WHITE HOUSE — *TF Ennis*

MEMORANDUM FOR

Mr. John Ehrlichman
The White House

The item of air pollution will be on the Agenda of the first meeting of the new Environmental Quality Council to be held on Friday, June 20th. We can announce after that meeting the initial move to get action on the air pollution program.

Lee DuBridge

Lee A. DuBridge
Science Adviser

Attachment
Agenda for EQC

LAD:of:17 June 69

OST Files, Chron
DuBridge Files, Chron

MEMORANDUM

THE WHITE HOUSE

WASHINGTON

JUNE 16, 1969

TO: DR. DuBRIDGE

FROM: JOHN EHRLICHMAN

I am told that Senator Kennedy very soon may take a critical position with respect to the problem of air pollution and the lack of any Administration effort in its regard.

He also seeks to blunt the effectiveness of McGovern and Muskie who will probably make the same move.

Shall we anticipate this turn of events by moving ahead specifically in the near future on air pollution?

July 18, 1969

MEMORANDUM FOR

WHITE HOUSE

Encl

Mr. Peter Flanigan

Possible appointees for the Citizens' Advisory Committee on Environmental Quality were discussed on June 27 with Laurance Rockefeller and Henry Diamond and John Buckley of my staff. On the basis of those discussions and subsequent recommendations from a variety of places, I offer the following nominations for the three new positions and the four vacancies that will occur in August of this year:

Elvis J. Stahr - Mr. Stahr is presently President of the National Audubon Society and, consequently, has a strong following among conservationists. A condensed biographical sketch from the National Audubon Society is attached.

Rene J. Dubos - A bacteriologist at the Rockefeller University with an outstanding record of popular books on man and environment. Dr. Dubos would bring to the Committee a strong support of environmental health. His listing in Who's Who is attached.

Lelan F. Sillin, Jr. - A utility executive, strongly recommended by Laurance Rockefeller. Biographical material from Who's Who is attached.

Edmund N. Bacon - Director of City Planning in Philadelphia. Mr. Bacon is presently on the Citizens' Advisory Committee; his term expires this August. Laurance Rockefeller strongly supports his reappointment. His listing in Who's Who is attached.

A. Wesley Hodge - Mr. Hodge is an attorney in Seattle. Mr. Ehrlichman recommends his appointment to this Committee. His memo and a few notes are attached.

Richard F. Babcock - John Ehrlichman also made this recommendation. Mr. Babcock is an attorney and is an expert on land-use law. A brief resume is attached.

John E. Cantlon - Professor of Botany, Michigan State University. Dr. Cantlon is a distinguished ecologist and the President of the Ecological Society of America at this time. His listing in American Men of Science is attached. Note: Professional ecologists are among the loudest group who feel they have had little influence at the highest levels of Government. Appointment to the Citizens' Advisory Committee will permit that group to participate but will keep them at arm's length insofar as decision-making is concerned.

David M. Gates - Director of the Missouri Botanical Garden and Professor of Botany at Washington University in St. Louis, represents the same sets of interests. His background is in the physical sciences. The scientific community as a whole might find him even more acceptable than Dr. Cantlon. His listing in American Men of Science is attached.

There are a large number of other suggestions for appointments that have been received. Dr. Buckley is prepared to discuss these if you wish.

Lee A. DuBridge

Attachments

cc:

OST File & Chron ✓

LAD File & Chron

JLB File & Chron

Mr. Beckler

Mr. Heffner

JLBuckley:ew

Office of Public Relations

Elvis J. Stahr, President of the National Audubon Society

Elvis J. Stahr, former president of two universities and Secretary of the Army under President Kennedy, was named as president of the National Audubon Society Oct. 14, 1968.

A native of Kentucky, Dr. Stahr was graduated from the University of Kentucky in 1936 with straight "A's" and a Phi Beta Kappa key and went on to Oxford University in England as a Rhodes Scholar. There he studied Law and received three additional degrees.

On his return to this country in 1939, he practiced law in New York City with the firm now known as Nixon, Mudge, Rose, Guthrie, Alexander and Mitchell. He entered the Army as a second lieutenant in 1941, shortly before Pearl Harbor, and served as an Infantry Officer throughout World War II, spending 26 months overseas, mostly in China. He rose to the rank of lieutenant colonel and received seven medals from the U.S. and China.

After returning to his New York firm following the war, he was appointed in 1948 as dean of the University of Kentucky College of Law. That year he also was named one of the "Ten Outstanding Young Men of America" by the U.S. Junior Chamber of Commerce. In 1954 he became Provost of the University.

During much of the Korean War he was on leave from Kentucky, undertaking assignments as Special Assistant to the Secretary of the Army. In 1956 he went again to Washington, serving as executive director of President Eisenhower's Committee on Education Beyond High School. The following year he was named vice chancellor of the University of Pittsburgh, and in January 1959, he became President of West Virginia University.

It was in January of 1961 that he was appointed Secretary of the Army by the late President John F. Kennedy, a post in which he served until the summer of 1962, when he resigned to become the 12th president of Indiana University. It was from that position that he came to National Audubon.

Besides his four earned degrees, and a diploma in Chinese Language from Yale, Dr. Stahr has been the recipient of 20 honorary degrees. He has held numerous important positions with educational and other organizations on state, regional and national levels. Currently he is a trustee of the Committee for Economic Development (CED), of the Council for Financial Aid to Education, and of the Association of the United States Army (of which he is past-president), a director of two corporations, and (until December 31, 1968) deputy chairman of the board of the Federal Reserve Bank of Chicago.

Dr. Stahr is married to the former Dorothy Howland Berkfield of New York City and they have two sons and a daughter.

RENE J. DUBOS

DUBOS, Rene Jules (dō-bōs'), bacteriologist; b. Saint Brice, France, Feb. 20, 1901; s. Georges Alexandre and Adeline Madeleine (De Bloedt) D.; student Coll. Chaptal, Paris, 1915-19; Institut Nat. Agronomique, Paris, 1919-21; Ph.D., Rutgers U., 1927, Sc.D. (hon.), 1949; Sc.D. (hon.), Rochester U., 1941, Harvard, 1942, Paris U., 1950, New School for Social Research (N.Y.C.), 1950, U. de Janeiro, Dartmouth; M.D. (hon.), Liege U., 1947, Yeshiva U., 1961, U. Alta., 1963, E. Pa., 1965, U. Cal., 1965; hon. degree, Colby Coll., 1966, Carleton Coll., 1966; m. Marie Louise Bonnet, Mar. 23, 1934 (dec. 1942); m. 2d, Letha Jean Peter, Oct. 16, 1946. Came to U.S., 1924, naturalized 1938. Asst. editor staff Internat. Ind. Agr., Rome, Italy, 1922-24; research asst. soil microbiology, instr. bacteriology N.J. Exptl. Sta. Rutgers U., 1924-27; fellowship Rockefeller Inst. Med. Research, 1927-28, asst., 1928-30, asso., 1930-38, asso. mem., 1938-41, mem., 1941-42, 1944-56; mem., prof. Rockefeller Univ., 1957—George Fabryan prof. comparative pathology, prof. tropical medicine Harvard Med. Sch., 1942-44. Served in French Army, 1921-22. Recip. numerous awards, most recent being: Howard Taylor Ricketts award U. Chgo., 1958; Passano award A.M.A., 1960; Robert Koch Centennial award R. K. Institute, Berlin, Germany; Sci. Achievement award A.M.A., 1964 gold medal and prize Pacific Science Center, 1964 Mem. Nat. Acad. Scis., Am. Philos. Soc., Nkr Club; Century Assn. Author: *The Bacterial Cell* 1945; *Bacterial and Mycotic Infections of Man* 1948; *Louis Pasteur—Free Lance of Science*, 1950 *The White Plague—Tuberculosis, Man & Society*, 1952; *Biochemical Determinants of Microbial Disease*, 1954; *Mirage of Health*, 1959; *The Dream of Reason*, 1961; *Pasteur and Modern Medicine*, 1960; *The Unseen World*, 1962; *The Torch of Life*, 1962; *Health and Disease*, 1965; *Man Adapting*, 1965. Home: Garrison, N.Y. Office: Rockefeller U., 66th St. and York Av., N.Y.C. 10021. ★31

LELAN F. SILLIN, JR.

SILLIN, Lelan Flor, Jr., utility exec.; b. Tampa, Fla., Apr. 19, 1918; s. Lelan Flor and Ruth (Berry) S.; A.B. with distinction, U. Mich., 1940, LL.B., 1942; m. Joan Outhwaite, Sept. 26, 1942; children—Lelan Flor, John Outhwaite, Andrew Borden, William Berry. Admitted to N.Y. bar, 1948; with firm Gould & Wilkie, N.Y.C., 1945-51; with Central Hudson Gas & Electric Corp., Poughkeepsie, N.Y., 1951-67, vice president, assistant gen. mgr., 1955-60, president, 1960-67, chief executive officer, 1964-67, also dir.; pres. N.E. Utilities, Inc.; dir. Charter N.Y. Corp., Utilities Mut. Ins. Co. Chmn. Fed. Power Commn. Nat. Power Survey Exec. Adv. Com.; dir. Action Council Poughkeepsie Area, Incorporated, Empire State Atomic Devel. Assos., Inc., Mid-Hudson Pattern for Progress, Inc. Trustee Urban Am. Inc.; chmn. council State Univ. Coll., New Paltz; adv. council Hudson River Valley Commn. Past pres., trustee Vassar Bros. Hosp., Poughkeepsie; campaign chmn. Dutchess Area Community Chest and Council, 1960, pres., 1960—; bd. counselors Childrens Home, Poughkeepsie; trustee Edwin Gould Found. for Children. Served to captain USMCR, 1942-45. Mem. Am. N.Y. State, Dutchess County bar assns., Edison Electric Inst. (dir.), U.S. C. of C., Newcomen Soc. N.Am., Am. Gas Assn., Soc. Gas Lighting, Nat. Rivers and Harbors Congress, Am. Judicature Soc. Clubs: Dutchess Golf and Country, Tennis (Poughkeepsie); Engineers, University (N.Y.C.); Millbrook Hunt, Sandanona Beagles (Millbrook, N.Y.). Home: Barnore Rd., R.D. 1, Box 181, LaGrangeville, N.Y. 12540. Office: Central Hudson Gas and Electric Corp., South Rd., Poughkeepsie, N.Y. 12602.

EDMUND N. BACON

BACON, Edmund Norwood, city planner: b. Phila., May 2, 1910; s. Ellis W. and Helen (Comly) B.; B.Arch., Cornell U., 1932; m. Ruth Holmes, Sept. 16, 1938; children—Karin Ellis, Elinor Ruth, Hilda Holmes, Michael Comly, Prudence Ann, Kevin Norwood. Archtl. designer, Shanghai, China, 1934; with W. Pope Barney, architect, Phila., 1935; supr. city planning, Inst. Research and Planning, Flint, Mich., 1937-39; mng. dir. Phila. Housing Assn., 1940-43; co-designer Better Phila. Exhbn., also sr. land planner Phila. City Planning Commn., 1946-49; exec. dir. Phila. City Planning Commn., 1949—; prof. adviser Franklin D. Roosevelt Meml. Competition, 1959; vis. lectr. U. Pa., 1950—; Mem. exec. com. Urban Am., Inc.; mem. Pres.'s Citizen's Adv. Com. Recreation and Natural Beauty. Trustee Am. Acad. in Rome, 1965—. Ford Found. travel fellow, 1950; recipient Art Alliance Phila. medal achievement, 1961; Man of Year award City Bus. Club Phila., 1962; Brown medal award Franklin Inst., 1962; Rockefeller fellow, 1963. Mem. A.I.A., Am. Inst. Planners. Author: *Design of Cities*, 1967. Home: 2117

Locust St., Phila. 19103. Office: City Hall Annex, Phila. 19107.

A. Wesley Hodge
Hodge, Dahlgren and Hillis
Norton Building
Seattle, Washington 98104

Born: Port Orchard, Washington, August 15, 1931

Admitted to Washington Bar in 1960.

A. B. Whitman College, 1953; LLB University of Washington, 1959

City Attorney for Tukwilla, Washington, since 1964.

American Bar Association; Washington State Bar Association;
Seattle-King County Bar Association.

THE WHITE HOUSE
WASHINGTON

JUNE 26, 1969

TO: HARRY DENT
cc: Dr. DuBridge ✓

FROM: JOHN EHRLICHMAN

My former partner, A. Wesley Hodge, has a high degree of interest in an appointment to the Citizens Advisory Commission concerned with environment.

I would very much appreciate favorable consideration of his interest.

His address is
A. Wesley Hodge
Hodge, Dahlgren & Hillis
Norton Building
Seattle, Washington 98104

He is an active Republican and well qualified for this position.

RICHARD F. BABCOCK

Born Evanston, Illinois, November 3, 1917

Admitted to Bar, 1946, Illinois.

Preparatory education: Dartmouth College (A. B. Magna Cumlaude, 1940) and University of Chicago (MBA, 1949).

Legal Education: University of Chicago (J.D., Cumlaude, 1946).

Phi Beta Capa; Order of the Coif.

Editor in chief, University of Chicago Law Review, 1945 -1946.

Member: Chicago, Illinois State, and American Bar Associations;
Legal Club of Chicago.

JOHN E. CANTLON

CANTLON, DR. JOHN E(DWARD), Dept. of Botany, Michigan State University, East Lansing, Mich. PLANT ECOLOGY. Sparks, Nev, Oct. 6, 21; m. 44; c. 4. B.S. Nevada, 47; Ph.D.(bot), Rutgers, 50. Asst. prof. bot, George Washington, 50-52, assoc. prof. 52-53; sr. ecologist, phys. res. lab, Boston, 53-54; assoc. prof. BOT, MICH. STATE, 54-58, PROF, 58- U.S.N, 42-45. Mem, Nat. Sci. Found. adv. panel environ. biol, 61-64. Fel. AAAS; Ecol. Soc.(secy, 58-63). Pattern in communities; physiological ecology; Alaskan Tundra vegetation.

DAVID M. GATES

GATES, DR. DAVID M(URRY), Dept. of Botany, Washington University, St. Louis, Mo. BIOPHYSICS. Manhattan, Kans, May 27, 21; m. 44; c. 4. B.S, Michigan, 42, M.S, 44, Ph.D.(physics), 48. Asst, Michigan, 41-44, res. physicist, 42-44; res. asst. prof. physics, Denver, 47-54, assoc. prof, 54-55; sci. dir. & liaison officer, Off. Naval Res, Eng, 55-57; asst. chief radio propagation physics div, Nat. Bur. Standards, 57-60, upper atmosphere & space physics div, 60-61, consult. to dir, 61-64; prof. natural hist, Colorado, & curator ecol, univ. mus, 65; PROF. BOT, WASHINGTON (ST. LOUIS), 65-; DIR, MO. BOT. GARDEN, 65- Lectr, Colorado, 61-64; summer prof, biol. sta, Michigan, 64. Consult, Air Defense Command, Colo, 53- Ed, Radio Propagation & J. of Res, 61-63. Mem. oper. anal. stand-by unit, Iowa State Col, 53-55; Denver, 55- Civilian with Off. Sci. Res. & Develop, 44. Fel. AAAS; Optical Soc; Research Soc; Geophys. Union; Bot. Soc; Ecol. Soc; Royal Meteorol. Soc. Infrared spectroscopy in the near and far infrared; upper atmosphere research by infrared; geophysical exploration work.

June 19, 1969

WHITE HOUSE - *TF. Envi*

MEMORANDUM FOR

Mr. John Whitaker

This is in connection with your inquiry about the possibility of getting industry to conform to natural guidelines on pollution under pain of losing Federal contracts.

I discussed with the President yesterday, along with other items on the agenda, the problem of enlisting industrial cooperation. He suggests, as a first step, that we might get in touch with the Business Advisory Council and ask if they would set up a Business Industrial Committee on Environmental Problems to work with the President's Environmental Quality Council and to recommend mechanisms by which industry could cooperate, hopefully, on a voluntary basis, but possibly on the basis of some mechanism of setting and enforcing standards. The President thought that Peter Flanigan might explore this with the Advisory Council, and it would be a very great help, if we could get their voluntary and enthusiastic collaboration, before we propose restrictive legislation or other government measures. I thought I would mention this in the Council Meeting.

Lee

Lee A. DuBridge
Science Adviser

cc: Mr. John L. Buckley
Mr. Peter Flanigan

LAD:of:19 Jul
OST Files, Chron
DuBridge Files, Chron

June 18, 1969

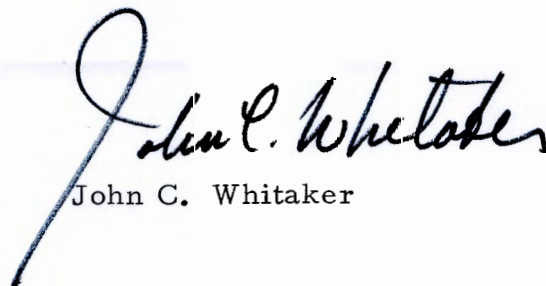
MEMORANDUM FOR

Dr. Lee A. DuBridge

Much like HEW withholds school funds where there is lack of compliance with integration guidelines, shouldn't there be a study on the possibility of industry conforming to national guidelines for standards of pollution control under pain of losing Government contracts? We could, for example, wait forever until the clean water standards being negotiated by Interior with the various States get ironed out, meanwhile "the water gets dirtier." I am also concerned that rapid depreciation as a reward for plant investment with proper pollution controls is not enough incentive to industry.

John Buckley brought up this idea with Peter Flanigan and me. We both thought it was worth exploring. It is a harsh proposal and politically volatile. Perhaps you have already made studies within OST along these lines.

At any rate, after proper staffing, it may be a good agenda item for a future Environmental Quality Council meeting.


John C. Whitaker

cc: Messrs.
K. Cole
P. Flanigan

AND TECHNOLOGY
OFFICE OF SCIENCE
JUN 18 4 20 PM '69
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CROSS REFERENCE INDEX

Date: June 19, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Final copy of the agenda for the Environmental Council
6/20/69

FILED: WHITE HOUSE-Pre sident

Indexer: vg

Remarks:

CROSS REFERENCE INDEX

Date: July 9, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Jackson Bill on Environmental Quality S 1075

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

July 22, 1969

WHITE HOUSE

Holland
Emmer

MEMORANDUM FOR

TODD HOLLAND
THE WHITE HOUSE

The attached memorandum, I believe, is self-explanatory and will give you the pertinent information regarding the John Muir Institute for the Environment.

I have been informed that this is a closed session not opened to the public and that it will not get much press coverage. However, it is my opinion that with all the controversy going on regarding the environmental problems, that it might be advisable at this time for John Ehrlichman and Secretary Hickel to give this serious thought before participating.

Frank R. Pagnotta
Executive Officer

Attachment

FRPagnotta:ba 7-22-69
FRP file and chron
OST ~~file~~ and chron
cc: Dr. Buckley info

July 22, 1969

MEMORANDUM FOR

Mr. Frank R. Pagnotta

This is in response to your request for information about the John Muir Institute for the Environment.

It is my understanding that this Institute is headquartered in Santa Fe, New Mexico. Dave Brower, who is either its chief executive or something like that, actually maintains a residence in San Francisco. George Alderson, in Washington, has been retained to organize the meeting you asked about. His phone number is 547-8196. I understand they expect to announce the meeting this week in New York City. The organization apparently plans symposia of invited attendees numbering 25-30 in odd years. In even years, they plan large public symposia. The first meeting will be in late September at Aspen. Invited speakers include: Robert McNamara, Robert Finch, Norman Cousins, Guy Falk(?). The session leaders invited include: John Ehrlichman and three other individuals whose last names are something like Linowitz, Bradley, and someone else whose name begins with H.

Robert O. Anderson is associated with this group. He is reputed to be the individual who is largely responsible for pushing Walter Hickel as Secretary of the Interior. He is associated with Atlantic-Richfield.

Dave Brower has become a very controversial individual who, in a close vote, was removed as Executive Director of the Sierra Club. In a sense, this group is a "splinter" group from the Sierra Club. Some of the national conservation groups will almost certainly find this competitive and disruptive; others will be less upset. I may have some more insights about these reactions later today after I talk to the Natural Resources Council of America.

If the "conservationists" are strongly opposed to this new group there will be little gain from attending and participating in such a session. On the other hand, if there is even passive acceptance, it might be a pretty good proposition.

Incidentally, the subject of the symposium is "equilibrium with the earth," though I am not sure that's its title.

John L. Buckley

JLBuckley:ew

CROSS REFERENCE INDEX

Date: July 24, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: Hickie/Interior

Summary: Environmental Quality Council standing Cmt. Outdoor
Recreation

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

MEMORANDUM

THE WHITE HOUSE

WASHINGTON

July 25, 1969

WHITE HOUSE *Ennis*

TO: Dr. Buckley

FROM: Malise C. Bloch *MCB*

SUBJECT: Nominee for the Citizen's Advisory Council on Environmental Quality

In connection with our telephone conversation yesterday about the Citizen's Advisory Council on Environmental Quality, I offer you the following information on Governor Thomas L. McCall of Oregon whom Harry Dent considers a "must" for appointment to this council. This information is from "Who's Who".

Thomas Lawson McCall

Born: Egypt, Mass., March 22, 1913

Education: B.A. in Journalism, University of Oregon, 1936

LL.D. from Linfield College, McMinnville, Oregon, 1965 (*honorary*)

Career: Radio and T.V. political news analyst, 1944-64

Administrative Assistant to Oregon Governor McKay, 1949-52

Oregon Secretary of State, 1965-66

Governor of Oregon, 1967 - present

Other Activities: Past President, Oregon Prison Association

Active in the National Conference of Christians and Jews

Republican Congressional nominee, 1954

USNR - 1944-46

Married, two children

Attached is further biographical information on Governor McCall that was sent over from the Republican National Committee. Shortly you will

-2 -

receive similar information on Wesley Hodge , the other nominee whom Harry Dent considers a "must".

VND TECHNOLOGY
OFFICE OF SCIENCE
JUL 50 8 13 AM '83
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TOM McCALL

Governor of Oregon

Tom McCall, 54, Oregon's 30th governor, was elected on November 8, 1966, by the largest vote ever cast for an Oregon governor.

Governor McCall's campaign was waged on a pledge to bring state government closer to the people--a pledge which his "citizen's administration" has kept.

Shortly after taking office, the governor organized a series of "Town Hall" tours designed to gain a better vantage point from which to view the crucial problems confronting Oregon.

These meetings have been highly successful in shortening the distance between the statehouse and localities so that the capitol no longer appears to be just a marble building in Salem, but a real instrumentality of concern for local problems.

Tom McCall is the only governor in the nation who has invited every citizen in his state to visit him in his office. Every weekday afternoon from 12:30 to 1:00, he holds an "open house" at the capitol in Salem. In the past 11 months, his "open house" has enabled him to meet and talk with--individually or collectively--over 40,000 people.

Each week since taking office, Governor McCall has made special 10-minute radio reports to the people aired statewide on 35 radio stations. These have been highly effective in casting light on crucial issues facing Oregon.

-more-

An ardent conservationist, Governor McCall has been vitally concerned about the purity of Oregon's air and water. Under his leadership, the state legislature enacted a sweeping pollution control program to preserve and enhance Oregon's cherished liveability.

Governor McCall was born at Dreamwold, the stately 1,000-acre estate of his grandfather--Thomas W. Lawson--in Egypt, Massachusetts. Lawson, an internationally-famed financier, author and sportsman wrote a celebrated history of the Republican party.

McCall's other grandfather, Samuel W. McCall, was one of the leaders of the Republican Party around the turn of the century. He served in Congress for 20 years and was Governor of Massachusetts from 1916 to 1918. His lieutenant governor was Calvin Coolidge. ("Honey Fitz," the late President Kennedy's grandfather, was elected mayor of Boston on the same day Sam McCall became Governor of Massachusetts.)

In 1936, Tom McCall graduated from the University of Oregon with a bachelor of arts degree in Journalism. He received an honorary doctorate from Linfield College in McMinnville, Oregon, in 1965. He is a member of the Board of Overseers of Lewis and Clark College, Portland, Oregon.

Prior to entering elective public life, Tom McCall was a journalist, television political analyst and documentarian. In 1962, his documentary on air and water contamination in Oregon--"Pollution in Paradise"--won the Sigma Delta Chi Award as the "Outstanding Television Documentary in the United States."

-more-

Governor McCall's record of public service spans two decades, dating back to the days when he was Governor Douglas McKay's principal assistant in 1949. In 1964 he was elected Secretary of State by a majority of 93,663, in the face of an opposition party registration advantage of 109,637.

Over the past 25 years, Tom McCall has been active in a host of community action and human welfare activities. He is a past president of the Oregon Prison Association and the Oregon Association of Crippled Children and Adults. He is the former regional chairman of the National Conference of Christians and Jews and former chairman of the Metropolitan Youth Commission and the Oregon Crusade for Freedom.

Governor McCall serves as a member of the Oregon Council on Crime and Delinquency's Advisory Committee, as well as on the Board of Directors of the Oregon Historical Society, Oregon United Appeal, Oregon Aerospace Education Council and the Advisory Board of the Salvation Army.

An avid sportsman, Governor McCall is an enthusiastic outdoorsman and an expert fisherman. He enjoys to fish whenever he has the opportunity.

The governor has played an active role in national Republican affairs since his election. He presently serves as a member of the vital Policy Committee of the Republican Governors' Conference.

Governor McCall is a member of the Committee on Revenue and Taxation and the Committee on Transportation for the 1968 National Governors' Conference.

-more-

The governor, tallest of the nation's governors, (6'5"), and his wife Audrey, live in Salem and usually spend weekends at their home on the Oregon coast. The McCalls have two sons.

Office of the Governor
State Capitol
Salem, Oregon 97310
(503) 364-2171, x1076

Contact: Ron Schmidt
Administrative Assistant

OST file
13

August 5, 1969

WHITE HOUSE

J.T. Enver

MEMORANDUM FOR

ENVR

STEVEN BULL
STAFF ASSISTANT
THE WHITE HOUSE

SUBJECT: Requirements for Environmental Quality Council -
August 26, 1969

1. Reference your memorandum dated July 28, 1969, to Dr. DuBridge requesting plans and schedules for California as it relates to Environmental Quality Council activities. Dr. DuBridge requests the following arrangements in support of the EQC activities:

a. Dr. DuBridge, accompanied by Mrs. DuBridge, will travel to California prior to the 24th of August and will have their own accommodations and travel plans. However, should White House air transportation be available for return to Washington on the 27th of August, we would like to ask that space be reserved for Dr. and Mrs. DuBridge.

b. Transportation and billet for EQ members and accompanying staff, approximately 14 people -- in addition, transportation and billets needed for Laurance Rockefeller, Citizens' Advisory Committee and one staff member. Some overlap may occur with regard to the members of the EQ Council, who are also members of the Urban Affairs Council. Exact numbers and names, etc., will be provided and discussed with you the early part of next week.

c. Transportation - (government, if available) for Dr. John L. Buckley and Frank R. Pagnotta, who will support Dr. DuBridge on staffing at the Environmental Quality Council meeting, 26 - 27 August.

d. Billet accommodations are requested for Dr. John L. Buckley and Frank R. Pagnotta.

2. Dr. DuBridge requests that you arrange for the necessary helicopters to transport the members of the EQC on a field trip to Los Angeles for an overflight of Los Angeles to view smog conditions. Details with regard to time, etc., will be worked out later and discussed with you. This flight can be scheduled for Monday afternoon or Tuesday afternoon. We so have plans for EQC activities for both afternoons of the 25th and 26th of August. One will be a flight to Los Angeles; the other will be a trip to Irvine Ranch Developments in San Clemente.

3. Your assistance in providing transportation and accommodations for this trip is appreciated and I will be available to discuss details with you regarding the helicopters and other transportation requirements while at San Clemente.

Frank R. Pagnotta
Executive Officer

FRPagnotta:ba 8-5-69
FRP file and chron
OST file and chron
Dr. DuBridge file and chron

cc: Dr. Buckley

CROSS REFERENCE INDEX

Date: August 7m, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Sec. Hickel's TIME Magazine Interview-environment

FILED: WHITE HOUSE President

Indexer: vg

Remarks:

August 14, 1969

WHITE HOUSE

J.F. En...

MEMORANDUM FOR

Clay T. Whitehead
Staff Assistant
The White House

Thank you for your memorandum of August 8. I appreciate your taking the time to review the draft letter and your suggestions are certainly well-taken. I have added two items along the lines you suggest.

You may be interested in knowing that we are currently reviewing the HEW R&D program for air pollution control at power plants and a major objective of that review is to try to develop greater industry incentives for funding the development of the needed technology. Copies of the relevant papers to date are attached. I also tried to suggest that we should internalize the air pollution externality in a recent talk (see pages 11-13).

S. David Freeman
Director
Energy Policy Staff

Attachments

SDF Speech to 7 States Air Pollution Control Conference, 5/8-9/69
Ltr from LAD to Chairman, FPC, re control of sulfur oxides, 7/10/69
Issues to be Included in Final Report of Sulfur Oxides Control
Technology Task Force

SDF:ps

EPS File & Chron
S&T File & Chron

THE WHITE HOUSE

WASHINGTON

August 8, 1969

MEMORANDUM FOR DAVE FREEMAN

I note that the eight points you include in your letter to utility groups regarding power plant siting almost all are procedural or involve government administrative procedures. As you know, the Administration is very interested in exploring other ways of achieving these goals.

I would suggest one or two points be added that get to the key issue of how the added costs of environmental factors are to be paid for, who is to pay for them, and, in short, how the regulatory and market processes might be brought to bear in this area. I realize this is not an easy question, but we really should get people thinking about it and we might get some good ideas. Research and development and public hearings are fine, but the nub of the question is how much society is willing to pay for environmental considerations and who pays for them.

A handwritten signature in blue ink, appearing to read 'Clay T. Whitehead', with a stylized, sweeping underline.

Clay T. Whitehead
Staff Assistant

11 11 11

CROSS REFERENCE INDEX

Date: August 16, 1969

INDEX: WHITE HOUSE-Envir.

To: Kenneth Cole/White House

From: DuBridge/OST

Summary: Sec. Hickels memo re the initial BOB FY 1971
planning allowances for the Dept of Interior

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

CROSS REFERENCE INDEX

Date: August 18, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Agenda for the Envir. Quality Council Mtg 8/25-26/69

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

MEMORANDUM

THE WHITE HOUSE

WASHINGTON

August 18, 1969

TO: DR. DU BRIDGE

FROM: PETER FLANIGAN

Buckley
WHITE HOUSE *Ennis*

I talked with John Ehrlichman and he would like to continue with his recommendation that Wesley Hodge be appointed to the Citizens Advisory Committee on Environmental Quality. Mr. Hodge is well qualified to serve as a land use expert. While his nominee, Richard Babcock, is also a zoning lawyer and preeminent in the field of land use, he is a Democrat and it has been agreed that we would not go forward with him. I have not yet gotten the status of Lelan Sillin but will let you know as soon as I do. I believe that when we reach a decision on Sillin that takes care of all the people on your list of July 18. I continue to suggest Willard F. Rockwell, Jr. and Michael Rapuano for the Committee. If Sillin does not check out, I strongly urge Jack Korette of Montana Power Company.

U.S. GOVERNMENT
OFFICE OF SCIENCE

AUG 18 2 37 PM '69

RECEIVED

CROSS REFERENCE INDEX

Date: August 20, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Comments on Agenda Items for the Envir. Quality Council
8/26/69

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

August 21, 1969

Mr. H. Stauffer
299 Park Avenue
New York, New York 10017

Dear Hans:

Thank you very much for your letter of August 11. I have taken the liberty of forwarding it to Dr. DuBridge so either he or an appropriate member of his staff can meet with Mr. Brinkley. I suggest that Mr. Brinkley call our office if he has difficulty arranging an appointment with the Office of Science and Technology.

With warm personal regards,

Sincerely yours,

Peter M. Flanigan
Assistant to the
President

bcc w/incoming to Dr. DuBridge, OST

cc: Central files
file cy

ms

8/21
Dr. Brinkley
see below:
WHITE HOUSE

Dave -
Lundquist 10

8/28

LAD: you
would you
want to see
Brinkley, w
shall I
suggest
Brinkley
see him?
in

yes

962

H. STAUFFER
299 PARK AVENUE
NEW YORK 10017

August 11, 1969

Mr. Peter M. Flanigan
Assistant to the President
The White House
Washington, D. C.

Dear Peter:

As you perhaps know, our Company is a major producer of agricultural chemicals used for the control of insects, weeds and fungus diseases. We are active members of the National Agricultural Chemicals Association, whose President is Mr. Parke C. Brinkley. Our Mr. Daniel J. Keating is the present Chairman of the Board of the N.A.C.A.

One of the principal functions of this Association is to cooperate with all scientific, regulatory and other government organizations. They work very closely with the National Research Council of the National Academy of Sciences.

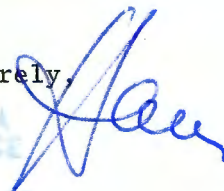
Mr. Parke Brinkley has spent his career in agriculture and, before coming with the N.A.C.A., was the Commissioner of Agriculture for Virginia. He would like very much to arrange a meeting with Dr. DuBridge, President Nixon's Science Advisor, to offer the industry's cooperation. I have had the pleasure of meeting Dr. DuBridge.

Our Company and our industry share the general concern for the effect of pesticides on the environment, and I believe that such a meeting will be most helpful.

Mr. Brinkley maintains an office and staff at 1155 Fifteenth Street N. W., Washington, D. C., and will make himself available at any time convenient to Dr. DuBridge.

With best personal regards,

Sincerely,



U.S. DEPARTMENT OF AGRICULTURE
OFFICE OF SCIENCE
AUG 11 2 01 PM '69

RECEIVED

S&T Cont. No. 962

① Thank
② will forward
letter to Dr.
DuBridge re
either he or
an appropriate
member of his staff
can meet with
Mr. Brinkley
I suggest that
Brinkley call on
office if he
has any
arranging
an opportu-
ment with
OST staff

August 29, 1969

WHITE HOUSE

L.A. DuBridge

Dear Governor Boe:

This is in response to your letter of August 5 with respect to the following paragraph of Mr. Cole's memorandum of July 26, 1969 concerning the President's Population Message.

"The President would like Secretaries Hickel, Hardin and Finch and Dr. DuBridge to assign high priority to research into new techniques that can help safeguard the environment and increase the world's food supply in the light of anticipated population growth. This research should be coordinated through the Environmental Quality Council, which should consider these matters at a meeting to be held no later than October 31. A written report, to be coordinated by Dr. DuBridge, on the Federal and non-Federal efforts to improve research in this area together with recommendations for additional activity should be submitted to the President by November 30. The President would like the Office of Intergovernmental Relations, under the direction of the Vice President, to assist in the preparation of this report."

Would you please designate an individual to meet with Dr. Donald King (Code 103, Extension 3515) of my staff at 1:30 p.m. on Friday, September 5 in Room 213 of the Executive Office Building to assist in developing the report mentioned.

Sincerely,

L.A. DuBridge
Lee A. DuBridge

Lee A. DuBridge
Science Adviser

The Honorable Nils A. Boe
Director
Office of Intergovernmental
Relations
Washington, D. C.

DRK:gg 8:29:69

LAD File & Chron
S&T File & Chron
DRK File & Chron

OFFICE OF THE VICE PRESIDENT
WASHINGTON

August 5, 1969

MEMORANDUM FOR: The Honorable Lee Dubridge
Science Advisor to the President

FROM: Nils A. Boe *NAB*
Director
Office of Intergovernmental
Relations

The Vice President has requested that I contact you with respect to the memorandum of Kenneth Cole, Jr. under date of July 25 relating to the President's message to Congress on population growth.

In paragraph 5 of this memorandum it is indicated that a written report with respect to Federal and non-Federal efforts to research new techniques to increase the world's food supply is to be coordinated by you. It is further indicated that the President would like the Office of Intergovernmental Relations, under the direction of the Vice President, to assist in the preparation of this report.

This office shall be pleased to render any necessary assistance which it may be able to give in connection with the assignment requested by the President. I shall be prepared to make periodic reports to the Vice President and to bring to you the thoughts and suggestions which he may have in connection therewith.

VND TECHNOLOGY
OFFICE OF SCIENCE
AUG 2 4 53 PM '69
RECEIVED

ACTION MEMORANDUM

THE WHITE HOUSE

WASHINGTON

LOG NO.: 868

Date: July 26, 1969

Time: 11:30 A.M.

FOR ACTION: Secretary Finch

cc (for information): Admin. Hannah
Sec. Rogers Dr. DuBridge ✓
Dr. Moynihan

FROM THE STAFF SECRETARY

DUE: Date: October 31, 1969

Time: 2:00 P.M.

SUBJECT:

President's request for an assessment of the adequacy of research presently being done on birth control methods of all types and on the sociology of population growth.

ACTION REQUESTED:

☒ For Necessary Action☐ For Your Recommendations☐ Prepare Agenda and Brief☐ Draft Reply☐ For Your Comments☐ Draft Remarks

REMARKS:

Secretary Finch: As requested in paragraph 8 of the attached memorandum, please submit to the President a survey report and a progress report on the steps being taken to develop an expanded research effort in this area.

PLEASE ATTACH THIS COPY TO MATERIAL SUBMITTED.

If you have any questions or if you anticipate a delay in submitting the required material, please

JAB
K. R. COLE, JR.

THE WHITE HOUSE

WASHINGTON

July 25, 1969

MEMORANDUM FOR

The Vice President

Honorable William P. Rogers
Secretary of State

Honorable Walter J. Hickel
Secretary of the Interior

Honorable Clifford M. Hardin
Secretary of Agriculture

Honorable George P. Shultz
Secretary of Labor

Honorable Robert H. Finch
Secretary of Health, Education,
and Welfare

Honorable Donald Rumsfeld
Director of the Office of
Economic Opportunity

Honorable Joseph H. Blatchford
Director of the Peace Corps

Honorable Lee A. DuBridge
Science Advisor to the President

Honorable John A. Hannah
Administrator
Agency for International Development

Honorable Robert P. Mayo
Director of the Bureau of the Budget

Honorable Frank J. Shakespeare, Jr.
Director
U. S. Information Agency

Honorable Daniel P. Moynihan
Assistant to the President for
Urban Affairs

As the President indicated in his Message to the Congress of July 18th, the problems associated with rapid population growth require increased attention by a number of Federal agencies. To carry out the intent of his Message, the President requests the following specific actions and reports.

1. The President would like Secretary Rogers to study our participation in population and family planning programs sponsored by international organizations, especially the United Nations, and to advise him of specific steps being taken to improve and support such programs. An interim report on our progress in this area should be submitted to the President by September 30.

2. The President asks Secretary Rogers and Administrator Hannah to examine our international population and family planning programs and to advise him of steps that are being taken to insure that they receive sufficient attention, personnel, research and funding to accomplish the goals set forth in his Message. A joint report on progress in this area should be submitted to the President by October 31.

3. The President would like Secretaries Rogers, Hardin, Stans and Finch, Administrator Hannah and Directors Blatchford and Shakespeare to take steps to enlist the active support of all representatives of the United States abroad in carrying out the policy of this Administration to encourage and assist developing nations to recognize and take action to protect against the hazards of unchecked population growth. The President requests Secretary Rogers to coordinate this effort and to report to him by October 31 on actions being taken by the several agencies to achieve this goal.

4. The President asks Secretary Hardin and Administrator Hannah to investigate ways of adapting and extending our agricultural experience and capabilities to improve food production and distribution in developing countries. A joint report on progress and plans in this area should be submitted to the President by October 31.

5. The President would like Secretaries Hickel, Hardin and Finch and Dr. DuBridge to assign high priority to research into new techniques that can help safeguard the environment and increase the world's food supply in the light of anticipated population growth. This research should be coordinated through the Environmental Quality Council, which should consider these matters at a meeting to be held no later than October 31. A written report, to be coordinated by Dr. DuBridge, on the Federal and non-federal efforts to improve research in this area together with recommendations for additional activity should be submitted to the President by November 30. The President would like the Office of Intergovernmental Relations, under the direction of the Vice President, to assist in the preparation of this report.

6. As the President indicated, our efforts to achieve the goals he set forth will require more trained people to work in population and family planning programs, both in this country and abroad. He would like Dr. Moynihan to coordinate a comprehensive survey of our present effort in this area and to develop recommendations for improvements. In preparing this survey, Dr. Moynihan should receive the assistance of the Vice President, Secretaries Rogers, Shultz, Finch and Hickel, and Directors Hannah and Rumsfeld. A preliminary report with recommendations should be submitted to the President by November 30.

7. The President's Message includes an important commitment by this Administration to provide "adequate family planning services within the next five years to all those who want them but cannot afford them." He would like Secretary Finch and Director Rumsfeld, in consultation with Director Mayo, to propose the legislative, organizational and budgetary measures necessary to achieve this goal. This plan should include ways of ensuring the coordination of all domestic family planning services, federal and non-federal, so as to avoid duplication and overlap, and should also heed the President's assurance that none of the activities associated with our pursuit of this goal will infringe in any way upon the religious convictions or personal wishes of any individual. A joint report, together with recommendations, should be submitted to the President by October 31.

8. The President would like Secretary Finch to assess the adequacy of research presently being done on birth control methods of all types, including the rhythm method, and on the sociology of population growth. This assessment should include a careful review of all federal research efforts in this area, and should also include a survey of all other major public and private research projects in the same area. Based upon the findings of this assessment, the President would like Secretary Finch to develop an expanded and coordinated research effort that is adequate to meet the national and international goals set forth in his Message. This program should include the research activities conducted by the Department of State and the Agency for International Development, and should pay careful attention to recent studies by the Federal Council for Science and Technology.

The survey report and a progress report on the steps being taken to develop an expanded research effort should be submitted to the President by October 31.


Kenneth R. Cole, Jr.
Special Assistant
to the President

August 29, 1969

WHITE HOUSE

- F.H. Ennis

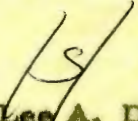
Dear Cliff:

I would like to prepare a response to the following request in Mr. Cole's memorandum of July 26, 1969 concerning the President's Population Message.

"The President would like Secretaries Hickel, Hardin and Finch and Dr. DuBridge to assign high priority to research into new techniques that can help safeguard the environment and increase the world's food supply in the light of anticipated population growth. This research should be coordinated through the Environmental Quality Council, which should consider these matters at a meeting to be held no later than October 31. A written report, to be coordinated by Dr. DuBridge, on the Federal and non-Federal efforts to improve research in this area together with recommendations for additional activity should be submitted to the President by November 30. The President would like the Office of Intergovernmental Relations, under the direction of the Vice President, to assist in the preparation of this report."

Would you please designate an individual to meet with Dr. Donald King (Code 103, Extension 3515) of my staff at 1:30 p.m. on Friday, September 5 in Room 213 of the Executive Office Building to assist in developing the report mentioned.

Sincerely,


Lee A. DuBridge
Science Adviser

The Honorable Clifford M. Hardin
Secretary of Agriculture
Washington, D. C. 20250

DRK:gg 8:29:69

LAD File & Chron
S&T File & Chron
DRK File & Chron

Identical letter sent to
Secretaries Hickel and Finch

ACTION MEMORANDUM

THE WHITE HOUSE

WASHINGTON

LOG NO.: 868

Date: July 26, 1969

Time: 11:30 A.M.

FOR ACTION: Secretary Finch

cc (for information): Admin. Hannah
Sec. Rogers Dr. DuBridge ✓
Dr. Moynihan

FROM THE STAFF SECRETARY

DUE: Date: October 31, 1969

Time: 2:00 P.M.

SUBJECT:

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ACTION REQUESTED:

☒ For Necessary Action☐ For Your Recommendations☐ Prepare Agenda and Brief☐ Draft Reply☐ For Your Comments☐ Draft Remarks

REMARKS:

Secretary Finch: As requested in paragraph 8 of the attached memorandum, please submit to the President a survey report and a progress report on the steps being taken to develop an expanded research effort in this area.

see page 2

PLEASE ATTACH THIS COPY TO MATERIAL SUBMITTED.

If you have any questions or if you anticipate a delay in submitting the required material, please

JAC
K. P. COLE, JR.

THE WHITE HOUSE

WASHINGTON

July 25, 1969

MEMORANDUM FOR

The Vice President

Honorable William P. Rogers
Secretary of State

Honorable Walter J. Hickel
Secretary of the Interior

Honorable Clifford M. Hardin
Secretary of Agriculture

Honorable George P. Shultz
Secretary of Labor

Honorable Robert H. Finch
Secretary of Health, Education,
and Welfare

Honorable Donald Rumsfeld
Director of the Office of
Economic Opportunity

Honorable Joseph H. Blatchford
Director of the Peace Corps

Honorable Lee A. DuBridge
Science Advisor to the President

Honorable John A. Hannah
Administrator
Agency for International Development

Honorable Robert P. Mayo
Director of the Bureau of the Budget

Honorable Frank J. Shakespeare, Jr.
Director
U.S. Information Agency

Honorable Daniel P. Moynihan
Assistant to the President for
Urban Affairs

As the President indicated in his Message to the Congress of July 18th, the problems associated with rapid population growth require increased attention by a number of Federal agencies. To carry out the intent of his Message, the President requests the following specific actions and reports.

1. The President would like Secretary Rogers to study our participation in population and family planning programs sponsored by international organizations, especially the United Nations, and to advise him of specific steps being taken to improve and support such programs. An interim report on our progress in this area should be submitted to the President by September 30.

2. The President asks Secretary Rogers and Administrator Hannah to examine our international population and family planning programs and to advise him of steps that are being taken to insure that they receive sufficient attention, personnel, research and funding to accomplish the goals set forth in his Message. A joint report on progress in this area should be submitted to the President by October 31.

3. The President would like Secretaries Rogers, Hardin, Stans and Finch, Administrator Hannah and Directors Blatchford and Shakespeare to take steps to enlist the active support of all representatives of the United States abroad in carrying out the policy of this Administration to encourage and assist developing nations to recognize and take action to protect against the hazards of unchecked population growth. The President requests Secretary Rogers to coordinate this effort and to report to him by October 31 on actions being taken by the several agencies to achieve this goal.

4. The President asks Secretary Hardin and Administrator Hannah to investigate ways of adapting and extending our agricultural experience and capabilities to improve food production and distribution in developing countries. A joint report on progress and plans in this area should be submitted to the President by October 31.

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7. The President's Message includes an important commitment by this Administration to provide "adequate family planning services within the next five years to all those who want them but cannot afford them." He would like Secretary Finch and Director Rumsfeld, in consultation with Director Mayo, to propose the legislative, organizational and budgetary measures necessary to achieve this goal. This plan should include ways of ensuring the coordination of all domestic family planning services, federal and non-federal, so as to avoid duplication and overlap, and should also heed the President's assurance that none of the activities associated with our pursuit of this goal will infringe in any way upon the religious convictions or personal wishes of any individual. A joint report, together with recommendations, should be submitted to the President by October 31.

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The survey report and a progress report on the steps being taken to develop an expanded research effort should be submitted to the President by October 31.


Kenneth R. Cole, Jr.
Special Assistant
to the President

CROSS REFERENCE INDEX

Date: September 5, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Agenda for Environmental Quality Council

FILED: WHITE HOUSE-President

Indexer:vg

Remarks:

CROSS REFERENCE INDEX

Date: September 9, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Actions of the Governors Conference on Environment

FILED: WHITE HOUSE-President

Indexer:vg

Remarks:

CROSS REFERENCE INDEX

Date: September 9, 1969

INDEX: WHITE HOUSE-Env.

To: Hugh Sloan/White House

From: DuBridge/OST

Summary: President's Participation in the Water Pollution Conference

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

September 11, 1969

WHITE HOUSE

Flanigan
Enr

MEMORANDUM FOR

Peter Flanigan

You raised a good question regarding automotive noise in your memorandum of September 8. At its first meeting the Council established a Committee on Noise under Secretary Stans direction. Dr. King, on my staff, is working with the Committee. I asked him whether attention is being given to the automotive noise problem.

He mentioned that little research has been devoted to any noise problems other than that produced by aircraft. The Committee is reviewing what can be done in the entire noise area and anticipates reporting at the next Council meeting. They are developing proposals for research and action programs, including those concerned with automotive noise.

A number of municipalities and a few States have passed ordinances with automotive noise abatement. Except for obvious public nuisances such as faulty mufflers, it is apparently difficult to enforce the law. Questions arise about what constitutes nuisance level and how far it should be measured from the source. New Jersey, however, has recently started enforcing noise regulations on the Turnpike with some success.

Although it would be possible to abate noise from individual vehicles, a major problem is the build up which occurs when traffic is heavy. There is need for research in such areas as highway surfacing materials, tire design, as well as engine noise.

DRK:gg 9:11:69 File & Chron
S&T File & Chron
LAD File & Chron
R. Barlow
Sally Studebaker

Attention also will have to be given to planning highway locations and establishing suggested permissible noise levels for different local situations. Aside from the potential for establishing noise levels for vehicle manufacturers, it is probable that enforcement of noise regulations will have to be a local matter.

In view of the current Council activity in the noise area, I will pass your suggestions on to Secretary Volpe since DOT will probably have responsibility for the automotive noise problem.

I am enclosing for your information a copy of a noise report put out by the FCST last year. It is being used as background by the Noise Committee.

Lee A. DuBridge

Lee A. DuBridge
Science Adviser

Enclosure

THE WHITE HOUSE
WASHINGTON

September 8, 1969

MEMORANDUM FOR DR. DU BRIDGE

FROM: PETER FLANIGAN

It would seem to me that a hard and quick ¹ look at the status of automotive noise would be an appropriate activity for the Environmental Quality Council. In addition, it's a manageable project which would result in a Council activity on which there could be a result to which we could point.

I have attached a simple, short program that might be considered as a way to attack this problem. I would appreciate your comments as to the desirability of undertaking this program.

S&T Cont. No. 1009

THE WHITE HOUSE

WASHINGTON

PROGRAM FOR AUTOMOTIVE NOISE ABATEMENT

1. Review Federal, State and private studies regarding effects of noise and desirable maximum noise levels. Determine from these the optimum permissible noise level.
2. Review available feasible devices to result in noise emission within this level.
3. Review State laws regarding maximum noise levels and enforcement mechanics.
4. Determine Federal Government's enforcement powers regarding setting maximum noise levels (similar to advertising limits on Interstate Highways).
5. Propose program by Federal Government to:
 - (a) Establish maximum desirable automotive noise levels.
 - (b) Establish methods of staying within those levels.
 - (c) Establish methods of enforcing these limits.
 - (d) Urge States and local governments to impose limits.
 - (e) To extent possible at Federal level, impose limits.

CROSS REFERENCE INDEX

Date: September 12, 1969

INDEX: WHITE HOUSE-Envir.

To: Dwight Chapin/White House

From: DuBridge/OST

Summary: Appt request from Mr. Bill Lear-auto pollution

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

CROSS REFERENCE INDEX

Date: September 13, 1969

INDEX: WHITE HOUSE-Envir.

To: Tod Hullin/White House

From: DuBridge/OST

Summary: Mtg of Envir. Quality Council 8/26/69-availability of aircraft
for hurrican tracking

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

CROSS REFERENCE INDEX

Date: September 18, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/OST

Summary: Report "The Universities and Environmental Quality
Commitment to Problem Focused Education."

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

MEMORANDUM

THE WHITE HOUSE

WASHINGTON

September 23, 1969

WHITE HOUSE *Enron*

TO: Dr. Buckley

FROM: Kay Kelly/Special Projects *Kay*

SUBJECT: Advisory Committee on Environmental Quality

The great state of Missouri will come up with, within five days, a try at replacing Gates with an equally able and more active Republican. We will force Bacon through, over Pennsylvania objections.

On clearing Rene Dubos, we have found that a Josiah Dubos does live at the address given, but a Rene Dubos does not. Do we have the right person? Is this the same person?

AND TECHNOLOGY
OFFICE OF SCIENCE
26 54 1-76 PM, 69
RECEIVED

S&T Cont. No. 1086

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

October 21, 1969

WHITE HOUSE

MEMORANDUM FOR

Lee A. DuBridge

SUBJECT: Comments on Pesticide Residues in Tobacco

It is true that there are no tolerances established for pesticide residues or other additives on tobacco. USDA includes insecticides for tobacco insect control in its Suggested Guide for the Use of Insecticides.....(Agricultural Handbook No. 331). However, no tolerances for residues have been established by HEW because tobacco is not a food.

The current arrangement of responsibilities is for USDA to evaluate effectiveness of a pesticide in controlling pests; HEW (FDA) then sets tolerances and USDA registers the compound for use.

I would think that the MRAK Commission might well recommend that HEW establish pesticide tolerances on tobacco. I believe this would necessitate legislation to extend HEW authority, rather than a broader interpretation of current legislation. I would suggest that you discuss this possibility with HEW people.

Mrs. Knauer's office did call about this matter a week or so ago and I agreed with their suggestion that they write you and Secretaries Finch and Hardin to start the action.

Don King

ADMINISTRATIVELY CONFIDENTIAL

THE WHITE HOUSE

WASHINGTON

October 17, 1969

MEMORANDUM FOR

Honorable Clifford M. Hardin, Secretary
Department of Agriculture
Honorable Robert H. Finch, Secretary
Department of Health, Education and Welfare
Dr. Lee A. Dubridge
Science Advisor to the President

FROM Virginia H. Knauer *VHK*,
Special Assistant to the President for
Consumer Affairs

SUBJECT Possible health hazards of pesticide residues in tobacco

Attached for your perusal are copies of correspondence and accompanying material exchanged between my office and the Federal Trade Commission relative to the potential health hazards represented by unknown amounts of pesticide residues and other chemical additives in tobacco.

As you will see, this potential problem appears to fall between the borders of departmental responsibility and I, therefore, believe an immediate interdepartmental meeting along the lines suggested in my letter is in order.

I urge your immediate consideration of this matter.

I also think it would be well if this matter were brought to the attention of Secretary Finch's Pesticide Commission.

Attachments

ADMINISTRATIVELY CONFIDENTIAL

S&T Cont. No. 1199

FEDERAL TRADE COMMISSION
WASHINGTON, D. C. 20580

PAUL RAND DIXON
CHAIRMAN

SEP 24 1969

Mrs. Virginia H. Knauer
Special Assistant to the President
for Consumer Affairs
Executive Office Building
Washington, D. C. 20506

Dear Mrs. Knauer:

A potentially serious problem affecting the health of American consumers has come to the attention of the Commission. As the enclosed memorandum from the Commission's Division of Scientific Opinions states, high residues of DDT and other pesticides have been found in tobacco. While the Food and Drug Administration sets tolerances for pesticides on certain consumable agricultural products, tobacco is not regarded as a commodity subject to the laws administered by the Food and Drug Administration. Therefore, tobacco is the only consumable agricultural crop that is not subject to controls limiting pesticide residues to safe levels; pesticide levels reported in some tobacco products are substantially higher than the limits set by FDA for foods.

Unfortunately, despite the potentially serious health problem presented by this situation, it appears that no executive agency has conducted the research required to determine the extent to which the absence of pesticide tolerance limits on tobacco may endanger the health of tobacco users, nor has any executive agency explored the effect of other chemical additives upon the health of users of tobacco products.

While the Federal Trade Commission has the jurisdiction to investigate these problems insofar as they relate to unfair or deceptive trade practices, it is the opinion of the Commission that action by other government agencies would be more appropriate. The Commission's limited laboratory facilities are not readily suited for the extensive research which the public interest requires. More important, the expertise

Mrs. Virginia H. Knauer

2.

and regulatory authority of the Departments of Agriculture and Health, Education, and Welfare, for example, could provide a more informed analysis of the problems involved and a more direct solution to the dangers, if any, disclosed by research than it is in the power of the Federal Trade Commission to provide.

While the Commission is prepared to reconsider whether action by it will be necessary to protect the consumer interest, for the reasons outlined above the Commission respectfully suggests that action by the Executive Branch would be more appropriate and effective. The Commission will therefore defer further action in this matter pending its consideration by your office.

By direction of the Commission.


Paul Rand Dixon
Chairman

Enclosure

SEP 24 1969

Mrs. Virginia H. Knauer
Special Assistant to the President
for Consumer Affairs
Executive Office Building
Washington, D. C. 20506

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signed and mailed

Mrs. Virginia H. Knauer

2.

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By direction of the Commission.

Paul Rand Dixon
Chairman

Enclosure

UNITED STATES GOVERNMENT

Memorandum

TO : Commission.

DATE: August 26, 1969.

FROM : Division of Scientific Opinions.

SUBJECT: Tobacco Insecticides & Pesticides,
File No. 682 3043.

The purpose of this memorandum is to acquaint the Commission with the background of the current public controversy over pesticide residues in tobacco and to suggest possible steps to obtain the scientific evidence necessary for the Commission to evaluate the problem and to provide the scientific basis upon which to discharge its regulatory responsibilities in this potentially serious public health matter. The present controversy over pesticides in the environment, and particularly in tobacco, makes it imperative, in our opinion, that the Commission be advised of the status of this matter as it relates to Investigational File No. 682 3043, Tobacco Insecticides & Pesticides, now under study by the Division of Scientific Opinions as an industry-wide project assigned to the Division of Special Projects.

The Congressional remarks of Senator Gaylord Nelson of Wisconsin have stimulated a series of items in the lay press regarding the possible health hazards of pesticides in tobacco. A copy of Senator Nelson's remarks as printed in the Congressional Record for July 28, 1969, is submitted as Attachment A entitled "Health of Cigarette Smokers Endangered by Pesticide Residues in Tobacco". Examples of news items and an editorial relating to Senator Nelson's remarks are submitted as Attachments B, C, and D, consisting of copies of articles from The New York Times and the Washington, D.C. Evening Star for July 28, 1969, and an Evening Star editorial dated August 15, 1969. Scientific data published more recently than that cited by Senator Nelson confirms the currency of this problem.

In his remarks, Senator Nelson points out potential health hazards from DDT and other pesticide residues in tobacco and advocates the setting of tolerance levels for pesticides in tobacco. He also points out that high residues of DDT and other pesticides have been found in tobacco, and that tobacco is the only consumable agricultural crop that does not have a tolerance level specifying when a pesticide residue is hazardous. He comments further that no significant Government research has been done to determine the effect of residues on the smoker's health, and that the Agriculture Department and the Department of Health, Education, and Welfare have virtually ignored the existence of toxic pesticide residues in cigarette smoke entering the human body.

In addition to the Congressional concern expressed by Senator Nelson and the popular interest expressed by the lay press, there recently appeared in the Journal of the National Cancer Institute a report in which six pesticides, including DDT, were found to induce tumors when fed to laboratory mice. The significance of these findings in terms of human health has not yet been determined, but as can be seen in the copy of the article from Science, for June 27, 1969, (see Attachment E) the Department of Health, Education, and Welfare may now have to determine whether any tolerances for DDT in food are now justified or acceptable if DDT is tumorigenic.

Senator Nelson also points out that the West German Government has taken action to set tolerance levels, and in some cases zero tolerances, for certain pesticides in tobacco imported into that country. Because American tobacco will probably not meet those tolerances under present practices, we anticipate more interest in the future on the part of the Department of Agriculture in controlling pesticide residues in tobacco.

In acquiring data in connection with this project investigation, we are concerned not only with the pesticides which are used on tobacco but also the unknown kinds and quantities of non-tobacco chemicals which are added to tobacco in the manufacturing process. At present, we do not have available the scientific data required to properly assess the problem of pesticide residues in tobacco, nor to evaluate the possible health consequences of pesticides and other chemical additives in tobacco. It is evident, however, that pesticide chemicals reach the smoker through inhalation of the mainstream smoke of cigarettes and cigars and through ingestion by chewing tobacco. If the setting of tolerance levels for pesticides in tobacco is to be considered at this time, we would have to suggest that in the absence of more complete data that the problem be referred to the National Academy of Sciences for study and recommendations. It should be borne in mind, however, that the National Academy of Sciences does not have its own laboratories, and would probably require the same kind of information and data we are seeking as a basis for an informed judgment.

As stated above, the principal purpose of this memorandum is to alert the Commission to an additional potentially serious health problem with respect to tobacco products. We also wish to point out that published data necessary to a detailed assessment of the problem is lacking and that direct means of acquiring data should be employed by requesting data on pesticides and chemical additives from the tobacco industry and by developing

scientific laboratory data in the Commission's own tobacco laboratory. To our knowledge no other agency is doing the kind of laboratory research that is required to assess the regulatory problem involved here, and no other agency has the regulatory responsibility to deal with the problem in the public interest. Tobacco is not classified as a food, drug or hazardous substance for household use, and, therefore, is not regarded by the Food and Drug Administration as subject to any of the laws administered by that agency. The FDA does set tolerances for a variety of pesticides for foods. The pesticide levels which have been reported to be present in some cigarette and cigar tobacco, are substantially higher than those limits set by FDA for foods. The U.S. Department of Agriculture registers pesticides for use on particular crops but has no legal control over their crop use and does not set tolerances for pesticide residues on crops. Moreover, no federal laws are extant which prevent farmers or processors from using as much or any kind of pesticide on tobacco as they desire.

The scientific reports referred to in the above news items are under review by this Division, and plans are being made to confer in the near future with the principal scientists involved in the reported studies. In the meantime, we are concerned not only with a wide variety of pesticidal chemicals which are being used on growing and stored tobacco as insecticides, herbicides, fungicides, plant growth regulators, fumigants and the like, but also with the possible health consequences of the addition of non-tobacco substances to smoking tobacco in the manufacturing process. These substances are understood to be added in the form of chemicals and non-tobacco plant extractives in accordance with highly secret manufacturing formulations to which only the individual firms themselves are privy. The health consequences of the addition of non-tobacco chemical substances to any given brand of cigarettes is not known nor does the Commission staff have available to it the information necessary to determine: (1) what non-tobacco additives and chemical pesticides are used in the production and manufacture of any given lot of cigarettes, (2) what potential threat to the user's health those additives and pesticides might pose, and (3) whether any such chemicals should be eliminated from the production and processing of tobacco or whether tolerances should be set limiting the amount of chemical or pesticide which can legally be present in tobacco as it reaches the consumer.

It is our opinion that the present climate of public interest makes it essential that the Commission arm itself with whatever data is now held by the tobacco companies on the presence and health consequences of pesticides and non-tobacco

additives in tobacco, and that the Commission undertake the development of its own routine test data on the amount and kind of pesticides and other non-tobacco chemicals reaching the smoker through specific brands of market cigarettes. No other agency can now provide this information, as far as we can determine.

We wish, therefore, to suggest to the Commission that the seriousness of this matter will, in our opinion, require the Commission's own laboratory to prepare to test cigarette smoke for pesticides and other non-tobacco chemicals in market samples. Mr. Pillsbury, chemist in charge of the laboratory, has been requested to make some preliminary determinations as to what laboratory instruments, facilities and personnel will be required to properly assess this problem from the laboratory standpoint. He has estimated that the laboratory would require two additional technicians, about 300 square feet of additional air-conditioned working space, and additional equipment at an approximate cost of \$22,000.

In view of the accelerating climate of public concern over pesticides in the environment and in view of the serious potential health problems involved in the presence of pesticides and chemical additives in tobacco, we suggest that there be obtained from the tobacco industry on a compulsory basis all the data possessed by each individual manufacturer in the industry on the pesticides and chemical additives used on and in its tobacco products and present in its tobacco products when marketed.

Respectfully submitted,

George Dobbs 8/27/69
George Dobbs, M.D.,
Associate Chief,

Division of Scientific Opinions.

APPROVED:

Frank C. Hale 8-28-69
Frank C. Hale,
Director,
Bureau of Deceptive Practices.

Attachments.

SJGilmore:gh

non households in 1978. This presumably compares with HUD's 8 million households in need of assistance, but since TEMPO considered 20% of income as the appropriate budget share for housing and HUD used 25%, the fact that TEMPO came up with a lower total leads to one to conclude that they were working with substantially different estimates of income distribution.

In his study for the Douglas Commission, Kristof does not attempt to estimate "non-effective" demand or the need for assisted starts in any direct way. It might be noted that his projection of the components of inventory change during the 1970's concludes that there will be 18.4 million new standard units built and 1.2 million substandard units upgraded to standard status. When this is compared with his estimates of need, it reflects a "shortfall" of 7.7 million units. This "shortfall" is, in a sense, one measure of the gap which public policy may have to fill. Since Kristof's projection of almost 2 million units a year in construction and rehabilitation is about 1½ times what the nation has accomplished in any year since 1950. It is likely that his projection understates the "shortfall" by a fair amount.

It is true that the Douglas Commission called for "at least 500,000 units a year exclusive of housing for the elderly . . . [for] poor and moderate income families," and that Kristof's study itself discusses adding ".5 million aided units per year." But the latter goes on to say, not that this would eliminate substandard housing in a decade, but that it would "reduce urban housing needs to negligible proportions by 1980 . . . [italics added]."

The \$5,000 income level for estimated the need for assistance (used by HUD for non-elderly households), strikes the present writer as reasonable, if arbitrary yardstick. TEMPO's analysis of the 1960 Census data concluded that the minimum income required for adequate housing ranged from \$3,400 for a white individual to \$6,500 for a nonwhite family of six or more living in a non-metropolitan area. The fact that this is a minimum-figure means that while smaller households may secure adequate housing on less than \$5,000 a year, many households—and especially larger ones—actually require more than the minimum. Thus, \$5,000 is utilized as an across-the-board figure, representing an average measure of need. If it is applied to those already occupying substandard housing, it means that 84% of them will require assistance to secure replacement of their current substandard housing with standard housing. This implies, on the basis of the 6.9 million substandard units in 1970 estimated by Kristof, a need for 5.8 million assisted units for the nation as a whole and 4.1 million assisted units for rural areas and small towns, merely to replace already existing substandard units.

To estimate the proportion of assisted units required to eliminate crowding in existing standard units and to meet the need for standard units developing during the decade, use of the general pattern of income distribution is probably more logical. The most recent data here, indicate that 35% of all households fall in the below-\$5,000 income category. Applying this percentage to the remainder of the needs (including that represented by crowded standard units), as estimated by Kristof gives a figure of 7.2 million assisted units for the nation as a whole and 3 million for rural areas and small towns. Combining these estimates with those arrived at in the preceding paragraph gives totals of 13 million and 7 million, respectively, for the nation and for rural areas and small towns. While these estimates of the assisted units required for the coming decade are dramatically above those officially endorsed by Congress, as well as those used by the Douglas Commission and the Kaiser Committee, it should be noted that the Na-

tional Housing Conference, in its 1969 annual meeting, called for "at least 1,000,000 units annually for these [low and moderate] income groups." It is also worth stressing that the need for assisted units in rural areas and small towns is almost certainly larger rather than proportional to the need in the rest of the country. Thus, Farmer's Home Administration . . . estimates that 56% of the required units in its service area will need public assistance. If this percentage is applied . . . to the estimate of needs for rural areas and small towns adapted for this paper from the Kristof estimates, the result is 7.6 million assisted units, a level even higher than that arrived at above.

CURRENT PROGRAM LEVELS

Federal programs in the field of low-income housing may best be seen in the perspective of a pair of ironies. The first of these is, as Michael Harrington has said, "the magnificent irony that the stated purpose of the 1968 housing legislation was to fulfill the stated purpose of the 1949 act." The second, and more telling irony is implied by a report of the Department of Health, Education and Welfare on the housing of public assistance recipients. It concludes that more than \$1 billion a year in government funds is spent by welfare recipients on housing and that at least half of them are in quarters that are "considerably below accepted standards." When one compares this statistic with the fact that the annual cost of its low-income housing programs has been estimated by HUD at about \$321 million, it becomes clear that the government is spending more money on bad housing than on good.

TABLE 10.—FEDERALLY ASSISTED HOUSING UNITS, FISCAL YEAR 1968, FISCAL YEAR 1969, AND PROPOSED FOR FISCAL YEAR 1970

	Fiscal years—		
	1968	1969	1970
Public housing	51	69	130
Other HUD rental programs	62	64	142
HUD ownership programs	9	13	129
All HUD programs	122	146	401
FmHA ownership programs	33	43	147
FmHA rental programs	2	3	3
All FmHA programs	35	46	150
All programs	157	192	551
Estimated portion in rural areas and small towns	53	67	210

¹ Original target (in initial fiscal year 1970 budget) was 186,000 units; estimated slippage thus 21 percent.

² Original target (in initial fiscal year 1970 budget) was 47,000 units; estimated slippage thus 2 percent.

Sources: fiscal year 1968 data from May 12, 1969, statement of Secretary Romney before House Banking and Currency Committee (see table 2 appended to statement); fiscal year 1969 data estimated on basis of same source, projecting 9-month figures to a 12-month basis; fiscal year 1970 target figures for HUD programs from "Summary of HUD Budget, fiscal year 1970," p. 1-7; fiscal year 1970 target figures for FmHA from unpublished May 16, 1969, "Program Attainment Report." Estimates for R. & S.T. portion assumed that all FmHA units and 15 percent of HUD units are located in those areas.

We turn now to how likely our current program levels are to meet our estimated needs and eliminate those twin ironies at last. Table 10 presents consolidated data on the number of assisted starts and rehabilitations produced by HUD and FmHA programs in FY 1968, expected in the current fiscal year, and proposed for the coming one. Based on the assumption that 15% of HUD-assisted units are located in rural areas and small towns (as defined in this paper), it also indicates the level for that target area. It should be remembered that the 551 thousand units proposed for the coming fiscal year are related to the planned achievement

of the ten-year total of 6 million units called for in the 1968 Act. . . . If the "slippage" that seems to have been experienced in the current fiscal year were to be characteristic of the next, the number of assisted starts would fall from 551 thousand to 464 thousand for the country as a whole, and from 210 thousand to 195 thousand for rural areas and small towns. Given the fact that the targets for FY '70 are so much more ambitious than were those for the current fiscal year, the chances for slippage are, in fact, larger.

The comparison of current program levels with estimated needs is a depressing business. We have estimated 7 to 7½ million assisted starts will be required in rural areas and small towns over the next decade. If this is the case, it would take a hundred years and more to do the job at existing levels of activity. Even if the current targets for next year are achieved, we would require nearly four decades to meet one decade's needs—hardly a winning proposition. It is the contention of this paper that it will not be enough to double or triple the current (i.e., FY '69) level of Federal housing activity in rural areas and small towns. That level must be increased more than tenfold if the stated goal of eliminating substandard housing in the next ten years is to be realized.

HEALTH OF CIGARETTE SMOKERS ENDANGERED BY PESTICIDE RESIDUES IN TOBACCO

Mr. NELSON. Mr. President, high levels of DDT and other pesticides are being found in cigarettes and are increasing the health hazards already facing smokers.

Research findings on pesticide residues in tobacco and cigarette smoke indicate the probability of additional health hazards to smokers and add to the massively accumulating evidence of the pervasiveness of persistent pesticides in the world environment.

The presence of these pesticides again demonstrates the urgent necessity of setting national standards to prevent the indiscriminate and uncontrolled use of these pesticides to protect the environment. It is already clear that such standards must include a ban on DDT.

I believe that the Department of Agriculture and the Department of Health, Education, and Welfare should take immediate action to set regulations limiting the amount of pesticide residues in tobacco and avoid compounding the health hazards already facing the smoker.

Recent studies have measured up to 38 parts per million of DDT residues in cigarette tobacco and up to 53 parts per million in cigars. The studies were conducted by North Carolina State University researchers and other laboratories.

Tobacco is the only consumable agricultural crop that does not have a tolerance level specifying when the pesticide residue is hazardous. Furthermore, no significant Government research has been done to determine the effect of the residues on the smoker's health.

It is of great concern that the existence of toxic pesticide residues in cigarette smoke entering the human body has been virtually ignored by both the Agriculture Department and the Department of Health, Education, and Welfare.

The Surgeon General has already identified certain substances in tobacco that can cause cancer, chronic bronchitis and pulmonary emphysema. Now there is evidence that the smoker's health is also besieged by poisonous pesticide residues flowing into his throat and lungs with cigarette smoke.

West Germany has recently set tolerance levels on a wide range of farm crops for 80 pesticides, including a zero tolerance for 14 persistent pesticides such as aldrin, dieldrin and endrin.

Under reported pressure from tobacco interests, the tolerance level for tobacco has been delayed until 1973.

According to North Carolina tobacco experts, if the present West German standards covered tobacco, virtually no American tobacco would be permitted on the German market.

Potential loss of the West German tobacco market has raised considerable concern among American tobacco interests. More than 700 million cigarettes and 88 million pounds of unmanufactured tobacco, worth \$74 million, were exported last year from the United States to West Germany.

The tobacco industry knows that its products cannot even come close to the residue tolerance levels that West Germany has set for similar farm crops. Unless some drastic changes in pesticide use are made, American producers might as well forget about selling to that market or any other that follows West Germany's lead in establishing tolerance standards for tobacco.

This entire episode is causing the greatest repercussions throughout the tobacco empire since the Surgeon General's report on smoking and health.

In addition to finding DDT residues of up to 38 parts per million in cigarettes and up to 53 parts per million in cigars, the North Carolina studies have found up to 100 parts per million on the green tobacco leaf after harvesting.

By comparison, the tolerance level for DDT established by the Food and Drug Administration for similar leafy products, such as cabbage, lettuce, and spinach, is seven parts per million.

Under current food and drug laws, tobacco is not considered as food in the United States and no tolerance level for residues has been set. Tobacco growers and processors are free to use as much pesticide as they want.

In contrast, fruit and vegetable producers must carefully watch the pesticide residue level or risk having their crop banned from commercial markets.

The frightening thing is that insects feeding on tobacco are developing an increasing resistance to DDT and other standard pesticides. This has caused growers to use even greater amounts of pesticides.

Nearly 5,500,000 pounds of insecticides were applied to 2,566,000 acres of tobacco in 1964, the latest year when detailed Agriculture Department statistics are available. The percentage of tobacco acreage treated with pesticides increased from 47 percent in 1952 to 81 percent in 1966.

A major problem exists because tobacco leaves have the characteristic of absorbing pesticides which cannot be

washed off and persist even after the curing and manufacturing process.

As a result of increased pesticides use, tobacco tested in 1965 showed six times more residue than 3 years earlier and 12 times greater than in 1957.

Research officials at the Agriculture Department have confirmed that insecticide residues, particularly chlorinated hydrocarbons like DDT, exist in high amounts in tobacco even after processing.

The principal pesticides listed by the Agriculture Department for use on tobacco in 1964 included:

DDT: 1,187,000 pounds on 559,000 acres, 2.1 pounds per acre average.
 TDE: 2,331,000 pounds on 657,000 acres, 3.6 pounds per acre.
 Toxaphene: 292,000 pounds on 98,000 acres, 2.9 pounds per acre.
 Parathion: 466,000 pounds on 340,000 acres, 1.4 pounds per acre.
 Carbaryl: 331,000 pounds on 123,000 acres, 2.7 pounds per acre.
 Malathion: 101,000 pounds on 43,000 acres, 2.3 pounds per acre.
 Endrin: 150,000 pounds on 149,000 acres, 1 pound per acre.
 Aldrin: 135,000 pounds on 85,000 acres, 1.6 pounds per acre.
 Dieldrin: 93,000 pounds on 182,000 acres, 0.5 pound per acre.

I ask unanimous consent that an article entitled "Poisons in Cigarette Tobacco Increase" published in the Health Bulletin of September 18, 1965; a research report entitled "Insecticide Residues on Tobacco During 1962," published in the Tobacco magazine of September 18, 1964; and a comprehensive review of pesticides research entitled "Pesticide residues on tobacco," published in The Residue Review of 1967, be printed in the RECORD.

The articles follow:

There being no objection, the items were ordered to be printed in the RECORD, as follows:

POISONS IN CIGARETTE TOBACCO INCREASE

Cigarettes on the market today contain much higher residues of insecticides than cigarettes sold several years ago, according to tests made by an independent laboratory for Health Bulletin. Four popular brands were analyzed for DDT and endrin by the sensitive gas chromatograph technique and the results were compared with previous reports of insecticide residues in cigarette tobacco published in the technical literature.

The most recent published study available to Health Bulletin is the article "Insecticide Residues on Tobacco During 1962," authored by three U.S. Department of Agriculture staff members and published in *Tobacco Science* (Volume 8). That article reported levels of DDT in brand name cigarettes ranging from 2 to 6 parts per million, and levels of endrin from 0.5 to 2 parts per million—with most brands at 1 part per million of endrin or below. Because of the great toxicity of endrin, the authors of that article recommended that its use for the control of tobacco insects be discontinued. It is no longer registered for use on tobacco by the U.S.D.A.

Health Bulletin's test results, received on September 9, showed that levels of DDT have increased dramatically since 1962. Four popular brands of cigarettes tested showed DDT levels of 25, 28, 38 and 37 parts per million respectively. Those figures indicate an average six-fold increase in DDT content since 1962. Comparison with a study of DDT residues in cigarettes in 1957 shows that the level now is roughly 12 times greater than it was then. (Bowers, et al. "Insecticide Res-

idues on Tobacco," *Agric. and Food Chemistry*, 7(10): 693-702, 1959.)

Endrin levels in cigarettes have increased since 1962, despite the fact that producers are not supposed to use that highly toxic insecticide for tobacco insect control. The four brands of cigarettes tested by Health Bulletin contained endrin in amounts of 1.3, 1.5, 1.6 and 1.6 parts per million. Those are roughly twice the amounts detected in the 1962 tests by U.S. Department of Agriculture scientists. The maximum amount of endrin in cigarettes detected in the 1957 tests was less than three-tenths of a part per million. A later study by Bowers et al showed that pesticide residues are present in mainstream cigarette smoke if they are also present in tobacco. (*Agric. and Food Chemistry*, 9(3): 193-7, 1961.)

Controlling the levels of pesticide residues in tobacco is made difficult—if not impossible—by the fact that there is no law preventing farmers or processors from using as much insecticide on tobacco as they wish. Tobacco is not classified as a food, and therefore is not subject to the control of the Food and Drug Administration. The FDA would have the legal power to set tolerances for insecticide residues in tobacco if given jurisdiction in that area by Congress. The U.S. Department of Agriculture registers insecticides for use on particular crops and can control the information placed on insecticide package labels. But it has no legal control over insecticide use, and does not set tolerances for residues on crops.

Increasing resistance of tobacco insects to DDT and other standard insecticides has forced farmers to use much larger amounts of these poisons to achieve the same degree of control they got with smaller amounts in past years. "If the present trend continues," the Texas Agricultural Experiment Station said in May of this year, "it is possible that in the near future there may not be any insecticides available which will produce the level of control to which producers are currently accustomed."

Insecticides in tobacco have attracted little attention from health researchers, probably because there are enough other harmful aspects of the smoking habit to occupy their thoughts and efforts. The search for cancer-causing elements in cigarettes has concentrated on substances occurring naturally in the tobacco plant. "The possible role of these compounds (insecticides) in contributing to the potential carcinogenicity of tobacco smoke is not known," the Surgeon General's advisory committee on smoking and health commented in its 1964 report. A spokesman for the Public Health Service told Health Bulletin this week that his agency is doing no research now on the effect of pesticides in tobacco on health.

INSECTICIDE RESIDUES ON TOBACCO DURING 1962

(By F. R. Lawson, Calvin Corley, and Milton S. Schechter)

Before the development of DDT the insecticides most commonly used on tobacco in the United States were arsenicals. The arsenic content of commercial cigarettes increased from about 15 p.p.m. in 1917 to as much as 50 p.p.m. in 1951, and then declined to less than 5 p.p.m. by 1958 (Guthrie et al. 1959). Today arsenicals are seldom used on tobacco. Small and McCants (1962) found an average of 2.8 p.p.m. in soil in North Carolina and 1.5 in tobacco. About 1 p.p.m. was found in tobacco grown on Maryland soil with no previous history of arsenic applications. (unpublished reports, U.S. Dept. Agric.)

The decline in the arsenic content of tobacco since 1951 reflects the replacement of the arsenicals with chlorinated hydrocarbons and organic phosphates. Of these the persistent chlorinated hydrocarbons are of

chief concern on tobacco. Bowery et al. (1959) showed that application of these insecticides at planting resulted in high levels of TDE, DDT, and endrin on green tobacco and that more than half of such insecticide residues persisted on tobacco through commercial processing. They also found 6.0-17.2 p.p.m. of TDE-DDT, and 0.68-0.29 p.p.m. of endrin in commercial cigarettes in 1957. Detectable amounts of these insecticides occur in the mainstream smoke (Bowery et al. 1959), and (unpublished report, N.C. State College).

Increased concern over the possible presence of insecticide residues in various agricultural products has prompted a more critical look at the status of such residues in tobacco following the application of insecticides to control various insect pests. The objectives of this study were to determine residues of DDT, TDE, and endrin on flue-cured tobacco from 1962 auction markets in North Carolina, South Carolina, Georgia, and Florida; to determine the residue levels in cigar wrapper tobacco in Florida; and to obtain data on residues in manufactured tobacco products on the 1962 retail market.

MATERIALS AND METHODS

Samples of raw, cured tobacco, as prepared and sold by the growers, were obtained from auction markets in four of the five States producing flue-cured tobacco. Flue-cured tobacco is the principal ingredient of cigarettes. Samples of raw, cured cigar wrapper tobacco were removed from stored leaf produced by 95 growers. The outside leaf on many brands of cigars constitutes 3-5 percent of the weight of the cigar. Other types of tobacco were not sampled.

Flu-cured tobacco to be sold on auction markets is placed in piles on the floors of large warehouses. Each pile belongs to an individual grower and is usually made up of similar leaves harvested from the same portion of the stalk.

Three market towns were selected in Florida, 3 in Georgia, 5 in South Carolina, and 5 in each of the three principal tobacco belts of North Carolina. The towns selected were those reporting the most tobacco sold in 1961. One warehouse with at least 100 piles of tobacco on the floor was selected in each town, except that in two towns in Georgia and two in Florida samples were taken in two warehouses in each town. In each warehouse, 50 representative piles of tobacco were selected and duplicate composite samples taken by removing two leaves from each pile and placing them in separate bags. Since each grower may have had several piles of tobacco for sale each day, the samples did not necessarily represent 50 growers but probably did in some cases. Manufactured tobacco products were purchased from stores in Oxford, North Carolina. The brands chosen were usually the leading ones of each of the principal companies.

The tobacco leaves, including the stems, were ground in a Hobart food chopper. After extraction with hexane and cleanup by column chromatography on Florisil-Nuchar mixture, aliquots were analyzed by gas chromatography with an electron capture detector. The sensitivity was 1.0 p.p.m. for DDT and TDE and 0.5 p.p.m. for endrin on a 1.0-mg. sample of tobacco. The presence of DDT was confirmed by infrared spectrophotometry in the samples of cigar wrapper tobacco from Florida. The presence of DDT, TDE, and endrin was confirmed by spot checking 25 samples of manufactured tobacco by thin layer chromatography. (Adams and Schechter 1963).

RESULTS

Data on the mean residues of TDE, DDT, and endrin found on 10 samples of cured tobacco from the various localities are given in Table 1. They show that residues of DDT and TDE were highest in the averages of the samples collected in Georgia and South Caro-

lina. The presence of these residues can be related to the greater abundance and necessity for control of the tobacco hornworm (*Protoparce sexta* (Johannson)) and tobacco budworm (*Heliothis virescens* (F.)) in these States. The Florida samples showed more endrin and less DDT and TDE in flue-cured tobacco than Georgia or South Carolina. This result indicated considerable use in Florida of endrin. The highest residues of DDT and endrin were found on one composite cigar wrapped tobacco sample from Florida. With this type of tobacco even one or two small holes in a leaf will reduce its value; hence, insecticides are applied frequently, usually at least once each week and often twice.

The aliquots analyzed to give the data in Table 1 included stems. Data given by Bowery et al. (1959) did not. Since the amount of residue in stems is unknown probably the best basis for comparison is to assume that stems have no residue and

correct for the weight difference by multiplying the figures in Table 1 by 1.282. On this basis, the mean residues of DDT and TDE on flue-cured tobacco from each area sampled in North Carolina were less than those reported for similar samples taken in 1956-58 (Bowery et al. 1959), but the mean residues of endrin were about the same. However, high residues of endrin were found on some of the samples of flue-cured tobacco in North Carolina as well as the cigar wrapper tobacco in Florida.

The results of the 1962 analysis of manufactured tobacco are given in Table 2. The quantity of TDE and DDT in commercial cigarettes has nearly doubled since 1957 (Bowery et al. 1959). All of the cigarette samples contained endrin, with half containing 1 p.p.m. or more. The maximum residue of 2 p.p.m. endrin found in one filter brand was 7 times greater than the maximum found in cigarettes in 1957.

TABLE 1.—INSECTICIDE RESIDUES ON CURED TOBACCO—1962 AUCTION MARKET

Type of Tobacco and Area	DDT		Residues p.p.m. TDE		Endrin	
	Mean	Maximum	Mean	Maximum	Mean	Maximum
Flue cured: ¹						
Florida	2.50	4.5	18.83	60.0	2.13	5.1
Georgia	7.90	32.0	35.85	58.0	1.21	1.8
South Carolina	10.44	27.5	31.19	60.0	1.22	2.7
North Carolina:						
Eastern belt	4.65	15.0	2.80	7.0	2.40	3.1
Middle belt	4.80	22.0	7.20	18.0	.75	2.1
Old belt	3.00	10.0	4.30	20.0	.49	1.1
Cigar wrapper: ² Florida		216.0		10.0		7.8
Check tobacco: ³	.0		.0		<.5	

¹ 10 Flue-cured tobacco samples (50 leaves per sample) from each area.

² Composite sample (100 leaves) from 95 growers.

³ Since recovery analyses were 100 percent for DDT and TDE and 95 percent for endrin, no recovery corrections were deemed to be necessary for results in tables 1 and 2. Zero figures for endrin signify that none was detected within the sensitivity of the method employed. The figures <1.0 p.p.m. for DDT and <0.5 p.p.m. for endrin signify qualitatively detectable amounts below the levels of good quantitation.

TABLE 2.—INSECTICIDE RESIDUES OF DDT, TDE, AND ENDRIN IN BRAND-NAME TOBACCO PRODUCTS

Brand No. and type	DDT (p.p.m.)	TDE (p.p.m.)	Endrin (p.p.m.)
Cigarettes—1 carton each:			
1 regular	2.0	12.0	<0.5
2 regular	3.0	17.0	1.0
3 regular	4.0	18.0	1.0
4 regular	4.0	18.0	1.0
5 filter	3.0	14.5	1.0
6 filter	4.0	16.5	1.0
7 filter	6.0	21.5	2.0
8 king	3.0	20.0	<.5
9 king	4.0	23.0	1.0
10 king	5.0	23.0	1.0
Cigars: 6 to 8 packages, 4 to 5 per package:			
1	53.0	10.0	.5
2	32.0	12.0	.0
3	10.0	15.0	.0
Pipe tobacco: 7 1 to 5 per 8-oz. cans or 1/4-lb. can			
1	<1.0	5.0	.0
2	1.0	10.0	<.5
3	<1.0	13.5	<.5
4	1.0	31.0	1.0
Snuff: 1 5-oz. jar or can:			
1	<1.0	14.5	.0
2	<1.0	17.0	<.5
3	<1.0	18.0	.5
4	1.0	22.5	2.0
5	1.0	29.0	.5

DDT residues in cigars were much higher than in any other product tested. The indicated high residues in Florida wrapper (Table 1) could account for part of the high residue in cigars, since the weight of a wrapper is 3-5 percent of the weight of the cigar. Endrin residue occurred in one of the three samples of cigars.

TDE residues in pipe tobacco and snuff were similar to those in cigarettes and cigars. Endrin was detected in 7 of the 9 samples of pipe tobaccos and snuff, with one sample of snuff running as high as 2 p.p.m. of endrin.

The results of the 1962 study corroborated earlier findings that high levels of TDE, DDT, and endrin residues occur on auction market tobacco and in commercial cigarettes and other manufactured tobacco products. The

1962 study also indicated an increased use of endrin. On the basis of these data, the Entomology Research Division no longer recommends endrin for the control of tobacco insects.

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PESTICIDE RESIDUES ON TOBACCO¹

By F. E. Guthrie² and T. G. Bowery³

I. INTRODUCTION

Tobacco is a unique crop with respect to possible contamination by pesticide residues

¹ Work reported herein was partially supported by PHS Grants EF00158 and ES00044 as well as The Council for Tobacco Research. The cooperation of the major tobacco manufacturing companies throughout all phases of the work is gratefully acknowledged. Contribution from the Entomology Department, North Carolina Agricultural Experiment Station, Raleigh, North Carolina. Published with the approval of the Director of Research as Paper No. 2361 of the Journal Series.

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because it is not classified as a food nor a drug and is, therefore, exempt from tolerances by the Federal Food, Drug, and Cosmetic Act of the United States.

The purpose of this review is to discuss residue problems on tobacco from culture through the commercial processes and to consider the importance of pesticide residues on tobacco. The specific relation of pesticide residues to the health aspects of tobacco use has been recently reviewed (Surgeon-General's Committee, 1964). The review by Larson *et al.* (1961) is an excellent reference source for toxicological and clinical experiments concerned with tobacco.

To permit the reader fully to comprehend the residue problem on tobacco, a brief synopsis of the culture and manufacture of tobacco is presented. Figure 1 summarizes the events which might affect pesticide residues as a result of pest control.

Field tobacco is harvested by priming (pulling) the ripe leaves (two to three) each week for about five weeks. To control the insect complex, at least one insecticidal treatment is normally applied to protect the leaves during the priming period, and the biological effectiveness of this treatment should be 10 to 14 days. Essentially every grower applies one treatment per season, and two to three applications per season are not uncommon. One application of a growth regulator is commonly applied during the early priming period for control of suckers. Residues resulting from pesticide application to tobacco, as with other leafy products, are rather high due to the large surface-to-weight ratios. At curing, about 85 percent loss of water and 15 percent loss of dry matter occurs. When green and cured samples are to be directly compared, a factor of 9.2 (to place both samples on a dry weight, stemless basis) is frequently applied. Tobacco is either flue-cured (by placing leaves strung on a stick in a curing barn where the temperature is slowly raised to 160° to 180° F. over a period of four to five days) or air cured for several weeks in a case of burley and cigar tobaccos. During August to October for flue-cured and November to February for burley, tobacco is displayed by the farmer at warehouses throughout the tobacco area and sold to the tobacco companies by an auction system. It is aged in large hogsheads (50 cu. ft. barrels) from six months to several years depending on the demand for the grade of tobacco involved. The aging process is an active fermentation, and considerable changes in the chemistry of the tobacco result. As needed, it is removed from the storage process and the midvein is removed. The leaf is then shredded and made into the desired tobacco product. During smoking of tobacco, the burning zone of a cigarette is 854° to 913° C. (Touey and Mumpower 1957). The burning zone of cigars is 600° C. and of a pipe 560° C. (Greene 1955). The various aspects of the events which might affect insecticide residues on tobacco will be discussed.

II. INORGANIC INSECTICIDES

Arsenicals were the first insecticides to be recommended for protection against the insects which attack field tobacco (Howard 1900). The earliest report of insecticidal residues found on tobacco was that of Remington (1927), who reported the arsenic content of commercial cigarettes. A number of investigators (Popp 1923, Gross and Nelson 1934, Zeldler and Wagner 1937, Barksdale 1940, Griffon and Delga 1947, Daff and Ken-

naway 1950 a, and Satterlee 1956) monitored the increase in arsenic residues on tobacco through the appearance of synthetic insecticides around 1950. Data in these papers showed that arsenic in United States tobaccos increased from about ten p.p.m. in 1917 to about 50 p.p.m. in 1951. Holland *et al.* (1958 b) reported residues of 52 p.p.m. in 1957, but Weber (1957), Bailey *et al.* (1957), and Guthrie *et al.* (1959 a) reported a sharp decline in arsenic residues to near background levels about 1952. Figure 2 summarizes the residues of arsenic on U.S. tobacco. The content of arsenic on tobacco produced in Europe, Asia, and Africa has consistently been lower than from American tobaccos (Popp 1923, Bailey *et al.* 1957, Enercan 1954, Satterlee 1956, and Monnet and DuPont 1953).

Satterlee (1956) suggested that arsenic residues would be a permanent problem as tobacco grown on soils containing arsenical residues from repeated applications to cotton and tobacco would absorb appreciable amounts of arsenic. Weber (1957) concluded that there was no appreciable absorption of arsenic by tobacco grown on arsenate-contaminated soil, and this was subsequently confirmed (Small and McCants 1962). It is of interest to note that arsenic is of such universal occurrence in soils that it has been referred to as a "normal constituent," four p.p.m. being found in virgin soils (Greaves 1913). A completely synthetic "cigarette" (Vanguard), void of tobacco and introduced for sale in 1953, was found to contain 1.0 p.p.m. of arsenic (Small 1960).

Following normal cigarette smoking by humans, 60 percent of the arsenic was found to be primarily in the ash and about 25 percent was found in the stump of the cigarette (Bailey *et al.* 1957). These authors concluded that 7 to 18 percent was presumably volatilized during smoking, but the volatilized products were not portioned into side and mainstream components. This confirmed earlier work by Daff and Kennaway (1950b). Cigarette paper itself contains about 0.01 p.p.m. arsenic (Cooper *et al.* 1955). Experiments by Gross and Nelson (1934) and Thomas and Collier (1945) showed that approximately 12 percent of the total arsenic in a cigarette is present in the puffed smoke when two-thirds of the cigarette is consumed. Gross and Nelson (1934) proposed that the arsenic inhaled while smoking cigars, cigarettes, or pipe tobacco was an unimportant source of arsenic when compared to tolerances then established for food products. Holland *et al.* (1958 b) reported 35 percent of the arsenic to be volatilized (both side and mainstream smoke components): 31 percent was found in butts, and 33 percent in ashes of nonfilter cigarettes. They found the filter of a filter cigarette to remove less than four percent of the arsenic in the mainstream smoke. Cigarette smoke condensates from 100 cigarettes contained 0.026 mg. of arsenic (Garcia *et al.* 1959). Using a mechanical smoker with continuous suction, Barksdale (1940) found

a transfer of 50 percent of the arsenic in the suction traps. Other workers found four percent of the arsenic in mainstream smoke (Cogbill and Hobbs 1957).

Studies on As⁷¹ mainstream smoke using rabbits in Holland smoking boxes (Holland *et al.* 1958 a) indicated that 0.01 percent of volatilized arsenic was retained by the animal. Distribution of arsenic in the respiratory tract two hours after smoking was discussed. After withdrawal of the rabbits from As⁷¹ tobacco smoke, the radioactivity in the respiratory tract of the rabbits decreased rapidly for the first two days and then tapered off slowly.

In a study with eight human volunteers who inhaled smoke impregnated with sodium arsenate in the distal ends of cigarettes, Holland *et al.* (1959) found 2.2 to 8.6 percent of the total As⁷¹ injected into cigarettes to be transferred to the respiratory tract. Approximately 50 percent of the inhaled arsenic was eliminated in ten days, primarily in urine. The remainder was "assumed to have been deposited in the body, exhaled, and/or eliminated in body secretions and excreta over a long period of time." The general distribution and elimination of arsenic has been reported by Lanz *et al.* (1950).

As lead arsenate was the primary insecticide used on tobacco until 1948, it is also of interest to note residues found for lead. Lead and arsenic residues in popular brands of cigarettes were found to be 5 to 25 times greater than tolerances for spray residues on fruits (anonymous 1936). On the basis of data obtained with a mechanical device simulating cigarette smoking, this same author hypothesized that 6.7 percent of the lead present in the smoked portion of the cigarette enters the smoker's mouth. Zeldler and Wagner (1937) found 22 p.p.m. of lead on Canadian cigarettes and less than 2:5 p.p.m. on Oriental tobaccos. Knechtling (1938) analyzed a limited number of cigarillos for lead, finding 0.69 mg. per cigarillo. Cigarettes were also analyzed, but no lead was detected. Although cigars were not included in his analyses, he concluded that the use of cigars might be a source of lead poisoning. Grotepass (1941) found tobacco smoke to be free of lead. Although 0.66 to 2.56 mg. of lead/100 g. of chewing tobacco was found, he concluded that it was an inconsequential source of lead poisoning. De Jong (1941) reviewed the published work on cigars, cigarettes, and chewing tobacco and concluded that there was little or no possibility of lead poisoning from consumption of these products.

III. SYNTHETIC INSECTICIDES

By 1956, there remained little doubt that arsenic residues on tobacco had been sharply reduced and would be expected to be further reduced. However, the magnitude of residues from insecticides recommended to replace the arsenicals was unknown. Studies were therefore initiated on flue-cured tobacco to determine the magnitude of insecticidal residues from more recently introduced insecticides on commercial tobaccos.

TABLE I.—INSECTICIDE RESIDUES ON TOBACCO SAMPLED DURING TOBACCO AUCTION SALES—1956 TO 1962

State	TDE ^a (p.p.m.)					Endrin (p.p.m.)				Dieldrin Toxaphene ^b (p.p.m.)	
	1956 ^a	1957 ^a	1958 ^a	1959 ^a	1962 ^a	1957 ^a	1958 ^a	1960 ^a	1962 ^a	1962 ^a	1957 ^a
North Carolina.....	39	29	44	27	8	1.5	2.2	0.2	1.2	.....	7.2
Virginia.....	11	.....	.....	11	.....	.....	.....	.....	.....	.....	.....
South Carolina.....	.....	.....	.....	36	42	.....	.....	2.4	1.2	.....	.....
Georgia.....	.....	.....	.....	43	42	.....	.....	1.3	1.8	.....	.....
Florida.....	.....	.....	.....	46	21	.....	.....	3.6	2.1	.....	.....
Tennessee.....	.....	.....	.....	17	.....	.....	.....	1.2	.....	.....	.....
Kentucky.....	.....	.....	.....	30	18	.....	.....	.....	0.5	0.3	.....

^a TDE plus DDT.
^b Bowery and Guthrie (1958).
^c Bowery *et al.* (1959).

^d Bowery and Guthrie (1961b).
^e Lawson *et al.* (1964).
^f Thurston and Caudill (1962).

^a Division of Research Facilities and Resources, National Institutes of Health, Bethesda, Maryland.

^b Chemical names of pesticides mentioned in the text by common name are shown in Table X.

TABLE II.—INSECTICIDE RESIDUES ON COMMERCIAL TOBACCO PRODUCTS

	TDE ¹ (p.p.m.)				Endrin (p.p.m.)				Carbaryl ¹ (p.p.m.)
	1956 ²	1959 ³	1962 ⁴	1966 ⁵	1956 ⁶	1962 ⁴	1963 ⁷	1964 ⁸	1966 ⁹
Cigarette.....	12.4		22	11	0.2	0.8	<1.0	1.3	0.7
Cigar.....		17.1	44			2			
Pipe tobacco.....		4.8	15			3			
Chewing tobacco.....		4.3							
Snuff.....		5.4	20			6			

¹ TDE plus DDT.² Bowery et al. (1959).³ Bowery and Guthrie (1961 b).⁴ Lawson et al. (1954).⁵ Sheets et al. (1957).⁶ Bowery (1952).⁷ Wolfe et al. (1963).⁸ Anonymous (1964).

(a) Residues on commercial tobacco

Residue data from warehouse samples of tobacco taken during annual sales are shown in Table I. A minimum of five warehouses in each of the states listed was used to establish these trends. Wide variations occurred among the different locations and years, probably as a reflection of requirement for control dictated by the severity of insect populations.

Commercial products (Table II) were sampled from purchases at local food stores. One comprehensive study of a large number of types of cigarettes purchased from widely separated geographical locations showed only slight differences among types and essen-

tially no difference among locations (Bowery et al. 1959). This was expected, for commercial cigarette tobacco is a very homogeneous mixture even though large quantities of different types of tobacco are mixed to prepare the finished product. The quantities of TDE-DDT [reported as TDE in this review since 90 percent of the insecticide combination on commercial tobacco is TDE (Bowery et al. 1959)] in cigarettes approximately doubled between 1956 and 1962 but decreased appreciably from 1962 to 1966. The content of endrin in 1956 was barely detectable with the methods then available but was 1.3 p.p.m. by 1964. The reason for the reduction in amount of this insecticide from 1964 to 1966 is discussed in a later section.

TABLE III.—ALTERNATE INSECT CONTROL METHODS WITH REDUCED QUANTITIES OF INSECTICIDES

Method	Description	Estimated reduction of residue (percent)	Reference
Directed application of chemicals.....	Applied to top, immature leaves thus avoiding applications to lower, mature leaves and using 1/2 the dose required for nondirected treatments.	30-60	Guthrie et al. (1959b).
Integrated control.....	Permit natural factors to control small (noneconomic) larvae if possible before chemical control effected on larger worms likely to cause economic damage.	40-100	Lawson et al. (1961).
Biological control.....	Use of artificial Polistes wasp shelters in place of insecticidal treatment.	0-100	Rabb and Lawson (1957), Lawson et al. (1961).
	Use of insect diseases when hornworms alone are problem.	100	Rabb et al. (1957).
Cultural control.....	Stalk destruction and MH-30 ¹ effects which eliminate food of majority of overwintering hornworms.	50-100	Rabb et al. (1964).
Alternate chemicals.....	Dissipated during growth, dissipated during curing, dissipated during aging, dissipated during smoking, degraded in mammalian system.		Cited elsewhere.

¹ Maleic hydrazide.

As the 1957 analyses of commercial tobacco had shown residues to be present at detectable levels, an intensive study was initiated to determine the fact of insecticides during culture and manufacture of tobacco. Concurrently, studies were made to evaluate alternate methods which might control insects with reduced quantities of insecticides. Following (Table III) is a list of these alternate methods with appropriate reference. Only the use of alternate chemicals will be given further attention in this review.

(b) Magnitude of residues on green leaves and loss by weathering

If necessitated during harvesting, applications of insecticides to tobacco are recommended immediately after priming, providing maximal period of seven days between application and priming. Losses of residues following recommended application of chlorinated hydrocarbons were 50 to 80 percent after seven days of weathering, 50 to 150 p.p.m. of TDE and 5 to 13 p.p.m. of endrin remaining on the green leaf after this interval (Bowery et al. 1959). Similar data were found for Endosulfan and Telodrin (Guthrie and Bowery 1962). The loss by weathering of recommended rates of phosphate and carbamate insecticide over a seven-day period was much greater, about 90 percent, and residues on green tobacco after this period were 5 to 20 p.p.m. for Guthion and ten p.p.m. for carbaryl (Guthrie et al. 1959 c, Bowery and Guthrie 1961 a). Trichlorfon weathers quickly, and due to its water solubility, especially so following rain. It has been observed that once organochlorine insecticide residues on tobacco have dried following application, little residue is lost by rains (Bowery 1962).

however. Except for Trichlorfon, the main loss of residues during weathering is attributed to growth and mechanical loss by agitation of tobacco leaves. Aircraft applications of DDT (1.75 lb./acre) resulted in maximum deposits on the upper surfaces of green leaves of 70 to 85 p.p.m. (Manson et al. 1962). Dust, emulsifiable concentrate, and wettable powder formulations of malathion (1.75 lb./acre) left initial residues ranging from 13 to 53 p.p.m., and approximately ten percent remained eight days after treatment (Wallis et al. 1957). The authors state that "no malathion residues have been reported on the cured tobacco, and it is unlikely that this insecticide would persist during the curing, redrying and aging processes."

(c) Loss during curing

The flue-curing process caused 40 percent loss in residues of recommended chlorinated hydrocarbon and 80 percent, or greater, loss of the phosphate and carbamate insecticides (Table IV). At this time, the residues of the organochlorine compounds go subsurface, and care must be taken thoroughly to release the chemicals from cured leaf lipids during chemical analysis or low values will be reported (Bowery et al. 1959). Considerable conversion of Guthion to oxyguthion occurs during curing. No attempt has been made to verify whether loss of residues during flue-curing is due to conversion to unidentified products or whether the materials vaporize. Thurston and Caudill (1962) found a much smaller reduction (15 percent) of endrin residues during air-curing than previously reported for flue-curing, as might be expected under the milder conditions of air-curing.

TABLE IV.—EFFECT OF FLUE-CURING, PROCESSING, AGING, AND CIGARETTE MANUFACTURE ON RESIDUES OF INSECTICIDES APPLIED AT PURPOSEFULLY HIGH RATES TO EXPERIMENTAL TOBACCO

[Compilation from Bowery et al. 1959, Bowery and Guthrie 1961 a, Guthrie and Bowery 1962]

Insecticide	Cumulative loss after indicated process (percent)					
	Green (p.p.m.)	Flue-cured (p.p.m.)	Flue-cured	Stemmed, shredded, redried	Aged	
					1 Year	2 Years
TDE.....	784	463	41	43	44	41
Endrin.....	101	60	42	45	47	47
Guthion.....	356	196	73		73	
Carbaryl.....	132	15	89		89	
Telodrin.....	17	4	76			
Endosulfan.....	102	17	83			
Trichlorfon.....	213	0.1	>99			

¹ Guthion plus oxyguthion.² Bowery (1962).

TABLE V.—TRANSFER OF INDICATED INSECTICIDAL RESIDUES ON EXPERIMENTAL TOBACCO INTO MAINSTREAM SMOKE
[Compilation from Bowery *et al.* 1959, Bowery and Guthrie 1961 a, Guthrie and Bowery 1962]

Compound	Residue (p.p.m.)		Loss during smoking (percent)
	Cigarette ¹	Mainstream smoke	
Endrin.....	55	10	82
TDE.....	440	82 (+90 deHCl TDE) ²	81
Telodrin.....	100	5.1	95
Endosulfan.....	100	3.3	97
Carbaryl.....	150	1.8	99
Guthion.....	300	0.6 (+0.04 oxy) ³	>99

¹ Purposefully treated at high levels to permit detection.² Oxygen analog.³ Dehydrochlorinated TDE.

TABLE VI.—RESIDUES OF TDE AND ENDRIN IN MAINSTREAM SMOKE OF COMMERCIAL CIGARETTES

Cigarette	Number of brands tested	Micrograms/cigarette and "smoked" cigarette		Loss during smoking (percent)
		Cigarette	Mainstream smoke	
			TDE ^{1,2}	
Regular.....	7	12.7	1.6(+1.4 de HCl TDE) ³	88
King.....	10	14.7	1.7(+1.3 de HCl TDE) ³	88
Filter King.....	13	10.3	1.6(+0.6 de HCl TDE) ³	86
			Endrin ⁴	
Regular.....	12	0.19	0.06	69

¹ TDE plus DDT.² Bowery *et al.* (1959).³ Dehydrochlorinated TDE.⁴ Bowery (1962).

(d) Loss during commercial processing

Although there is considerable variation in the extent of storage of tobacco, a two-year period of aging is about normal. The residue content of the samples of tobacco treated at purposefully high rates of organochlorine compounds did not alter during a two-year aging period nor during subsequent steps to prepare the processed tobacco into cigarettes (Table IV). Similar samples containing Guthion and carbaryl were found to be unaltered during aging, which was somewhat surprising as the conditions during aging would be expected to offer ample opportunity for hydrolytic detoxication over such a lengthy period (Bowery 1962).

(e) Loss during smoking

Individual smoking habits vary enormously. A number of mechanical devices have been made to "simulate" smoking, however, and the L & M Smoking Machine was used to ascertain the effect of smoking on organic insecticides (Bowery *et al.* 1959, Bowery and Guthrie 1962, Mold and Walter 1957). Briefly, the cigarettes are placed on a wheel, and as each cigarette passes a diaphragm the mainstream smoke is sucked through a series of solvents of cellulose filters. No attempt was made to collect the vapors of the sidestream smoke, nor to identify the insecticidal components, if any, of the ash. Residues in the butt of smoked

cigarettes (eight puffs of two seconds duration) were not appreciably different from those in the original cigarette (Bowery *et al.* 1959).

The proportional of insecticide appearing in the mainstream smoke of experimental cigarettes prepared from tobacco deliberately impregnated with high levels of insecticide was 29 percent for TDE (plus 20 percent dehydrochlorinated TDE), 20 percent for endrin, five percent for Telodrin, three percent for endosulfan, and less than one percent each for Guthion and carbaryl (Table V). Although levels of other commercially available insecticides have not been sufficiently high to study in commercial cigarettes, they have been studied for endrin and TDE (Table VI). These studies are fairly consistent with those from experimental cigarettes, although on a percentage basis slightly less TDE and slightly more endrin was found in the mainstream smoke of commercial cigarettes. It is suspected that there is a small (less than five percent) component of endrin coming through in the mainstream smoke as a breakdown product (possibly a *delta*-keto derivative), but this has never been substantiated. No appreciable difference was found in the quantities of TDE or endrin appearing in mainstream smoke from different types of cigarettes. While making a study of the various constituents in mainstream tobacco smoke of commercial cigarettes, Mold and Walker (1957) found an important fraction of their condensate to be TDE. Their results, reported after smoking 20,000 cigarettes, were in agreement with concurrent work of others.

The transfer of organic insecticides to mainstream smoke of pipe and cigar tobacco has not been studied. Recalling that the transfers into mainstream cigarette smoke for arsenicals and organic insecticides were somewhat similar, it would be suspected that the same pattern might apply, enabling one to estimate the transfer of organic insecticides to cigar and pipe smoke. Gross and Nelson (1934) found seven percent transfer of total arsenic into the puffed smoke for cigars and 26 percent for pipes.

TABLE VII.—RESIDUES OF TDE IN RABBIT TISSUES FOLLOWING EXPOSURES TO MAINSTREAM CIGARETTE SMOKE FROM CIGARETTES CONTAINING 48 UG. OF C¹⁴-TDE/CIGARETTE[From Bowery *et al.* 1965]

Tissue	Calculated as C ¹⁴ -TDE (p.p.m.)				Organo-soluble components (percent)		
	3 months' exposure		6 months' exposure		TDE	deHCl-TDE ¹	Unidentified
	Organo-soluble	Total	Organo-soluble	Total			
Avg. 4 tissue fats.....	0.026	0.027	0.023	0.042	43	56	0
Avg. 7 vital organs.....	.010	.011	.014	.062	59	41	0
Avg. 3 respiratory tissues.....	.007	.009	.006	.032	33	49	18
Avg. 6 other tissues.....	.006	.008	.022	.116	43	57	0
Blood ug./ml.....		.011					
Urine ug./ml.....		.409					
Feces ug./g.....		.007					
Mainstream smoke.....					54	46	

¹ Dehydrochlorinated TDE.

(f) Residue retained during smoking

Although the aforementioned tests had shown that insecticidal components could be brought into the smoker's mouth, the question of retention during expiration of smoke remained to be clarified. A test was made using C¹⁴-TDE experimental cigarettes in which one series was machine-smoked, one series was smoked by noninhaling smokers, and a third series was smoked by inhaling smokers. The human volunteer smokers exhaled the smoke (under slight vacuum) into a tube connected to three solvent traps. Analysis of the smoke showed that the non-inhaling smoker exhaled essentially all of the TDE brought into the mouth whereas the inhaling smoker retained about 70 percent of the TDE inhaled in the mainstream smoke (Bowery *et al.* 1965).

(g) Fate of residue on inhaled smoke

The next step necessary to evaluate the impact of insecticidal residues in mainstream smoke was to determine if the quantities retained in a mammalian system via respiratory intake behaved differently from oral doses of insecticides. The problem was approached with a tracer technique (Bowery *et al.* 1965), using rabbits as "smokers." Rabbits specially selected for their willingness to accept tobacco smoke were placed in Holland smoking boxes. C¹⁴-TDE added to cigarettes at levels simulating commercial cigarettes and at levels four times this quantity were "smoked" in the specially designed apparatus. A 45-cc. puff of smoke was released into the box containing a rabbit for a duration of two seconds during each minute. Those rabbits which did not breathe normally dur-

ing the "smoking" process were eliminated from the tests. Seventy cigarettes were smoked each day, five days a week, for the various test periods. The rabbits were then sacrificed and the various tissues analyzed for content of TDE and metabolites. Table VII summarizes the data, and, although the tests did not include as large a number of subjects as would be desirable, the conclusions were that the fate of TDE inhaled during smoking was similar to that for ingested TDE. All of the animals were autopsied at the end of the experiment, and no untoward effects were noted.

IV. NATURAL INSECTICIDAL COMPONENTS

A discussion of insecticidal components of commercial tobaccos would not be complete without some mention of the naturally oc-

curing component, nicotine. The content of nicotine in cured tobacco varies between one and three percent, and two percent is a likely average for American cigarettes. Table VIII summarizes the content of nicotine found in commercial tobaccos and the sub-

sequent retention following use of various types of products. Quantities of nicotine received by the human system during smoking are appreciably greater than the quantities of synthetic insecticides received by the same route.

TABLE VIII.—MAGNITUDE AND FATE OF NICOTINE TRANSFERRED TO TOBACCO USERS

[Compiled from Larson et al., 1961]

Tobacco product	Mg./unit product	Percent		
		In main-stream smoke	Retained in lungs	Mg. absorbed/unit product
Cigarette.....	20/cigarette.....	15-20	65-90	1-3/cigarette.
Cigar.....	150/cigar.....		4-18	6-7/cigar.
Chewing tobacco.....	25/gram plug.....			8-88 mg./day.
Snuff.....				20-60 mg./day.

A large volume of literature indicates that mammals can tolerate nicotine in subchronic doses without ill effects for long periods of time, and, when administered slowly, at daily doses accumulatively much greater than lethal acute levels (Larson et al. 1961). The human body, particularly, seems to possess an extremely efficient mechanism for absorbing, distributing, metabolizing, and eliminating nicotine and its degradation products.

Nicotine was distributed to all tissues within 10 to 15 minutes (Hansson and Schmiterlow 1962). Rapid metabolism and excretion followed, and the liver, lung, and kidney were found to be the most important degrading tissues in the rabbit (Yamamoto et al. 1955). Over 90 percent of the total C^{14} -nicotine administered was recovered in excretory products in 16 hours from rats (Ganz et al. 1951) and 36 hours from dogs (Bennett et al. 1954). About ten percent of the excretory alkaloid was the intact molecule (Wolf and Giles 1950, Haag and Larson 1942). There was no evidence that nicotine was stored in the body of the rat, mouse, or dog (Ganz et al. 1951, Bennett et al. 1954). The fate of nicotine has been the subject of an exhaustive study by McKennis and his associates in recent years. The key metabolite is cotinine, and a summary of the work with a suggested metabolic scheme is found in a recent publication (McKennis et al. 1964). Cotinine is also a metabolite of aging nicotine residues, at least in some plant parts (Günther et al. 1959). The Surgeon General's Committee (1964) stated that the nicotine inhaled during smoking "probably does not represent a significant health problem."

V. MISCELLANEOUS PESTICIDES

(a) Fumigants

Unpublished data available at the present time indicate that fumigants and other pesticides applied to tobacco in storage (dichlorvos, hydrogen cyanide, methyl bromide, acrylonitrile-carbon tetrachloride mixtures, and pyrethrins) would not be expected to leave objectionable residues as a result of treatment under normal conditions of storage and processing (Childs 1966).

(b) Fungicides

In the United States, fungicides are rarely applied to cigarette tobacco types in the field, and no data have been reported on residues of fungicides on commercial tobacco. Lucas (1966) reported residues following experimental Dyrene treatments for brown spot on tobacco (three weekly applications during weekly harvest at one lb./acre). Resulting residues on cured tobacco ranged from 0.48 to 38.4 (average 7.2) p.p.m. In other experiments where Dyrene was applied at two lb./acre and maneb at one lb./acre (six weekly applications during harvest), residues on cured tobacco were 34 to 111 (average 47) p.p.m. and 76 to 495 (average 198) p.p.m., respectively. Residues of these fungi-

cides were shown to vary directly with number and rates of application and inversely with rainfall. Residues of Dyrene and maneb on tobacco placed in an accelerated storage test for six months were not significantly decreased by the treatment.

Anderson (1962) injected 500 pp.m. of Dyrene into cigars subsequently smoked in an artificial smoking apparatus. One percent of intact Dyrene was detected in mainstream smoke extracts, and 5.8 percent of a decomposition product, o-chloroaniline, was also isolated from the mainstream smoke.

In Europe, recent outbreaks of blue mold on green field tobacco have made frequent applications of fungicides a prerequisite to successful culture. The level of zineb on cured tobacco following field treatment (two to three lb./acre, 15 applications) was 1,050 p.p.m. for bright tobacco and 4,300 p.p.m. for burley tobacco (two to three lb./acre, 15 applications). When subjected to various manufacturing processes, the residues in the finished cigarettes were found to be 43 and 76 percent, respectively, of the original levels (Carugno and Pizzini 1963). In other tests, Chouteau (1963) found maneb and zineb residues on cured tobacco to be 1,873 p.p.m. and 2,890 p.p.m., respectively; rates of field application were not given but presumably they were recommended rates. When subjected to bulk fermentation, 78 and 62 percent of the residues disappeared. These authors observed that during air curing, zineb degrades very little whereas 30 to 40 percent of maneb is destroyed.

(c) Herbicides and growth regulators

Three herbicides, diphenamid, Pebulate, and Vernolate, are registered for use on tobacco, and all are applied within a week of the time tobacco is planted. No published information concerning residues likely to occur in the cured leaf or present in tobacco smoke is available.

Maleic hydrazide is frequently applied at the rate of 2.25 lb./acre to control adventitious buds when tobacco is topped. Cigarettes made from tobacco so treated contained 10 to 30 p.p.m. (Stone 1957 and Carroll 1957) of maleic hydrazide. When cigarettes contain 30 p.p.m. were smoked in a automatic smoking machine (35 cc. puff of two seconds duration once per minute until length of butt was 20 mm.), 93 percent was decomposed or transferred to the side stream. The cigarette butts contained 30 p.p.m., indicating no buildup due to sublimation or any loss due to hot smoke pulled through the butt (Stone 1957). Cigarettes containing ten p.p.m. were similarly smoked without detection of maleic hydrazide in the mainstream smoke at the limit of the colorimetric method used. In a third test in which 105 p.p.m. of C^{14} -maleic hydrazide was infused into cigarettes, 23 percent of the radioactivity was found in the mainstream smoke, a large part of which was postulated to be decomposition products.

When maleic hydrazide was applied to tobacco at the rate of 2.25 lb./acre, the green commercial leaves were found to contain 37 p.p.m. while the green sucker leaves contained 492 p.p.m. (Hoffman and Parups 1962). To determine the possible uptake of maleic hydrazide from accumulative soil residues, Hoffman et al. (1962) applied maleic hydrazide to soil in laboratory and field tests at concentrations up to five times the concentration normally applied to growing tobacco. Residues of maleic hydrazide disappeared more rapidly from sand and muck than from clay soils. About 88 percent of the original dose had disappeared from sandy soils within eight weeks. When tobacco plants were grown in soils containing five p.p.m. (five times the concentration which might occur if 2.25 lb. were applied directly to the soil) the green leaves contained 0.9 p.p.m. The authors concluded "that there would have to be an enormous amount of maleic hydrazide in the soil before any would be found in the plant."

(d) Soil fumigants

The uptake of organic chlorine or bromine by the tobacco plant following treatment with soil fumigants (DD or EDB) at recommended rates and normal weathering conditions is about 0.3 percent of chlorine and 0.15 percent of bromine above normal concentration (Gaines and Graham 1953, Moseley et al. 1953). There is no published information to indicate whether this slight increase in chlorine or bromine content is traceable to the parent compound, or metabolites, or whether it is a manifestation of normal physiology of the plant. From 2.8 to 5.9 percent of chlorine and 1.4 to 3.0 percent of bromine is transferred to mainstream smoke based on the total quantities present in the intact cigarette (Moseley et al. 1953).

VI. TOBACCO AND PESTICIDE RESIDUE TOLERANCES

Expressions regarding the need for the establishment of tolerances for pesticide residues on tobacco have been raised on occasions by those in the socio-political environment in the United States. This coupled with the serious thought being given to such an action on the part of one European country, West Germany (anonymous 1966), requires some discussion as to the unique factors that must be considered with this product over those normally utilized when tolerances are established for foodstuffs.

Since pesticide residue tolerances are usually established on the "raw agricultural commodity" one must immediately be concerned as to the applicability of this to tobacco since the product that is ultimately consumed by the public (tobacco smoke) bears little resemblance to the raw product. At first blush one might argue that the same argument holds in most cases since modern food processing can drastically alter the relationship between the raw product and the consumed product. However, pesticide residues on raw agricultural food commodities are usually altered only in a quantitative manner with little, if any, significant qualitative change taking place between consumer purchase and consumption. In the case of pesticide residues on tobacco, extensive degradation of pesticide does, or is likely to, occur during the consumption phenomena. Only after the commodity (smoke) that is to be consumed is produced do the tolerance requirements for ingested foodstuffs and ingested smoke appear to become analogous.

Therefore, any consideration of the application of tolerances to tobacco should account for the pyrolysis factor in some appropriate fashion. For example, the TDE-DDT content of cigarette tobacco is about 11 p.p.m., well above the tolerance limit of 7 p.p.m. permitted on many foodstuffs. However, the amount of TDE-DDT actually de-

livered to the consumer during smoking in about 1.8 p.p.m., well below tolerances for food.

This principle was utilized by the Entomology Section of the 20th Tobacco Workers' Conference in Columbus, Ohio, in 1964 when the following resolution was passed:

TABLE XI.—RESIDUES OF INSECTICIDES TO BE EXPECTED ASSUMING USE OF THE MATERIALS LISTED AT RECOMMENDED RATES AND WAITING PERIOD OF 7 DAYS BETWEEN TREATMENT AND HARVEST

[Compiled from Bowery and Guthrie 1962, Sheets et al. 1966]

Material	Anticipated on tobacco (p.p.m.)			Tolerance "expected" tolerance (p.p.m.)	Levels actually found in commercial cigarettes (p.p.m.)
	Green	Flue-cured	In smoke		
TDE	58	35.0	7.0	7	1.70
Endrin	7	4.2	1.2	0	.06
Endosulfan	20	3.4	.1	2	.....
Telodrin	7	2.7	.03	0	.....
Carbaryl	13	1.4	.01	10	<.3
Guthion	25	1.8	.001	2	.....

Table IX summarizes the residues to be expected in the mainstream smoke of commercial tobacco following extensive use of recommended and experimental insecticides on tobacco. The state and federal recommendations for tobacco insect control in 1964 reflected the results for this action. Data for 1966, shown earlier in Table II, represent current analyses which indicate a marked decline in residues.

TABLE X.—Common and chemical names of pesticides mentioned in text

[Common name and chemical name]

Acrylonitrile: vinyl cyanide.
 Carbaryl: 1-naphthyl N-methylcarbamate.
 Cotinine: N-methyl-2-(3-pyridyl)-5-pyridone.
 DD: 1,3-dichloropropene and 1,2-dichloropropene mixture.
 DDT: 1,1,1-trichloro-2,2-bis(p-chlorophenyl) ethane.
 Dichlorvos: O,O-dimethyl 2,2-dichlorovinyl phosphate.
 Dieldrin: 1,2,3,4,10,10-hexachloro-*exo*-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4 - *endo* - *exo*-5,8-dimethanonaphthalene.
 Diphenamid: N,N-dimethyl 2,2-diphenylacetamide.
 Dyrene: 2,4-dichloro-6-(o-chloroanilino)-s-triazine.
 EDB: 1,2-dibromethane.
 Endosulfan: 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3 - benzo-dioxathiepin-3-oxide.
 Endrin: 1,2,3,4,10,10-hexachloro-*exo*-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4 - *endo* - *endo*-5,8-dimethanonaphthalene.
 Guthion: O,O-dimethyl S-4-oxo-1,2,3-benzotriazin-3(4H)-ylmethyl phosphorodithioate.
 Malathion: S-[1,2-bis(ethoxycarbonyl)ethyl] O,O-dimethyl phosphorodithioate.
 Maleic hydrazide: 6-hydroxy-3-(2H)-pyridazinone.
 Maneb: manganese ethylenebis(dithiocarbamate).
 Nicotine: 1-methyl-2-(3-pyridyl)-pyrrolidine.
 Pebulate: S-propyl butylethylthiocarbamate.
 Pyrethrins: insecticidally active principles of *Chrysanthemum cinerariaefolium*.
 TDE: 1,1-dichloro-2,2-bis(p-chlorophenyl) ethane.
 deHCl-TDE: 1-monochloro-2,2-bis(p-chlorophenyl) ethylene.
 Telodrin: 1,3,4,5,6,7,8,8-octachloro-1,3,3a,4,7,7a-hexahydro-4,7-methanoisobenzofuran.
 Toxaphene: mixture of isomers of octachlorocamphene (67 to 69 percent chlorine).
 Trichlorfon: O,O-dimethyl 2,2,2-trichloro-1-hydroxyethyl phosphonate.
 Vernolate: S-propyl dipropylthiocarbamate.
 Zinc: Zinc ethylenebis(dithiocarbamate).

Summary

Residues of inorganic insecticides on tobacco have decreased sharply in recent years, and the levels of arsenic on tobacco are of little significance at the present time.

Organic insecticides applied for tobacco insect control can be detected at relatively high levels during the early phases in the culture of tobacco due to the large surface-to-weight ratio characteristic of leafy products. During the flue-curing process about 40 percent of TDE and endrin are dissipated whereas more than 70 percent of certain other organochlorine insecticides, phosphates, and carbamates are lost in this process. The content of TDE and endrin in the cured leaf remains constant during two years of commercial processing. During the smoking of cigarettes 80 to 90 percent of TDE, 70 to 80 percent of endrin, and 95 percent (or more) of carbaryl and Guthion are dissipated. Noninhaling smokers exhale essentially all of the TDE in the mainstream smoke whereas inhaling smokers retain the majority of the insecticide brought into the system. The fate of inhaled TDE in rabbits appears to follow similar pathways of storage and elimination as reported for oral doses. The intake of the most common insecticide appearing in tobacco smoke by the one-pack-per-day inhaling smoker is approximately equal to the intake of insecticide in his daily food (utilizing TDE plus DDT for comparative purposes).

The use of fumigants for control of stored tobacco insects, maleic hydrazide for sucker control, and fungicides for control of pathogens of minor importance on flue-cured tobacco do not presently appear to be a residue problem. Should plant disease problems on tobacco in the United States increase to the point where fungicide applications become a routine practice during the growing season, the residue problem which appears to presently plague European tobacco-producing areas could become critical.

Residue problems on tobacco deserving attention include monitoring of commercial tobacco, isolation and identification of side stream components of smoke, identification of decomposition products of mainstream smoke, and the retention of insecticide residues following use of cigar, pipe, snuff, and chewing tobaccos. Marked progress could be made to reduce the number of pesticide applications if economic threshold levels and accurate prediction systems could be incorporated into control programs.

Résumé

Les résidus d'insecticides inorganiques sur le tabac ont fortement diminué au cours de ces dernières années, et les doses d'arsenic que l'on trouve actuellement sur le tabac sont faibles.

* Traduit par S. Dornal van den Bruel.

Les insecticides organiques appliqués pour la lutte contre les insectes du tabac peuvent se trouver en doses relativement fortes durant les premières phases de la culture du tabac, en raison de la valeur élevée du rapport surface/poids qui caractérise les parties feuillues. Au cours du processus de séchage artificiel à l'air chaud, 40 p. cent environ de TDE et d'endrine se dissipent, tandis que 70 p. cent de certains autres insecticides organochlorés, de phosphates et de carbamates sont perdus. La teneur en TDE et endrine de la feuille séchée reste constante durant deux années de préparation commerciale. Pendant la combustion de la cigarette, 80 à 90 p. cent de TDE, 70 à 80 p. cent d'endrine et 95 p. cent (ou plus) de carbaryl et de Guthion disparaissent. Les fumeurs qui n'avalent pas la fumée rejettent pratiquement tout le TDE dans la colonne principale de fumée, tandis que ceux qui l'avalent absorbent la majorité de l'insecticide introduit dans l'organisme. Chez le lapin, le TDE absorbé par inhalation suit un processus de rétention et d'élimination analogue à celui qui est rapporté pour l'absorption par voie orale. Pour le fumeur qui avale la fumée d'un paquet de cigarettes par jour, l'apport de l'insecticide qui apparaît le plus couramment dans la fumée de tabac est approximativement égal à l'apport d'insecticide de la ration alimentaire quotidienne (si l'on prend comme élément de comparaison le TDE plus le DDT).

L'emploi de fumigants pour la lutte contre les insectes du tabac emmagasiné, de l'hydrazide maléique pour l'ébourgeonnement et de fongicides pour la lutte contre les agents pathogènes d'importance secondaire pour le tabac séché artificiellement à l'air chaud ne pose, en ce moment, aucun problème de résidus. Si les maladies du tabac prenaient de l'extension aux Etats-Unis, au point de nécessiter un emploi courant de fongicides durant la période de croissance, le problème des résidus, qui semble être actuellement un fléau pour les régions européennes productrices de tabac, pourrait devenir critique.

Les problèmes de résidus sur le tabac, qui méritent de l'attention, comprennent le contrôle des tabacs commerciaux, la séparation et l'identification des composants des colonnes latérales de fumée, l'identification des produits de décomposition des colonnes principales de fumée, et la rétention des résidus d'insecticides faisant suite à l'usage du cigare, de la pipe, de tabac à priser et à chiquer. Des progrès notables pourraient être accomplis pour réduire le nombre d'applications de pesticides si des seuils économiques et des méthodes précises de prognose pouvaient être incorporés dans les programmes de lutte.

Zusammenfassung

Die Rückstände anorganischer Insektizide haben in den letzten Jahren stark abgenommen und die Arsenikmengen auf Tabak sind z. Zt. von geringer Bedeutung.

Organische Insektizide, die für die Insektenbekämpfung auf Tabak Anwendung finden, können während der frühen Phasen in den Tabakkulturen infolge des grossen Oberflächen-Gewichts-Verhältnisses, das für Blattpflanzen charakteristisch ist, in relativ hohen Mengen nachgewiesen werden. Während des "flue-curing Prozesses" des Tabaks gehen etwa 40% des TDE und Endrin zu Verlust, während mehr als 70% gewisser anderer Organochlor-Insektizide, Phosphate und Carbamate bei diesem Prozess verloren gehen. Der Gehalt an TDE und Endrin im behandelten Blatt bleibt während der zwei Jahre der Weiterverarbeitung konstant. Beim Rauchen von Zigaretten verschwinden 80-90% von TDE, 70-80% von Endrin und 95% (oder mehr) von Carbaryl und Guthion. Nichtinhalierende Raucher atmen im wesentlichen das gesamte TDE im Hauptstrom des Rauchs wieder aus, während inhalierende Raucher ein Grossteil des eingeatmeten Insektizids zurückhalten. Das Schicksal des in-

* Übersetzt von O. R. Kümmer.

hallierten TDE beim Kaninchen scheint den gleichen Wegen der Ablagerung und Ausscheidung zu folgen, wie die bei oraler Zufuhr mitgeteilt wurden. Die Aufnahme des am weitesten verbreiteten Insektizids, das im Tabakrauch des "eine Packung täglich-Rauchers" auftritt, ist annähernd gleich der Insektizidaufnahme in seiner täglichen Nahrung (wenn man TDE plus DDT zu Vergleichszwecken benutzt).

Die Verwendung von Begasungsmitteln zur Insektenbekämpfung in lagerndem Tabak, von Maleinsäurehydrazid für die Bekämpfung von Schösslingen und von Fungiziden zur Bekämpfung weniger wichtiger pathogener Lebewesen auf "flue-cured" Tabak scheint gegenwärtig kein Rückstandsproblem darzustellen.

Sollten aber die Probleme der Pflanzenkrankheiten auf Tabak in den USA bis zu einem Punkte zunehmen, an welchem die Fungizidanwendungen zu einer Routine-massnahme während der Wachstumsperiode werden, dann würde das Rückstandsproblem, das z. Zt. die europäischen Tabakanbaubetriebe zu bedrängen scheint, kritisch werden.

Rückstandsprobleme beim Tabak, die Beachtung verdienen, umfassen Warnung des Tabakhandels, Isolierung und Identifizierung von Nebenbestandteilen in Tabakrauch, Identifizierung der Zersetzungsprodukte im Hauptstrom des Rauches und das Zurückhalten von Insektizidrückständen nach Genuss von Zigarren-, Pfeifen-, Schnupf-, und Kautabaken. Ein wesentlicher Fortschritt zur Verringerung der Anzahl der Pestizidanwendungen könnte erzielt werden, wenn ökonomische Schwellenwerte und genaue Vorratesysteme in die Bekämpfungsprogramme eingebaut werden könnten.

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A CITIZEN TAKES A HARD LOOK AT THE ABM DEBATE—AN ARTICLE BY DEAN ACHESON

Mr. STENNIS. Mr. President, I have before me an article entitled "A Citizen Takes a Hard Look at the ABM Issue," which was written by Dean Acheson, the former Secretary of State, and a well-known public official. The article was published in the Sunday Star of yesterday.

We all know Dean Acheson as a rugged individual, a man of vast experience in government, and a man who has faced the complicating questions of dealing with the Soviets. We know him as a gentleman who for many years was on the hot spot during the Korean war.

I think this article should be read by everyone who is interested in the ABM issue. It is a forthright exposition by a distinguished American. After leaving office, Dean Acheson continued to serve in an advisory capacity to more than one president. Some of the points made by Mr. Acheson should lay to rest some of the criticisms being leveled at the proposed program.

Mr. President, I ask unanimous consent that the article to which I have referred may be printed in the RECORD.

There being no objection, the article was ordered to be printed in the RECORD, as follows:

A CITIZEN TAKES A HARD LOOK AT THE ABM DEBATE

(By Dean Acheson)

Complexity is a serious obstacle to the working of the democratic process. This process requires a high degree of intelligent citi-

zen understanding of issues that profoundly affect us all. Once an issue is wrapped in technological jargon and subtle misrepresentation, the citizen is tempted to throw in the intellectual towel and be pushed toward the conclusion favored by the vocal technocrats and other spokesmen who have captured the headlines and have sought to monopolize the positive symbols of peace.

This seems to be the course being followed in the debate over the President's proposal to deploy a modest Safeguard ABM system during the next five years to protect our Minuteman missiles against Soviet attack.

Four arguments, often wrapped in most confusing technical terms and resting on tendentious assertions, have been made against the Safeguard system:

1. The Minuteman missiles do not need protection.

2. The Safeguard ABM will not protect the missiles.

3. Safeguard will cost so much as to delay much-needed domestic programs.

4. A decision to deploy Safeguard will imperil strategic arms limitation talks with the Soviet Union.

Before we examine these arguments in layman's terms, let us first see what the situation is that has led the President to conclude that prudence requires the Safeguard defense system.

Over many years, we have sought to obtain Soviet agreement on the control of atomic energy and nuclear armaments. This effort did not succeed, and both the United States and the Soviet Union have developed a large number of intercontinental and medium-range missiles armed with nuclear warheads. The United States at one time had a great superiority in these weapons, but today, as a result of steady growth in the Soviet missile force and the leveling off of the U.S. force, the Soviet Union now can deliver slightly more nuclear megatonnage by intercontinental missiles than we can.

THREE TYPES

The American nuclear arms system has three principal types of weapons: land-based Minuteman missiles in concrete silos sunk in the earth, shorter range missiles carried by nuclear submarines deployed much nearer their targets, and manned aircraft armed with nuclear bombs, but more vulnerable than either of the other two.

Both countries have developed antiballistic missile systems (ABMs) that can destroy in space incoming missiles detected by radar. The Russians have deployed some 60 of these (around Moscow). We have deployed none in the United States. The President proposes that we deploy ABMs around Minuteman silo sites to add to their security—hence, the name of the program, Safeguard.

The major new and urgent reason for this proposal now is the rapid development and deployment by the USSR of their powerful missile called the SS-9. This missile will be so accurate by the mid-1970's that its nuclear warhead would strike close enough to a Minuteman missile to destroy it despite the protection of its buried concrete silo. Moreover, the SS-9 is so large that it can carry as many as three nuclear warheads—perhaps more—each capable of destroying a different Minuteman missile.

The slower, manned bombers of SAC are much more vulnerable than hardened missiles, and will become increasingly vulnerable as the deployment of Soviet nuclear submarines close to the United States reduces the warning time of an incoming attack. The increasing vulnerability of SAC bombers as well as Minuteman would reduce our reliance for nuclear retaliation chiefly to the Polaris-Poseidon system, thus simplifying Soviet military planning. No one can say how long it will be before some technical breakthrough also renders our submarines vulnerable. Any such result would strike at the central purpose of what has been thought of as our nuclear strategy—that is, deterrence.

It would have been much better if nuclear weapons had never been possible or invented. But they exist—and are likely to continue to exist in even more dangerous forms—and while they do, what security there is lies in deterring their use by either side. Winston Churchill called this "the balance of terror." Mutual deterrence depends on the incapacity of either great nuclear power to wholly destroy the opponent's capacity to retaliate with a crushing blow. The conviction that a nuclear attack will inevitably bring on doomsday for all is our principal hope of averting nuclear war. Anything that may weaken that conviction is a betrayal of mankind.

To protect the Minuteman's contribution to deterrence, to frustrate any Soviet plan aimed at removing this agency of retaliation, the President has asked for the Safeguard system. How valid are the objections to Safeguard?

First, it is said that the Minuteman silos do not need protection. The Russian SS-9s, it is argued, are not sufficiently dependable and accurate to take out all our missiles before some would be off on their missions to Moscow and other targets. It would be better, it is said, to invest in more Minuteman missiles and rely on instantaneous retaliation rather than fall into the fatal Maginot Line defensive attitude.

ESTIMATE ACCEPTED

It is difficult for laymen to judge the performance of the Soviet SS-9s. In the absence of convincing evidence to the contrary, I accept the estimates of the U.S. intelligence community, a group of highly trained professionals who examine these complex technical developments from every possible angle. Over many years I have had to decide questions on which experts differed. The truth may range somewhere between them, but usually nearer to the views of those who have most often done careful homework, who have been right in the past, and who have not interjected political factors into their technical judgment. Security based on an optimistic view of Russian incompetence rests on a ledge too narrow for safety. We had best assume that our opponent is as smart as we are.

Even worse, many ABM opponents advocate alternatives that would appear more provocative to the Soviet Union, would stimulate an arms race in offensive weapons, and would limit the military and diplomatic options of the President in a confrontation with a nuclear adversary.

Some of those who argue against ABMs urge the President to follow the "policy of the empty silo"—that is, to fire the Minuteman missiles at Russian cities on the first radar report of incoming missiles and thus avoid being stripped of our deterrent. The time available for such a decision precludes any deliberation by the President, or, perhaps, any notice to him.

Whoever in fact gives the order, the judgment to start action to destroy millions of Russian people bring counter-retaliation on millions of Americans might really be that of comparatively junior military officers. Having been through one radar alarm (happily false) of incoming hostile planes some hours before the presumed attack, I have little desire to see such decisions made in a matter of seconds.

Other opponents of deployment urge that we take a chance on the survival of enough Minutemen for counter-attack by building more, putting more concrete around the silos, and relying on Russian inaccuracy in hitting them. I understand the experts disagree on the efficacy of these measures. Whether they would protect Minutemen or not, the effect of this strategy would be to absorb on American soil, even though not directly on American cities, the brunt of the first attack, with the full effects of its fallout sweeping across the country. The ABM, on the other hand, seeks to confine the first nu-

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THE NEW YORK TIMES, MONDAY, JULY 28, 1969

NELSON URGES CURB ON DDT IN TOBACCO

WASHINGTON, July 27 (UPI) — Senator Gaylord Nelson, Democrat of Wisconsin, said today that high levels of DDT and other pesticides had been found in cigarettes, increasing health hazards.

He called for immediate Federal action to limit the amount of pesticide residues in tobacco.

Noting the Surgeon General's warning that smoking is associated with cancer, chronic bronchitis and pulmonary emphysema, Mr. Nelson said:

"Now there is evidence that the smoker's health is also besieged by poisonous pesticide residues flowing into his throat and lungs with cigarette smoke."

Unlike other agricultural

products, tobacco is the only consumable crop without federally established tolerance levels, Mr. Nelson said.

He said that studies conducted by researchers at North Carolina State University had shown DDT residues in cigarette tobacco up to 38 parts for each million, and up to 53 for cigars.

This compares with DDT tolerance levels of 7 parts set for other leafy products, such as cabbage, lettuce and spinach, Mr. Nelson said.

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NELSON CITES RESEARCH

High Levels of DDT
Reported in CigarettesBy ROBERTA HORNIG
Star Staff Writer

High levels of DDT and other long-lasting hazardous pesticides are being found in cigarettes and are increasing the health hazards already facing smokers, Sen. Gaylord Nelson said today.

Nelson, a Wisconsin Democrat and the Senate's pesticides watchdog, said findings by North Carolina State University researchers and other laboratories on pesticide residues in tobacco and cigarette smoke "add to the massively accumulating evidence of the pervasiveness of persistent pesticides in the world environment."

Their presence in tobacco, he said, again "demonstrates the urgent necessity of setting national standards to prevent the indiscriminate and uncontrolled use of these pesticides to protect the environment."

"It is already clear that such standards must include a ban on DDT," Nelson said.

He also urged that the government limit the amount of pesti-

cide residues in tobacco "to avoid compounding the health hazards already facing the smoker."

According to Nelson, studies have measured up to 33 parts per million of DDT residues in cigarette tobacco and up to 53 parts per million in cigars. The North Carolina studies have found up to 100 parts per million on the green tobacco leaf after harvesting, he said.

"Tobacco is the only consumable agricultural crop that does not have a tolerance level specifying when the pesticide residue is hazardous," Nelson charged, and "no significant government research has been done to determine the effect of the residues on the smokers health."

Toxic pesticide residues in cig-
See CIGARETTES, Page A-10

CIGARETTES

Nelson Reports Data
On High DDT Levels

Continued from Page A-1
cigarette smoke entering the human body have been virtually ignored by both the Agriculture and Health, Education and Welfare departments, he said.

West Germany recently set tolerance levels on a wide range of farm crops for 80 pesticides, including a zero tolerance for 14 persistent ones such as aldrin, dieldrin and endrin, he said.

Under reported pressure from tobacco interests, Nelson said, the tolerance level for tobacco has been delayed until 1973.

According to North Carolina tobacco experts, he said, if the West German standards covered tobacco, virtually no American tobacco would be permitted on the German market.

Under current food and drug laws, tobacco is not considered a food in the United States. By comparison, Nelson said, the DDT level set by the Food and Drug Administration for similar leafy products, such as cabbage, lettuce and spinach, is seven parts per million.

"The frightening thing is that insects feeding on tobacco are developing an increasing resistance to DDT and other standard pesticides, causing growers to use even greater amounts, he said.

Nearly 5,500,000 pounds of insecticides were applied to 2,566,000 acres of tobacco in 1964 — the latest year for which detailed Agriculture Department statistics are available, Nelson said. The percentage of tobacco acreage treated with pesticides

increased from 47 percent in 1952 to 81 percent in 1966.

He said research officials at Agriculture confirm that insecticide residues, particularly chlorinated hydrocarbons like DDT, exist in high amounts in tobacco even after processing.

Potential loss of the West German tobacco market has raised considerable concern among American tobacco interests, for more than 700 million cigarettes and 88 million pounds of unmanufactured tobacco, worth \$74 million, were exported last year from the United States to West Germany.

"The tobacco industry knows that its products cannot even come close to the residue tolerance levels that West Germany has set for similar farm crops," Nelson said.

"Unless some drastic changes in pesticide use are made, American producers might as well forget about selling to that market or any other that follows West Germany's lead in establishing tolerance standards for tobacco."

The principal pesticides listed for use on tobacco in 1964 included DDT, TDE, toxaphene, parathion, carbaryl, malathion, endrin, aldrin and dieldrin.

The Evening Star

With Sunday Morning Edition

Published by THE EVENING STAR NEWSPAPER CO., Washington, D. C.

CROSBY N. BOYD, *Chairman of the Board*

JOHN H. KAUFFMANN, *President*

NEWBOLD NOYES, *Editor*

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FRIDAY, AUGUST 15, 1969

Puffing the Pesticides

Tobacco addicts, already stewing over what they are doing to their lungs and their cardio-vascular systems, now have something new to fret about. The weed, it seems, is reaching the consumer saturated with DDT and other long-lasting pesticides, some of which presumably finds its way into the system of anyone who indulges in cigarettes, pipes, cigars, snuff or chewing tobacco.

This latest discouraging word for the smoker and the tobacco industry comes from the office of Senator Gaylord Nelson, a leader in the fight against indiscriminate use of DDT and its lethal cousins. The government, Nelson said, has never set the figure at which pesticide levels in tobacco are dangerous, and has never tried to study the effects of the substances on the health of smokers.

There is, he said, a plan to set such levels by 1973 — a date that is presumably more to the liking of the tobacco industry than 1969. Why wait, Nelson asks.

It's a good question. Private studies have shown that the pesticide level in cigarette tobacco is some 500 percent above that allowed in leafy vegetables that are eaten. It seems reasonable to inquire what this inhaled poison is doing to us.

If puffing on DDT should prove harmful, the tobacco growers should stop spraying or find some pesticide that doesn't work its peculiar magic on humans as well as bugs. Cancer and heart disease are enough for any one product to contribute to the human condition.

the attention of Lee's office involved a scientist excluded from a HEW panel because his father-in-law had subscribed to a Jewish Communist newspaper in the time before his daughter was married to the scientist.

According to other accounts, a good many of the people barred from panels are older scientists who were politically active in the 1930's, some of whom were members of student or other groups later put on the Attorney General's list of subversive organizations. There are also people reported to have been barred from panels because of political activities of their parents or other relatives.

Frederick H. Schmidt, the HEW Internal Security Director, explained that his office relies on the FBI for loyalty or security investigations and on the Civil Service Commission for investigations on questions of suitability. He explained that his office has a staff of only 16 people for a department with 100,000 employees. Schmidt said there were no written guidelines for the HEW investigating staff which made "primarily a common sense judgment" in dealing with cases. When asked if his office would make actual recommendations about whether a scientist should be cleared for a panel, he said, "I'm primarily a fact-finding organization but I will still make recommendations."

A key man in the HEW security and suitability review process is Bernard Sisco, the Deputy Assistant Secretary for Administration. Sisco meets every Friday with Schmidt to discuss personnel cases. If he thinks the case is questionable, Sisco will take it to the HEW Under Secretary. (Apparently, cases involving HEW panel members rarely, if ever, are taken all the way up to the HEW Secretary.)

Sisco, who has served in his present position since last September, said that he didn't know of anyone who had been denied panel membership on political grounds. "Just because a man is a liberal doesn't mean that there's anything against him," he commented, "there are all kinds of liberals." Sisco said that Socialist party members or past members of the Communist party could be appointed but that he could not appoint current members of the Communist or Fascist parties or anyone else who believes in violent overthrow of the government. Sisco said that HEW was checking more for "suitability" than for security. He said that if it was decided that

an individual should not be approached HEW would in the great majority of cases turn to someone else rather than try to elicit more clarifying information about the unsatisfactory individual. Other HEW officials also said that the general practice is to appoint acceptable scientists rather than trying to fight through an effort to clear a scientist who had been rejected for security or suitability reasons.

Opinion on Security System

The scientists and scientific agency officials interviewed on the HEW check for advisers were almost unanimous in criticizing the system. "I've talked to Secretary Finch about this; I've expressed our serious concern over this practice on NIH," said NIH Direc-

tor Robert Q. Marston, "... our business is getting the best scientific advice we can. Anything that gets in the way of that, we're against." NIH Deputy Director John F. Sherman said: "It is a serious impediment. I know of no case where a man's political actions would have any bearing on his work. What bothers me is the sub-rosa, un-American character of this system."

When queried by *Science*, HEW Secretary Robert Finch said that he was "looking into" the matter of security and suitability checks for HEW advisory groups and that he would like to do away with security procedures for employees in some parts of HEW. However, this seems like it may be merely one of the hundreds of things a new HEW Secretary has to look

HEW Examines Cancer Institute Report

Health, Education, and Welfare Secretary Robert Finch may be taking a hard look at a National Cancer Institute (NCI) research report on an investigation of the long-term role of a number of pesticide chemicals, including DDT, on tumor formation in mice. An advance copy of the report, soon to be released in the June issue of the *Journal of the National Cancer Institute*, was rushed to Finch last week. Observers say that the study could possibly trigger the invoking of the Delaney Amendment to effectively limit or ban the use of DDT.

The Delaney Amendment, sponsored by Rep. James Delaney (D-N.Y.), which, so far, has never been successfully applied to remove pesticide chemicals from the market, was passed by Congress in 1958. It gives the HEW Secretary authority to rule that no food additives can be deemed safe if they have been found to induce cancer when ingested by man or animals. Authorities in this case say the real question is whether the National Cancer Institute report provides substantial evidence to link DDT pesticides with carcinomas, and whether Finch will be disposed to use the study to invoke the Delaney Amendment. If such should be the case, Food and Drug Administration Commissioner Herbert L. Ley would be delegated responsibility for enforcing the ruling.

The study, under way since 1964, tested the long-term toxic effects of some 130 chemical compounds, at

high dosages, on approximately 20,000 mice. An analysis suggests that some of these compounds at these high dosages, were associated with a significant elevation in tumor development, particularly in the liver, and, to a lesser extent, in the lung and in lymphoid organs.

Evaluation of the results of oral administration of certain of these compounds revealed that 11 were "clearly tumorigenic," at high dosages, for the strains of mice used; results for another group of 20 compounds are still inconclusive and will require further evaluation. Eighty-nine compounds did not give significant indication of tumorigenicity.

In the report, National Cancer Institute scientists indicate that major evidence of tumorigenicity in animals exposed to experimental compounds raises a number of significant and not easily answered questions. It is often difficult to determine whether the tumors are malignant or benign. It is not easy to judge experimental data unless several species of animals are used. It is difficult to interpret tests on the effects of single chemicals when man's environment includes a highly complex series of chemicals.

While NCI scientists indicate that their study does not produce conclusive evidence, it seems likely that the study will generate considerable interest, particularly if it paves the way for regulation of the use of DDT.

—MARTI MUELLER

October 28, 1969

*White House -
C. L. C. Ennis*

MEMORANDUM FOR

Kenneth Cole, Jr.

Enclosed is the progress report you requested in your memorandum of September 22 concerned with the world food supply and environment items in the President's Population Message.

We have obtained agency agreement on combining the charges in paragraph 4 and 5 and have initiated actions as the report indicates. We plan to involve both Federal and non-Federal participants to provide an opportunity for the individuals most knowledgeable in this area to contribute. We plan to develop proposals for specific actions the President might take to improve the U.S. programs concerned with the world food supply and environment.

Lee A. DuBridge

Lee A. DuBridge
Science Adviser

Enclosure

DRKing:gg 10:28:69

DRK File & Chron
LAD File & Chron
S&T File & Chron
Barlow

THE WHITE HOUSE

WASHINGTON

September 22, 1969

MEMORANDUM FOR HONORABLE LEE A DuBRIDGE
Science Advisor to the President

Attention: Dr. Donald King

At Dr. Moynihan's suggestion, I should like to ask you to take joint responsibility for action items 4 and 5 on my memorandum of July 25th, a copy of which is enclosed. Please combine the studies and reports described in those items in the most suitable manner, and provide the President with a joint report and recommendations no later than January 31, 1970. In addition, please submit a progress report by October 31.

This request presupposes that the agencies affected are in agreement with the change, and I would appreciate it if you would make certain that they are.



Kenneth R. Cole, Jr.
Special Assistant to
the President

Attachment

25-54
S&T Cont. No. 1087

THE WHITE HOUSE

WASHINGTON

July 25, 1969

MEMORANDUM FOR

The Vice President

Honorable William P. Rogers
Secretary of State

Honorable Walter J. Hickel
Secretary of the Interior

Honorable Clifford M. Hardin
Secretary of Agriculture

Honorable George P. Shultz
Secretary of Labor

Honorable Robert H. Finch
Secretary of Health, Education,
and Welfare

Honorable Donald Rumsfeld
Director of the Office of
Economic Opportunity

Honorable Joseph H. Blatchford
Director of the Peace Corps

Honorable Lee A. DuBridge
Science Advisor to the President

Honorable John A. Hannah
Administrator
Agency for International Development

Honorable Robert P. Mayo
Director of the Bureau of the Budget

Honorable Frank J. Shakespeare, Jr.
Director
U.S. Information Agency

Honorable Daniel P. Moynihan
Assistant to the President for
Urban Affairs

As the President indicated in his Message to the Congress of July 18th, the problems associated with rapid population growth require increased attention by a number of Federal agencies. To carry out the intent of his Message, the President requests the following specific actions and reports.

1. The President would like Secretary Rogers to study our participation in population and family planning programs sponsored by international organizations, especially the United Nations, and to advise him of specific steps being taken to improve and support such programs. An interim report on our progress in this area should be submitted to the President by September 30.

S&T Cont. No.

1087

2. The President asks Secretary Rogers and Administrator Hannah to examine our international population and family planning programs and to advise him of steps that are being taken to insure that they receive sufficient attention, personnel, research and funding to accomplish the goals set forth in his Message. A joint report on progress in this area should be submitted to the President by October 31.

3. The President would like Secretaries Rogers, Hardin, Stans and Finch, Administrator Hannah and Directors Blatchford and Shakespeare to take steps to enlist the active support of all representatives of the United States abroad in carrying out the policy of this Administration to encourage and assist developing nations to recognize and take action to protect against the hazards of unchecked population growth. The President requests Secretary Rogers to coordinate this effort and to report to him by October 31 on actions being taken by the several agencies to achieve this goal.

4. The President asks Secretary Hardin and Administrator Hannah to investigate ways of adapting and extending our agricultural experience and capabilities to improve food production and distribution in developing countries. A joint report on progress and plans in this area should be submitted to the President by October 31.

5. The President would like Secretaries Hickel, Hardin and Finch and Dr. DuBridge to assign high priority to research into new techniques that can help safeguard the environment and increase the world's food supply in the light of anticipated population growth. This research should be coordinated through the Environmental Quality Council, which should consider these matters at a meeting to be held no later than October 31. A written report, to be coordinated by Dr. DuBridge, on the Federal and non-federal efforts to improve research in this area together with recommendations for additional activity should be submitted to the President by November 30. The President would like the Office of Intergovernmental Relations, under the direction of the Vice President, to assist in the preparation of this report.

6. As the President indicated, our efforts to achieve the goals he set forth will require more trained people to work in population and family planning programs, both in this country and abroad. He would like Dr. Moynihan to coordinate a comprehensive survey of our present effort in this area and to develop recommendations for improvements. In preparing this survey, Dr. Moynihan should receive the assistance of the Vice President, Secretaries Rogers, Shultz, Finch and Hickel, and Directors Hannah and Rumsfeld. A preliminary report with recommendations should be submitted to the President by November 30.

7. The President's Message includes an important commitment by this Administration to provide "adequate family planning services within the next five years to all those who want them but cannot afford them." He would like Secretary Finch and Director Rumsfeld, in consultation with Director Mayo, to propose the legislative, organizational and budgetary measures necessary to achieve this goal. This plan should include ways of ensuring the coordination of all domestic family planning services, federal and non-federal, so as to avoid duplication and overlap, and should also heed the President's assurance that none of the activities associated with our pursuit of this goal will infringe in any way upon the religious convictions or personal wishes of any individual. A joint report, together with recommendations, should be submitted to the President by October 31.

8. The President would like Secretary Finch to assess the adequacy of research presently being done on birth control methods of all types, including the rhythm method, and on the sociology of population growth. This assessment should include a careful review of all federal research efforts in this area, and should also include a survey of all other major public and private research projects in the same area. Based upon the findings of this assessment, the President would like Secretary Finch to develop an expanded and coordinated research effort that is adequate to meet the national and international goals set forth in his Message. This program should include the research activities conducted by the Department of State and the Agency for International Development, and should pay careful attention to recent studies by the Federal Council for Science and Technology.

The survey report and a progress report on the steps being taken to develop an expanded research effort should be submitted to the President by October 31.


Kenneth R. Cole, Jr.
Special Assistant
to the President

STATUS OF REPORT ON
INCREASING THE WORLD FOOD SUPPLY
AND
SAFEGUARDING THE ENVIRONMENT

The President, in his Population Message to the Congress on July 18, stressed the interrelationships among population growth, the world food supply and environmental problems. Subsequently, he requested the Secretary of Agriculture and the Administrator of the Agency for International Development to submit a joint report concerned with ways of adapting and extending our agricultural experience and capabilities to improve food production and distribution in developing countries.

The President also asked the Secretaries of the Interior; Agriculture; Health, Education, and Welfare; and the Director of the Office of Science and Technology to assign high priority to research into new techniques that can help safeguard the environment and increase the world's food supply in the light of anticipated population growth. He requested that the Environmental Quality Council consider these matters at a meeting to be held before October 31. He further asked for a written report by November 30 on Federal and non-Federal efforts to improve research in this area together with recommendations for additional activity. This report was to be coordinated by the Director of the Office of Science and Technology, and was to involve the Office of Intergovernmental Relations as well as the Departments mentioned above.

Responses to both of these requests were initiated. It became apparent in the course of these activities that combining the two studies would provide an opportunity to look at the entire problem more constructively. Since the combined study would be quite comprehensive, its satisfactory completion necessitated extending the reporting date to late January. Agreement was reached on the desirability of this approach. A charter (attachment 1) was prepared as a basis for proceeding.

Two interagency meetings have been held to discuss the areas to be covered in the report and to develop an outline for the study (attachment 2). A task force of representatives from the agencies has initiated the preparation of material in conformance with the outline. It is anticipated that an initial draft will be developed based on this information.

Meanwhile, action has been initiated to convene a group of experts under the aegis of the President's Science Advisory Committee, to provide advice in the preparation of the report. The group will consist of individuals who are knowledgeable in the area of concern, and will include representation from the original PSAC Panel on the World Food Supply.

The draft report will be discussed in joint meetings of the interagency task force and the PSAC group and additions and alterations will be made until agreement is reached. The final report will be submitted in late January.

COMMITTEE ON WORLD
FOOD SUPPLY
AND
THE ENVIRONMENT

In his foreign aid message of May 28, 1969, the President proposed "a strong new emphasis on technical assistance." He stressed the need to improve the quality of our technical cooperation, to expand the broad use of the best of our American talent, and to devise new techniques for revitalized technical activities.

The President has appointed a Commission to formulate new goals and perspectives for the foreign aid program to submit to the Congress next March. In the meantime, an examination of how U.S. foreign technical assistance could be improved throughout the Government would be timely and of value both to the Commission which will formulate the objectives of our foreign aid program and to AID.

In his Population Message of July 18, the President pointed out the potential impact of population growth on the environment and on the world's food supply. Subsequently, he asked for an investigation of ways to adapt and extend our agricultural experience and capabilities to improve food production and distribution in developing countries. In addition he requested the assignment of high priority to research into new techniques that can help safeguard the environment and increase the world's food supply.

In the President's speech to the United Nations General Assembly on September 18 he reiterated his concern for the problems of food production, population growth and environmental quality.

To address these issues, a Committee will be established which will have as its objective, recommending actions to improve the effectiveness of U.S. ...technical assistance efforts in foreign nations from the standpoint of both the world food supply and environmental quality. The Departments of Agriculture; Health, Education, and Welfare and the Interior will participate along with the Agency for International Development, the Office of Intergovernmental Relations and the Office of Science and Technology.

The Committee will submit an interim report by October 31 and will complete its assignment by January 31.

Outline for World Food and Environment Report

I. Population Growth, Food Needs, and the Environment

- A. Population Trends
- B. World Food Supply
- C. Implications for the Environment

Comment: This section will be introductory and will set out definitions and assumptions. Population assumptions on such factors as how many people there will be and where they will be located can be used to raise the issues of future food needs and environmental implications. The former will provide a basis for later discussion of the measures to be taken to increase the food supply. Discussions of environmental issues should be cast on a world-wide scale, but should include appropriate U. S. actions as well. The discussion of U. S. population and domestic environmental issues should center on actions to bring the international food and environment issues to the foreground in proper perspective.

II. History and Current Status of U. S. Efforts

- A. In Increasing the World Food Supply
- B. In Safeguarding the Environment

Comment: The emphasis should be on the "current" status, describing recent efforts to increase food production and to safeguard the world environment. Areas where these two considerations are related should receive particular attention.

III. Increasing the World Food Supply

- A. Analysis of the Problem
- B. Environmental Implications
- C. Focus on Technical Assistance

Comment: Progress in dealing with the expansion of food supply must deal with a complex of issues involving

food assistance, capital assistance, and restructuring marketing and transportation systems, as well as the transfer of experience and knowledge in food research and development. The critical elements in the expansion of food production overseas is the availability of technology and the ability of the local populations and their Governments to take effective action. Measures to strengthen the technical competence of developing countries to solve their own problems in the food and environmental areas must be the long-term objective of a plan of action in this field. For this reason, emphasis on technical assistance is necessary and appropriate.

It should be made clear that capital assistance is indispensable to a successful approach to the World Food problem, and that the focus on technical assistance is not intended to imply that capital assistance can in this way be eliminated. Technical assistance is useful in the short run in making capital assistance more effective and in the long run in upgrading the ability of local populations to cope with their own problems. Opportunities exist for greater progress through better technical assistance and this warrants the emphasis on this aspect of the problem in this paper.

In the environmental area, there also are positive actions that can be taken which extend beyond technical assistance.

In addition to considerations involving potentially harmful environmental effects associated with increasing the world food supply, there are opportunities for improving the environment that are directly related to expanding populations. The recent UNESCO Biosphere Conference dealt with a number of these aspects of the problem, and attention should be given to this area in the report.

IV. Directions of Future Programs

A. Organizing for the Task

1. Food Supply
2. Environment
3. Relate 1 and 2

B. Planning and Accomplishing the Immediate Task

1. Research
2. Education
3. Action

C. Completing the Task

Comment: Recommendations should focus on actions which can be taken rather than on conceptually desirable principles. Under A-1 on Food Supply the paper should outline what organizational arrangements can be made to improve the food supply. Similarly, under A-2, organizational arrangements can be proposed to meet environmental issues. Under A-3, we should bring the two concepts together.

This section should take into account the plans and efforts of local governments, the role of international and multilateral organizations, and the role of other Governments so that proposed U. S. actions will be realistic and constructive.

Under B, should come the specific planning and action which can be taken in both the food supply and environmental areas. This could include expansion of certain types of current efforts or wholly new proposals which warrant experimentation.

Under C, thought should be given to post-AID relationships and continuing efforts in the food supply and environmental areas.

!

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

October 17, 1969

MEMORANDUM FOR

Dr. Lee A. DuBridge

Attached is a letter of transmittal and a progress report on the world food supply and environment study. The progress report was requested in Ken Cole's memorandum of September 22. (also attached)

This report will be a big job. Dan Margolies and I have been getting it underway. We have discussed procedures, the PSAC involvement, and the ultimate preparation of the report with Dave Beckler. All three of us agreed that it would be desirable if Dan could stay on until the end of December to help with the report.



Don King

Attachment

CROSS REFERENCE INDEX

Date: November 10, 1969

INDEX: WHITE HOUSE-Envir.

To: DuBridge/OST

From: King/OST

Summary: Talking Points w/Dr. Hannah/President's Population Message

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

November 13, 1969

White House
EE

Dear Mayor Chermak:

President Nixon has asked me to acknowledge the resolution of your City Council regarding the encroachment of smog into San Juan Capistrano and urging action to solve the problem of air pollution.

We share your concern. In your part of California, certainly the automobile is the principal source of air pollution. The State of California and the County of Los Angeles lead the nation in the actions being taken to control smog from this source. The Federal government will be pushing rapidly in the same direction as California and, in fact, is now considering other actions that may speed the availability of low-polluting automobiles. The Justice Department suit referred to attained its full objective in securing agreement by the auto manufacturers to proceed actively and competitively to produce non-polluting cars. I can assure you we consider air pollution an important problem and one deserving substantial attention by the Federal government as well as by other levels of government.

Sincerely,

Lee A. DuBridge

Lee A. DuBridge
Science Adviser

Honorable Edward S. Chermak
Mayor, City of San Juan Capistrano
San Juan Capistrano, California

cc:

OST File & Chron
LAD File & Chron
JLB File & Chron

JLBuckley:ew

S&T Cont. No. 1267

November 13, 1969

Dear Dr. Grobe:

President Nixon has asked me to acknowledge your October 29 letter expressing the interest of the American Academy of General Practice in the activities of the Environmental Quality Council. While I am not prepared to tell you right now the ways in which we believe you can cooperate, we certainly welcome your offer and we will give serious consideration to finding ways in which we can use your assistance.

Sincerely,

Lee A. DuBridge,
Executive Secretary
Environmental Quality Council

Dr. James L. Grobe
Chairman, Commission on
Environmental Medicine
The American Academy of General Practice
Volker Boulevard at Brookside
Kansas City, Missouri 64112

cc:
OST File & Chron
LAD File & Chron
JLB File & Chron

THE WHITE HOUSE

WASHINGTON

November 4, 1969

MEMORANDUM FOR: Dr. DuBridge

Respectfully referred for suitable
acknowledgment or other appropriate
handling.

Noble M. Melencamp

Noble M. Melencamp
Staff Assistant
to the President

AND TECHNICAL
OFFICE OF 201
NOV 2 11 ST V

S&T Cont. No. 1267

14
Resolution on
air pollution

8

RESOLUTION NO. 69-10-13-1

1 A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SAN
2 JUAN CAPISTRANO RECOGNIZING THE INCREASING ENCROACH-
3 MENT OF SMOG INTO SAN JUAN CAPISTRANO AND URGING
4 LEGISLATIVE ACTION AT ALL LEVELS TO SOLVE THE PROBLEM
5 OF AIR POLLUTION.

6 WHEREAS, the City Council is in receipt of a communication
7 from the San Juan Beautiful Committee of the San Juan Capistrano
8 Chamber of Commerce, deploring the ever-increasing smog that is
9 creeping daily into our valley; and

10 WHEREAS, the City Council has long recognized the problem
11 of increased and more frequent intrusions of smog in the San Juan
12 Capistrano Valley, but has recognized that as a City it is unable
13 through legislation to impose effective controls upon smog; and

14 WHEREAS, the City Council finds that the problem of air
15 pollution as it affects the health of the residents of San Juan
16 Capistrano the the agricultural produce of the San Juan
17 Capistrano valley has grown to the point where action must be
18 urged upon County, State and National authorities to adopt
19 effective and urgent legislation to halt all forms of air
20 pollution.

21 NOW THEREFORE, BE IT RESOLVED by the City Council of the
22 City of San Juan Capistrano, that it recognize and it does hereby
23 fully recognize the urgency of preventing the encroachment of
24 smog into the San Juan Valley and that it is aware of the neces-
25 sity to take all possible steps to secure legislation at the
26 County, State and Federal levels to halt all types of air pollu-
27 tion.

28 BE IT FURTHER RESOLVED that the County Board of Super-
29 visors, the State Legislature of the State of California and the
30 Congress of the United States be and they are hereby urged to take
31 immediate steps through the legislative process to control and wipe
32 out air pollution as it affects the lives and property of the
citizens of San Juan Capistrano and the rest of the County, State
and Nation.

1 AND BE IT FURTHER RESOLVED that copies of this
2 resolution be sent to each member of the Board of Supervisors,
3 to th Orange County members of the State Legislature and of the
4 Congress of the United States.

5 THE FOREGOING RESOLUTION was passed and signed by me
6 this 16th day of October, 1969.

7
8
9 Edward S. Cherniak
10 Mayor of the City of
11 San Juan Capistrano

12 ATTEST:

13 Ernest A. Thompson
14 City Clerk of the City of
15 San Juan Capistrano

16
17 STATE OF CALIFORNIA)
18 COUNTY OF ORANGE) ss
19 CITY OF SAN JUAN CAPISTRANO)

20 I, ERNEST A. THOMPSON, City Clerk of the City of San
21 Juan Capistrano, California, hereby certify that the foregoing
22 is a true and correct copy of a Resolution of the City Council
23 of said City numbered 69-10-13-1, adopted by the City Council
24 on the 13th day of October, 1969, and was so passed and adopted
25 by the following stated vote, to wit:

26 AYES: COUNCILMEN: FORSTER, BATHGATE,
27 NOES: COUNCILMEN: OLIVARES and CHERMAK
28 ABSENT: COUNCILMEN: NONE
29 DURNFORD

30 Ernest A. Thompson
31 City Clerk
32

RESOLUTION NO. 69-10-13-2

1 A RESOLUTION OF THE CITY COUNCIL OF THE CITY
2 OF SAN JUAN CAPISTRANO URGING THE JUSTICE
3 DEPARTMENT TO SET ASIDE ITS CONSENT DECREE
4 IN THE AUTOMOBILE MANUFACTURERS ANTI-TRUST
5 ACTION SO THAT FULL PUBLIC TRIAL MAY PROCEED
6 ON THE ANTI-SMOG MATTER.

7 WHEREAS, at long last an anti-trust suit has been brought
8 against the major automobile manufacturers because of their un-
9 warranted and unconscionable delay in developing adequate anti-
10 smog devices for cars; and

11 WHEREAS, during this period the air pollutants in Southern
12 California have finally brought smog to the remote portions of
13 southern Orange County and to San Juan Capistrano as well as to
14 the Summer White House in San Clemente; and

15 WHEREAS, we have been informed that the Justice Department
16 and counsel for the automotive firms have agreed to enter a con-
17 sent decree under which the manufacturers, without admitting guilt
18 promise to do better in the future; and

19 WHEREAS, the City Council of the City of San Juan Cap-
20 istrano is of the unanimous opinion that the anti-trust suit
21 should be tried at a public trial, not only to afford the suffering
22 public the opportunity to learn the facts involved, but to arrive
23 at a considered decision which might give full impetus to the
24 immediate development of relief from smog.

25 NOW THEREFORE, BE IT RESOLVED by the City Council of the
26 City of San Juan Capistrano that it urge and it does hereby urge
27 the Justice Department of the United States to request that the
28 full trial to the end that the facts surrounding the delay on the
29 part of the automobile manufacturers in developing an adequate
30 anti-smog device or non-smog producing motor vehicle may be
31 brought to public view and that as a result thereof some positive
32 action may be expected.

BE IT FURTHER RESOLVED that copies of this resolution be
sent to George E. Brown, Member of Congress, the Orange County

1 members of Congress, Honorable John N. Mitchell, Attorney General
2 of the United States and to the Honorable Richard M. Nixon,
3 President of the United States.

4 THE FOREGOING RESOLUTION was passed and signed by me this
5 16th day of October, 1969.

6
7
8 Eduard S. Chermak
9 Mayor of the City of
10 San Juan Capistrano

11 ATTEST:

12
13 Ernest A. Thompson
14 City Clerk of the City of
15 San Juan Capistrano

16 STATE OF CALIFORNIA)
17 COUNTY OF ORANGE) ss
18 CITY OF SAN JUAN CAPISTRANO)

19 I, ERNEST A. THOMPSON, City Clerk of the City of San
20 Juan Capistrano, California, hereby certify that the foregoing
21 is a true and correct copy of a Resolution of the City Council
22 of said City numbered 69-10-13-2, adopted by the City Council
23 on the 13th day of October, 1969, and was so passed and adopted
24 by the following stated vote, to wit:

25 AYES: COUNCILMEN: BATHGATE, FORSTER, OLIVARES
26 and CHERMAK
27 NOES: COUNCILMEN: NONE
28 ABSENT: COUNCILMEN: DURNFORD

29
30 Ernest A. Thompson
31 City Clerk
32



The American Academy of General Practice

VOLKER BOULEVARD AT BROOKSIDE • KANSAS CITY, MISSOURI • 64112

President
EDWARD J. KOWALEWSKI, M.D., Akron, Pennsylvania
Vice President
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Executive Director and General Counsel
MAC F. CAHAL, J.D.

October 29, 1969

The President
The White House
Washington, D. C.

My dear Mr. President:

Last summer in a number of the news media there was a notice that you have organized a high-level committee, composed primarily of Cabinet members, to consider environmental quality of the United States.

This special committee was carefully discussed at our meeting of the Commission on Environmental Medicine in San Diego, California.

The members of the Commission wish to express the official interest of the 31,000 family doctors in the American Academy of General Practice in the activities of this committee. Perhaps there are ways in which we can help. We have chapters in most of the populous states. The work of our Commission assumes the broadest meaning for the word "environmental", as practically all medical affairs are considered by this body.

Thank you very much for your attention.

Faithfully yours,

James L. Grobe, M.D.
James L. Grobe, M. D., Chairman
Commission on Environmental Medicine

CROSS REFERENCE INDEX

Date: November 13, 1969

INDEX: WHITE HOUSE-Environment

To: The President

From: DuBridge/OST

Summary: Proposed Agenda for Environmental Quality Council Meeting
11/20/69

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

CROSS REFERENCE INDEX

Date: November 17, 1969

INDEX: WHITE HOUSE-Envir.

To: Susan Ramsey

From: DuBridge/OST

Summary: deterioration of the environment

FILED: WHITE HOUSE-President

Indexer:vg

Remarks:

November 25, 1969

MEMORANDUM FOR

John Ehrlichman

*White House
J. F. Ennis*

I and the members of my staff, as well as the staffs of DOT and HEW are perfectly aware of the research on unconventional engines which has been going on in the automobile industry. The automobile companies demonstrated several of their experimental cars and trucks at Newport Beach during the EQC meeting in San Clemente last summer. I was therefore not surprised when Mr. Cole of General Motors mentioned the fact that they had built "concept cars" of the various types discussed by Secretary Volpe.

The point is, however, ~~that~~ the companies have consistently indicated that they do not believe there is a future in such cars and that the internal combustion engine can do the job. However, when I discussed the proposed HEW standards with several of these manufacturers before the meeting, they admitted that there was no hope of meeting any such standards as those indicated for 1980 using the internal combustion engine. This, I hope, will accelerate their work on unconventional engines.

However, the whole point of the DOT-HEW program is based on the fact that there are many independent manufacturers who are working on good ideas in the unconventional field. On November 21st I rode in an experimental electric car being tested by a small manufacturing company in New York. I think you and the President know of Bill Lear's efforts to produce unconventional engines and there are other competent companies engaged in this work.

These companies do not have the resources of the major ones to push the work ahead rapidly. However, if they had modest federal assistance, they could put up some real competition to the major companies and they just might come up with some good ideas which one of the major companies would take over.

Our idea of the federal program is to create a bit more technological competition to spur the major companies, to encourage the smaller ones, and to try to elicit some new ideas on automobile engines. Detroit does

not have all the good ideas and has not examined all alternatives to the internal combustion.

The President's Science Advisory Committee Panel on the Environment looked into this question at some length recently, and they felt that there were many experimental ideas now being investigated which held great promise for the future, and they strongly urged some federal assistance for some of these smaller companies. In the past none of these smaller companies have been able to compete with the big three and therefore their ideas have never progressed very far. Without the spur of such competition the big companies have spent only small amounts of their research money on unconventional engines. A Vice President for Scientific Research of the Ford Motor Company is a member of PSAC.

We did not want to say with the automobile manufacturers there at the meeting that our purpose was to give them some technological competition, nor did I wish to remark, when Mr. Cole said they were working with such cars, that we knew of their work but still felt that other work should be supported.

The Federal Government will never be able to impose really strict requirements on automobile emissions as long as the large companies say such requirements are not "feasible." We need to have experimental proof, if it can be obtained, that there are alternatives to the internal combustion engine if the internal combustion engine cannot meet the future goals.

There are a number of additional points. Most of the unconventional cars either use no fuel oil at all (e. g. electric drives) or use a lower cost fuel, and in any case do not require leaded gasoline. Thus the lead problem which we heard about Thursday would be solved if a suitable unconventional car should appear.

Clearly, the Federal Government cannot take over the role of private industry in the development of new cars, but it can stimulate new ideas here and there which will spur private industry onto greater efforts. I believe this would be an extraordinarily profitable investment for the country.

I am attaching a copy of the PSAC report and a report by the U. S. Senate Commerce Committee. If the President wishes, another expert examination of this situation, we will undertake one.

Attachments

Lee A. DuBridge
Science Adviser

LAD/eac
LAD File
& Chron.

cc John Bucklew, John Whitaker
S&T File
S&T Chron.

~~CONFIDENTIAL~~
THE WHITE HOUSE
WASHINGTON

DETERMINED TO BE AN
ADMINISTRATIVE MARKING
E.O. 12356, Section 1.1
By EP NARS, Date 6/24/85

NOVEMBER 21, 1969

FOR: DR. LEE A. DuBRIDGE
HON. ROBERT H. FINCH
HON. JOHN A. VOLPE

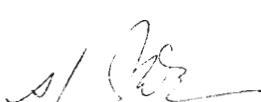
The President, at the Environmental Quality Council meeting yesterday, was very much left with the impression that the unconventional automobile research program proposed by HEW, DOT and OST basically involved research into types of unconventional automobiles that the industry has already tested. Also, the comments of some of the auto executives at the meeting seemed to indicate that they would be cooperative to turn over the results of their research to the Government and thus save the Government considerable funds.

The President was further left with the impression that HEW, DOT and OST did not seem to be aware that this research had already been done by industry.

He therefore questions seriously the value of the proposed HEW/DOT unconventional automobile programs, unless you can show that the expenditure has a real ability to stimulate further private industry research leading toward development of unconventional cars. As the President sees it now, the Government is proposing to do what the automobile industry has already done.

Could I have your written comments addressed to this point as soon as possible.

It seems that, for openers, we should take the auto executives up on their offer, go to Detroit and find out exactly what each of them has done in this area.


JOHN D. EHRLICHMAN

December 1, 1969

White House
Encls

MEMORANDUM FOR

John Whitaker

I would like to have your comments on the enclosed memorandum from the Assistant Secretary of Commerce relative to the next meeting of the Environmental Quality Council. I would gather that it might be possible to hold this meeting in the downstairs auditorium in the White House.

Incidentally the date for the next meeting has not yet been set, but I assume it will probably have to go over until January.

Lee

Lee A. DuBridge
Science Adviser

Attachment

Ltr from Tribus 11/24/69

LAD/eac

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Dr. Buckley with cy incoming

Do Not Detach This Slip

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY

To: Dr. DuBridge *CDP*

Date: 11/28

Miss Combs
(I doubt there will be an
E O P in December)

Buckley *on*

For:

☒ Appropriate Action

☐ Information

☐ Direct Reply

☐ Note and Return

☐ Comment

☐ Concurrence

☐ Recommendation

☒ Official Files

☐ Prepare Reply for Dr. DuBridge

The audit is in state mail
63

Remarks: Ltr fr. Tribus/Commerce to Dr. DuBridge 11/24

Requests room to show film on real nature of the

sound problem of society. Will have a press conf.

and repeat show following the meeting

~~DUE 11/4/69 12/4/69~~

From: *Pagnotta*



November 24, 1969

Honorable Lee A. DuBridge
Science Adviser to the President
Executive Office Building
Room 203
Washington, D.C. 20506

Dear Lee:

At the next Environmental Quality Council meeting, Secretary Stans will present a sound show illustrating for the President and the Council the real nature of the sound problem in our society. The presentation lasts 11 minutes and consists of a slide show, stereo sound track and closed circuit TV system which presents pictures, realistic and authentic "noises of our culture" and a real time indication of the actual sound level in relation to health and legal limits. The presentation is very effective and should set the stage very nicely for the discussion of the proposed assignment of responsibilities.

After the meeting, we wish to schedule a news conference at which the entire show can be repeated and you can announce the move which will be taken to bring this nuisance under control.

There are a couple of logistical matters which I would like you to help me to resolve. Perhaps you can delegate someone to act for you in the matter. The problems stem from two facts:

1. The room in which the cabinet meetings usually occur is acoustically very poor for our purposes. We will adjust the sound level to make the spot where the President sits the control point for realism. This means that because of the shape of the room, almost everyone else will be subject to distorted experiences and perhaps some hazard at the high noise levels.

2. It will be very difficult to move the equipment rapidly from the cabinet room to the press room.

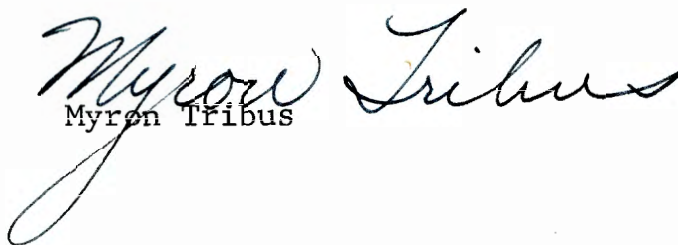
It is possible to hold the meeting in the small auditorium⁷ which has occasionally been used for press conferences? We could set up a long table for the members of the Council and others could sit either around the table or in the place usually reserved for the press at the press conferences. The equipment could then be left in place for the press conference afterwards. There are several advantages of this proposal:

1. We can replay the scene for the press, just as it actually happened, emphasizing that the President wanted to have this realistic exposure prior to considering our plans.
2. We guarantee more attention to the meeting, since the holding of the Council meeting in an unusual place indicates something unusual is afoot.

If you will let me know with whom to work, I shall ask Messrs. Hibbs and Flynn to my staff to make the necessary arrangements and keep us both informed.

I think you will be impressed at the high fidelity system the NBS has conjured up. We should be sure that the various science magazine editors learn about it in time to tell their readers.

Sincerely,


Myron Tribus

December 3, 1969

MEMORANDUM FOR

John Ehrlichman

SUBJECT: Automotive Fuels

*White House
Auto*

At and following our recent Environmental Quality Council Meeting, representatives of the auto industry mentioned the fact that ammonia could be used as a fuel in automobiles. This is perfectly true and experiments along this line have been under way for a number of years. It is true that when ammonia burns in an internal combustion engine it does not, of course, produce hydrocarbons or carbon monoxide. On the other hand, the heat content of ammonia is less than for gasoline and so a larger weight of fuel would be required for a mile of driving. In addition the ammonia would have to be stored as a gas under high pressure which means that a given amount of weight would occupy more volume in the car and would also have the unhappy situation of a high pressure tank of ammonia in every car which might be a serious hazard in case of accidents. Ammonia, as you know, is not a pleasant gas to have floating around in large quantities.

Finally, there is this situation to consider. When we burn petroleum products or coal or even uranium we are using latent energy which was already stored and available in the earth's resources. The only energy expenditure required is that expended in mining or pumping the product and treating it to bring it to useable form.

In the case of ammonia more energy must be expended to manufacture the ammonia in the first place than would be yielded when the ammonia is used as a fuel. Thus, for example, the Army is considering and is experimenting with taking a nuclear reactor into a battle area, using its energy to produce ammonia from the atmosphere and then using the ammonia so produced in their tanks and other automotive vehicles. To produce adequate ammonia to fuel all our civilian automobiles would obviously require huge expenditures for power plants which would have to burn either petroleum or coal or uranium. Someday when our coal and oil supplies are used up but we still have plenty of uranium it is

comforting to know that uranium energy can be used to manufacture ammonia for automotive fuels. This would seem like a long way in the future.

Our conclusion is that ammonia is not a feasible or economical fuel to consider for automotive vehicles at this time and that it will be far more feasible and economical to develop automobile engines which do not pollute the air but which still use conventional fuels.

I hope this answers the questions you raised in regard to this situation.

Lee A. DuBridge

Lee A. DuBridge
Science Adviser

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December 4, 1969

WHITE HOUSE

Whitaker
Ermi

MEMORANDUM FOR DR. LEE A. DUBBRIDGE

From: John C. Whitaker

Jan

At the moment, an EQC meeting in December does not look like it is possible.

As to a "noise presentation", the White House auditorium, Indian Treaty room, etc. are possibilities to explore, and should be checked out.

The question of whether a practical action program on noise abatement could be announced following the meeting has to be ironed out first.

Therefore, I think you should look at all possible agenda items first and then let's talk about a firm meeting for January. It may be that you would rather focus on a firm prototype unconventional automobile program following your visit to Detroit, Lear, etc. It just seems too early to focus on the specific agenda.

cc: Mr. John D. Ehrlichman

S&T Cont. No. 1399



THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

644 ✓
Honey ✓
Sub" for Sunday ✓
December 5, 1969

WHITE HOUSE Ennis

MEMORANDUM FOR: Dr. Lee A. DuBridge
Science Advisor to the President
The White House

Subject: Low Pollution Vehicles: Mr. Ehrlichman's Inquiry
About Industry Activities

Attached is a copy of our reply to Mr. Ehrlichman's memorandum of November 21, 1969.

In brief, it says that our proposal does not duplicate what industry has already done, and that the industry program for the development of unconventional vehicles as we understand it is not moving as purposefully or as fast as we consider necessary.

I further indicate my intention to visit the auto manufacturers personally to see what they may have in addition to what they showed us at San Clemente. I hope that you would be able to accompany me on these visits.

Attachment:
OST Letter to Mr. Ehrlichman



THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

MEMORANDUM FOR: Dr. Lee A. DuBridge
Science Advisor to the President
The White House

Subject: Low Pollution Vehicles: Mr. Ehrlichman's Inquiry
About Industry Activities

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Attachment:
OST Letter to Mr. Ehrlichman



THE SECRETARY OF TRANSPORTATION

WASHINGTON, D.C. 20590

5 DEC 1969

Mr. John D. Ehrlichman
Counsel to the President
Executive Office of the President
The White House Office
1600 Pennsylvania Avenue, N. W.
Washington, D. C. 20500

Dear Mr. Ehrlichman:

Thank you for your memorandum of November 21, sent after the meeting of the Environmental Quality Council.

First, it is unfortunate that the President received the impression that the Federal program proposes duplicating or repeating the automobile industry's R&D on unconventionally powered automobiles. This is not the case. To the contrary, the Federal program proposes utilizing work that has been done by the automobile industry and researchers outside the industry and carrying that work forward to fruition at a much faster pace than the industry is proceeding on its own. Second, as to whether the proposed Federal program can stimulate further private industry research, we believe that it can and will and believe that it provides the necessary incentive to their doing so in the form of a carrot -- competition and the promise of Federal procurement, and a stick -- Federal and California air pollution regulations.

I acknowledge that the automobile industry, taken as a whole, has great capability in the field of nonconventional power sources. Their business is knowing how to propel cars. General Motors is a leader in Stirling cycle engine technology; Chrysler in the application of gas turbine engines to automobiles; Ford has pioneered in the development of one of the high energy density-high power density batteries that may be required for electric cars. Within the past year, General Motors has disclosed some of its experimentation with steam powered cars and cars with hybrid engines. Work by the automobile industry and related work by others in private industry and Government has led those who have examined the state-of-the-art to recognize that an alternative to the internal combustion (i. c.) engine for automobiles is potentially practical. (A list of sources of information about the R&D activities of the automobile industry and others in this field is enclosed for your reference (Enclosure 1).)

However, in view of the critical time urgency of the pollution problem, the pace at which the automobile industry is proceeding either (1) to develop and demonstrate alternative (unconventional) propulsion systems in commercially acceptable vehicles or (2) to develop and demonstrate a significantly cleaned up version of the internal combustion engine is far too leisurely. To the best of our knowledge, Detroit has no present plans to accomplish the former objective within the next five years or so. I believe timing of this kind is necessary to reduce the air pollution levels of the 1980's if the i. c. engine cannot be cleaned up.

Admittedly, the automobile industry has a somewhat negative financial incentive to conduct R&D which could lead to the replacement of the i. c. engine. In time, however, air pollution regulations of the Federal Government and California may provide a positive incentive. As of today, however, the auto industry has only conducted R&D on unconventional power sources to keep abreast or ahead of the competition; not to force the pace of development.

Now consider the important features of the proposed Federal R&D program. First, timing. To meet the increasing automotive pollution problem, it is specifically directed toward the development of alternative power sources by the mid-1970's. It envisions development of two competitive technological alternatives to the i. c. engine; alternatives to reduce exhaust emissions to one-tenth of the 1970-model level. The technologies selected involve steam reciprocating engines and hybrid engines. Second, competition. It would encourage and capitalize on the capabilities of industry outside of Detroit which has developed a significant capability in these two fields. (Enclosures 2 and 3 discuss the current status in the hybrid and steam engine R&D fields, respectively.)

As to your second issue, business judgment indicates that a properly designed Federal program will stimulate industry to further efforts on unconventionally powered vehicles. Many corporations, such as Lear Motors, LTV, TRW, General Steam, and Marquardt are investing, on a limited scale, in developing unconventional power sources. Our contacts with them have convinced us that Federal expenditures in this area would provide a powerful stimulus to their continued efforts. And the importance of the potential contributions of these "non-Detroit" firms cannot be overstated. Their efforts will either develop some of the necessary solutions, cause the Detroit automotive industry to greatly accelerate programs to develop solutions, or both.

To accomplish field tests of low-pollution automobiles by the mid-1970's, the proposed R&D program will use any and all pertinent information from any source, including the automobile industry. If the automobile manufacturers provide information that hastens field tests, that is all to the national good, and the Federal program will be modified accordingly.

I agree with your suggestion that we accept the offer of the automobile executives. If the automobile industry has relevant information that we are not already aware of, we will use it to strengthen the Federal effort. To this end I intend to visit the automobile manufacturers personally to see what they have, in addition to what they may have demonstrated to us at San Clemente. In addition, visits to the automobile industry by the technical staffs of the Department of Transportation, the Department of Health, Education, and Welfare, and the Office of Science and Technology, and others as necessary, are being arranged and carried out.

As I said at the Environmental Quality Council meeting, we do not want to cause any unnecessary disruption to the automobile industry or to the national economy. We hope that the internal combustion engine can be improved sufficiently in the time available to meet national air quality goals that will be in effect beyond 1980.

Sincerely,

John

Enclosures

SOURCES OF INFORMATION ABOUT THE
STATE-OF-THE-ART OF AUTOMOTIVE POWER SOURCES

1. DOT, HEW, and OST staff studies and visits to research centers, including auto industry research and development facilities.
2. President's Scientific Advisory Committee studies. PSAC has auto industry representation.
3. "Automobile and Air Pollution: A Program for Progress". Report of the Panel on Electrically Powered Vehicles to the Commerce Technical Advisory Board, October 1967. People from Ford, GM, and Chrysler were on the Panel and auto industry representatives served on the subpanels.
4. "Frontiers of Technology Study", 3 volumes, Summary, Survey, and Implementation, Report of Los Angeles Division of North American Rockwell Corporation to the Urban Transportation Administration of the U. S. Department of Housing and Urban Development (January 1968); Surveyors visited Ford and General Motors research centers among others.
5. "Study of Unconventional Thermal, Mechanical, and Nuclear Low-Pollution-Potential Power Sources for Urban Vehicles" by Battelle Memorial Institute, Columbus Laboratories for the National Center for Air Pollution Control, U. S. Department of Health, Education, and Welfare (March 1968).
6. "Prospects for Electric Vehicles, A Study of Low-Pollution-Potential Vehicles--Electric" by Arthur D. Little, Inc., for National Center for Air Pollution Control, U. S. Department of Health, Education, and Welfare (May 1968).
7. Technical literature subsequent to the major published reports.
8. Senate Hearings in 1967 and 1968 on electrically powered vehicles and external combustion engines. The hearings were held by the Committee on Commerce and the Subcommittee on Air and Water Pollution of the Committee on Public Works. Automobile industry representatives testified.
9. "Technology and Urban Transportation - Volume I: Overview; Volume II: Part A, Automotive Propulsion Systems, Part B, Short Range Mass Transportation". R. U. Ayres and R. A. McKenna, Hudson Institute (1968), Review Drafts, not for publication.

AUTOMOTIVE HYBRID ENGINES - SIGNIFICANT ACTIVITIES

Summary

Hybrid propulsion systems for vehicles are defined and their potential advantages and disadvantages discussed. Recent and current activities of U. S. and foreign organizations are described. Only TRW Systems and Minicars, Inc., are known to be actively investigating hybrid systems potentially suitable for general purpose automobiles.

Discussion

Definition: A hybrid propulsion system is a combination of two (or more) types of energy conversion devices to use the best features of each to minimize disadvantageous features of the complete system. A trivial example is the battery-starter motor, internal combustion (i. c.) engine combination of our present cars which uses the stored electrical energy of the battery to provide the peak power required to start the i. c. engine and then uses excess power from the engine to recharge the battery. This discussion is centered on recent attempts to go beyond this trivial application of batteries and i. c. engines.

Potential Advantages: The fluctuating demand for power at the wheels of an automobile leads to the requirement that an i. c. engine be capable of producing power over a wide range of speeds and loads. In a hybrid propulsion system, it is possible to operate the heat engine at constant speed or power or slowly changing power. This mode of operation allows the engine parameters to be optimized for reduced exhaust emission or fuel economy or some other desirable feature. Predictions of doubled gas mileage and of exhaust emissions reduced by a factor of three have been made for i. c. engine-battery hybrids.

Some of the nonconventional heat engines may be more readily implemented for automotive purposes in a hybrid form; for example, a Rankine cycle turbine with an organic working fluid would conceivably work well with an electrical storage system in a hybrid. In the hybrid combination, the nonconventional heat engines would not require the wide dynamic range that otherwise would be needed. This relaxation of required performance for the heat engine may allow it to be used in an automotive system earlier than might otherwise be the case.

Possible Disadvantages: The increased cost and complexity of hybrid engines are usually pointed out as their major disadvantages. Both are thought to be inherent in a system that has two power sources. The extent to which the hybrid form allows the size (and, hence, the cost) of the heat engine to be reduced has not yet been established. Complexity is a matter of judgment and design.

Hybrid Buses: In Stuttgart, West Germany, the Daimler-Benz company is operating a demonstration of a diesel-electric hybrid bus. However, the bus was designed to run 50 miles on the batteries alone, so it might better be described as an electric bus with an on-board battery charger. The batteries alone weigh 7000 pounds.

There are reports of a 3-ton hybrid minibus operating in Moscow. The reports say that carbon monoxide emissions are reduced to less than 7% of those from an automobile. The i. c. engine is a 45 horsepower model, while the electric motor is rated at 15 KW. Top speed is limited to 40 mph, presumably by the size of electric motor and the control circuitry.

At the Truck and Coach Division of GMC, work on a hybrid propulsion system for buses of conventional size is just getting started. A small i. c. engine and small d. c. motor have been retrofitted into an older model transit bus. The bus has been run with the hybrid propulsion system and is noticeably underpowered.

Hybrid Cars, Large and Small: General Motors has had more experience with hybrid powered cars than any other company, at least as far as the public record shows. Two Stirling cycle engine-battery hybrid, 3200 plus pound cars have been displayed. The first model, Stir-Lec I, used an a. c. motor and control system. The second model, Stir-Lec II used a d. c. motor and control system because of the simpler, less bulky electronic control for the d. c. case. Stir-Lec II hits a top speed of 60 mph, accelerates from 0 to 30 mph in 8.5 seconds, and will run 150 miles on 5 gallons of gas, and has greatly reduced exhaust emissions in comparison with a standard i. c. engine powered car. The range of 25 miles on batteries alone would appear to indicate excess battery capacity for the hybrid application.

A hybrid gasoline-electric experimental, two-passenger urban car in the Model 512 series was also developed by GM. The small, 5.5 hp. engine did not develop enough power to keep the batteries charged on an urban driving cycle. The company literature gives the following details: "In the hybrid mode, the peak horsepower is 13.8, top

speed is 35 mph, and the car accelerates from 0 to 30 mph in 16 seconds. Its range is 5.2 miles at 30 mph in the electric mode, and approximately 150 miles with three gallons of gasoline in the hybrid mode." Its curb weight is 1250 pounds.

GM has designed and built a mock-up of a small commuter car, labeled XP-883. "The design objectives for the car include a weight of approximately 2100 pounds, maximum speed of 60 mph, and an acceleration of 0 to 60 mph in 28 seconds and 0 to 40 mph in 12 seconds." The gas mileage is expected to be about 50 mpg. However, at this time, GM does not admit to having any plans to go beyond the mock-up phase.

TRW Systems has run a computer simulation of an i. c. engine-battery hybrid engine for a range of battery weights, engine sizes, vehicle gross weights, and an urban driving cycle. The simulation predicts approximately 100% improvement in gas mileage. The hybrid engine system has been implemented recently to allow dynamometer testing. A parallel configuration is used to allow the i. c. engine and the battery bank to simultaneously provide power to the drive shaft. Regenerative braking allows energy normally lost in braking to be recovered. Lead-acid batteries designed for the specific application have been developed and will be tested in the system. The hybrid engine is sized for a 3000-pound car. Technical personnel in charge of the project at TRW Systems expect to make their recommendations to their management early in 1970.

In connection with an Urban Mass Transportation Administration/Department of Transportation demonstration project at the University of Pennsylvania, a special purpose vehicle, the Minicar, has been equipped with an i. c. engine-battery hybrid in a parallel configuration. The engine is reliable enough to have powered the 3000-pound Minicar on a trip from Santa Barbara to Phoenix, a distance of 550 miles, in 10 hours. Top speed of the Minicar is in excess of 70 mph. The engine is still in an early stage of development and will require much additional modification, adjustment, and evaluation. It has been estimated by the developer, Minicars, Inc., that exhaust emissions can be reduced to a third of those of an i. c. engine powered vehicle with similar performance.

11/28/69

AUTOMOTIVE STEAM ENGINES - SIGNIFICANT ACTIVITIES

Summary

Advantages and disadvantages of steam powered cars are discussed briefly. Some of the most recent activities of Government and private industry are described. General Motors and Lear Motors have the greatest observable progress to report.

Discussion

Potential Advantages of Steam Powered Cars: Besides the very good exhaust emission characteristics associated with continuous combustion, steam engines have a torque-vs. speed characteristic that allows excellent acceleration. Steam engines need not idle as an internal combustion (i. c.) engine must, although requirements for accessory power may be satisfied by allowing the engine to idle. In any event, transmissions can be simplified and reduced in cost and weight. Specific fuel consumption need not be any worse than that of an i. c. engine. There is no complicated carburetor system on a steam engine.

Possible Disadvantages: The larger surface area needed for heat rejection in a closed cycle steam engine is one of the more severe problems faced by steam engine developers. Problems of lubrication and freezing are non-trivial but are believed to be soluble. The steam engine system, from heat source to radiator to transmission is likely to be somewhat heavier than the comparable i. c. engine system, and hence the first cost is likely to be higher. If steam engines are constrained to fit within the engine compartments of existing vehicles they probably will not meet the performance levels of the i. c. engines in those vehicles in all respects.

Activities of Private Industry: In May 1969, General Motors unveiled two steam powered cars. An engine, GM SE-124, mounted in a Chevrolet Malibu had been developed by Besler Development Company, Oakland, California, under contract to GM. It is a double expansion engine and produces about 50 horsepower. Another engine, GM SE-101, mounted in a Pontiac Grand Prix, was developed in-house. It produces about 160 horsepower. GM described these engines generally as having twice the weight and half the horsepower of the engines normally installed in vehicles. GM did not provide information about the performance of the engines, however, it would

appear that 160 horsepower in the Pontiac Grand Prix would provide acceptable acceleration performance because of the high starting torque. GM states that both vehicles are being used as test beds for further development.

William P. Lear, Sr., founded Lear Motors in October 1968, to develop steam powered vehicles. He states he has spent \$5.5 million to date on R&D for this purpose. One highly publicized version of reciprocating engine ran into development problems severe enough to cause its abandonment. However, work is continuing on at least two other types of positive displacement expanders; one, a 6 cylinder in-line Valiant engine modified for steam; the other, a special type called an involute expander. The six cylinder engine was tested on the dynamometer as recently as 21 November 1969, at the time of a visit by Department of Transportation personnel. High pressure steam was piped from a nearby room and exhaust steam was piped to a condenser outside the building. Nevertheless, work is well underway on compact efficient vapor (steam) generators and the condensor design is reasonably compact for steam. A feed water pump is also being developed. Lear Motors expects to have the six cylinder engine mounted in an automobile by mid December 1969. Of the more than 130 people working for Mr. Lear at his Reno base of operations, about 70 are employed by Lear Motors. Mr. Lear has several related activities going on simultaneously, so it would be difficult for someone outside his organization to estimate how much of the \$5.5 million has been productively expended on the steam work alone. Certainly his organization is vigorously and effectively developing automotive steam power. He is looking for Federal support.

A small company in southern California, General Steam Corporation, formerly Thermodynamics Corporation, has been developing a steam engine to be installed in a California Highway Patrol (CHP) car. General Steam has no contractual agreement with the CHP to do this. The General Steam design uses a novel expander with double acting cylinders mounted parallel to the drive shaft. A two-lobed cam on the drive shaft is used to transfer power. At this time, General Steam is still developing the combustor, vapor generator, feed water pump, condenser, and expander. Reportedly, a million dollars is available to the company for the steam power work. They see their principal market as the power boat field, rather than automobiles.

A number of other small companies are reported to be active in the steam power field in one way or another. Steam Power Systems of

San Diego is a spin-off from Lear Motors and is associated with the larger Sheridan-Gray Company of Huntington Park. Steam Engine Systems Corporation of Newton, Massachusetts, the creation of Richard S. Morse, has some well qualified people with good ideas, but waits for Government or other financing. Thermo-Electron Corporation, previously mentioned as the recipient of a contract from HEW, has some kind of cooperative arrangement with the Ford Motor Company.

Several aerospace companies have had experience with Rankine cycle systems under DOD, NASA, or AEC contracts. Some of that experience is potentially applicable to automotive power plants. Sunstrand and Aerojet General particularly have much experience with organic Rankine cycle power plants.

Government Sponsored Activities: Since the Senate hearings on automobile steam engines and other external combustion engines in May 1968, the field of steam power has seen an acceleration of activities by the Federal Government, the State of California, and private industry.

In February 1969, the Urban Mass Transportation Administration (UMTA) announced the award of two grants for demonstrations of steam powered buses in revenue service. One grant was to the California State Legislature, Assembly Rules Committee for a demonstration in the San Francisco Bay area. Proposals were solicited from prospective vendors and those received were evaluated in September 1969. Negotiations are still being conducted. It is anticipated that the first bus would be available for testing approximately one year after negotiations are completed.

The second grant was to the Dallas Transit System, which proposed to have LTV Aerospace as a subcontractor. A Freon working fluid engine was originally proposed. Development problems forced a re-examination of that technical approach. The Dallas Transit System and LTV plan to inform UMTA of their revised work plan early in 1970. No Federal funds have been expended on this project to date, but LTV confidentially admits having spent more than one quarter million dollars. These two steam bus activities are not directly applicable to steam plants for automobiles. However, much of the technology is transferable. A contract for the conceptual design of a Rankine cycle engine powered automobile was awarded by the National Air Pollution Control Administration, HEW, to Thermo Electron Corporation for less than \$200,000 late in fiscal year 1969. The engine is being designed to use an organic working fluid rather than water, so strictly speaking, the vehicle would not have a steam engine.

December 18, 1969

White House
for
Encl

MEMORANDUM FOR

Mr. John Ehrlichman

SUBJECT: Management of the Environmental Quality Council Affairs

With the impending passage of the Jackson bill or a similar bill creating in the Executive Office of the President a new office or "Council" for Environmental Quality, it seems desirable to be exploring the options available to the President for the future structure of this office in the environmental field.

The Jackson bill creates only a group of three people with very limited staff support to advise the President on environmental matters, to assist him in preparing an annual report on the status of the environment, and generally to study and recommend environmental policies and programs. No administrative functions are assigned to this Council. In other words the law does not specify whether this new Council shall serve the President's Council (we are, of course, going to be plagued by the fact that there will be two "Councils for Environmental Quality").

Nevertheless, in establishing and making appointments to this new Council, the President could provide that it serve also as a Secretariat to his Environmental Quality Council. Alternatively, he could leave the administrative tasks of serving as Secretariat to EQC to my office, as at present, and leave the new Council free of these administrative duties to act only as an advisory body to the President and to the EQC.

There are pros and cons to either option and I have no particular recommendation to make either way. I am only suggesting that we should be thinking about the choice between the two and when the choice is made certain things will follow:

(a) If the new Council becomes the Secretariat to EQC a top notch environmental man who is also an administrator well experienced in government affairs and qualified for operating a secretariat should be chosen as Chairman. The two members of his Council, as well as staff people, also should be experienced operators within the government circle rather than merely distinguished "advisors".

(b) If the new Council is to be purely advisory, its composition could be quite different, since it would not be assuming administrative functions. In that case, however, ~~the~~ office would need to maintain and increase its personnel of environmental experts who can do the large volume of staff work and staff coordination required for the EQC activities. We would, in fact, need to add one top notch administrative-environmental man.

Of course, it may be several months before any bill passes the Congress and it may be still longer before any office which is established has been financed. Indeed waiting for appropriations might mean no change in the present set up until one year hence. With this possibility in mind the President has a third option, mainly to make an interim arrangement such as creating a "transition office" for environmental matters.

EQC has a good momentum and it would be desirable to have it more adequately staffed. It would seem too bad to wait for a year before proceeding in this direction.

Lee T. DuBridge

Lee A. DuBridge
Science Adviser

cc: Mr. John Whitaker

Dr. Buckley
Mr. Page

LAD:of:18 Dec 69
OST Files, Chron
LAD Files, Chron

December 18, 1969

MEMORANDUM FOR

John Ehrlichman

White House
Envi

Subject: Preliminary Report on Visit to General Motors

In accordance with the agreement following the Environmental Quality Council meeting, an expert panel set up by my office visited the General Motors Technical Center in Detroit on December 15th. They were given excellent treatment and so far as we can tell, they were shown all of the work going on there on low pollution automotive engines, particularly the unconventional ones.

They apparently found no surprises, since the work which General Motors has been doing in recent years is well known to the experts in the field.

Certainly the work of General Motors and other companies has brought out some important facts and some important limitations on certain kinds of approaches to the automobile problem other than the internal combustion engine. However, the companies are committed to the thesis that the internal combustion engine will be the final answer, although our experts believe that the array of attachments and special devices which will be required will be cumbersome, unreliable and expensive. An engine with much lower inherent pollution qualities still seems to be a desirable goal.

Our panel concludes that there are several lines of investigation not being pursued by the automotive industry which should be investigated elsewhere, and they believe that some government financing along the lines proposed by DOT and HEW would be most desirable and most productive.

I recommend that the President tentatively authorize a budget item of between \$10 and \$15 million for this purpose in fiscal 1971, and that he secure recommendations from the Bureau of the Budget on how this research program should be managed as between DOD and HEW.

The panel of experts which I have set up will make additional studies and will be glad to advise with DOT and/or HEW in shapening up their plans and insuring that these funds are productively and usefully expended.

Lee A. DuBridge

Lee A. DuBridge
Science Adviser

cc: John Whitaker

LAD/eac

S&T File & Chron.

LAD File & Chron.

Buckley

Gouse

AD HOC PANEL ON UNCONVENTIONAL VEHICLE PROPULSION

OFFICE OF SCIENCE AND TECHNOLOGY
EXECUTIVE OFFICE OF THE PRESIDENT

REPORT OF VISIT TO GM TECH CENTER

December 15, 1969

(NOTE: This is a draft. The contents have been discussed by the Panel, but have not been approved by them in this form.)

SUMMARY

As a result of our visit to the GM Technical Center, the Panel concludes that GM has an extensive unconventional vehicle propulsion program. Gas turbines have received, by far, the most attention and have been applied in heavy vehicles (trucks and busses). A program to apply them to passenger vehicles is in early stages. Extensive experience in small, stationary, Stirling engines is being applied to an engine for a bus. Electrochemical devices are being extensively considered in laboratory studies, but there is little hope for early passenger vehicle application. The accomplishments in the area of reciprocating steam engines are commendable considering the limited time the program has been in existence, but the vehicles they have constructed do not reflect modern technology. Organic fluid Rankine-cycle engines have not been developed. Their efforts on hybrid power sources have been inadequate.

It was obvious that GM is depending on developments in emission control of internal combustion engines to meet the long-term HEW requirements.

Based on our observations at the GM Technical Center, the Panel feels that there are potentially significant technologies in the area of unconventional propulsion plants that have not been sufficiently explored.

1. Extent of Effort

1.1 Gas Turbines

For heavy vehicles, the program has been extensive.

For passenger cars, the program is just beginning.

The assembly of a car using present technology will probably take two years. This car will be good in terms of emissions, but probably very expensive. The high cost is due to materials (nickel) and processing (especially the latter). A program to produce a vehicle costing 25% more than a present automotive vehicle is being initiated, but there is no target date for completion of the program.

1.2 Stirling-cycle Engine

There is extensive experience for small, stationary power sources for military application (10-15 h.p.). Large-scale hardware (150-190 h.p.) for a bus engine is currently being assembled. We expect results in about a year. There is

no plan to put a Stirling-cycle engine in a passenger vehicle in the near future.

1.3 Electrochemical Devices

The efforts in this area are significant when evaluated from the viewpoint of electrochemistry, but relatively insignificant from the view point of low-pollution, general-purpose vehicles. Many electrochemical systems are being evaluated by a sizable staff (50 including 13 at the Ph.D. level), but there is no system that will evolve into a power-plant for a general purpose vehicle in the next five years.

1.4 Rankine-cycle engines

Preliminary design work on a steam engine began in 1967. Serious plans to build steam-powered vehicles were begun in October 1968 and the vehicle was completed by May 1969. This is an impressive feat. The vehicle was built as a strictly state-of-the-art vehicle. The steam conditions (700° F and 800 psi) are not particularly exciting. The steam generator details do not reflect the latest in heat-transfer technology. But for a vehicle designed and completed in 8 months it is impressive.

It was disappointing and inconsistent to find the staff so negative about the future prospects for a Rankine-cycle

system. They cited lubrication problems, materials problems, heat exchanger problems, and freezing of the working fluid as major obstacles to the development of a competitive steam engine. This attitude after so short an investigation is hard to reconcile with their long-standing, careful efforts on Stirling engines and turbines and technically difficult electrochemical systems such as lithium-chlorine, sodium-sulfur, sodium-air, etc.

2. Innovations

Stirling-cycle engine work seems to have been carried to a high level of sophistication, although it is not felt that the engine can be applied to passenger vehicles in the foreseeable future. The gas turbines work is just now being applied to passenger vehicles. The work on electrochemistry seems to be excellent, but to date unfruitful in terms of a general purpose vehicle. Efforts on the steam engine have certainly not been innovative, nor could they be expected to be, considering the short time the program has been in existence.

3. Other Possibilities that Might be Usefully Explored

The area of Rankine-cycle engines has certainly not been thoroughly investigated. Organic working fluids in conjunction with a turbine expander is one possibility. The detailed

consideration of the identified problems in reciprocating engine systems is another.

Hybrid combinations of systems needs further consideration. This includes heat engine-electrochemical hybrids as well as heat engine-mechanical hybrids.

Modern Diesel technology could profitably be explored.

4. Potential Federal Government Program

The Panel feels that there is sufficient reason to start a Federal program, particularly to investigate the areas outlined under Section 3.

For the Panel

Dr. David V. Ragone
Chairman

THE WHITE HOUSE

WASHINGTON

December 18, 1969

MEMORANDUM FOR

John Ehrlichman

Subject: Preliminary Report on Visit to General Motors

In accordance with the agreement following the Environmental Quality Council meeting, an expert panel set up by my office visited the General Motors Technical Center in Detroit on December 15th. They were given excellent treatment and so far as we can tell, they were shown all of the work going on there on low pollution automotive engines, particularly the unconventional ones.

They apparently found no surprises, since the work which General Motors has been doing in recent years is well known to the experts in the field.

Certainly the work of General Motors and other companies has brought out some important facts and some important limitations on certain kinds of approaches to the automobile problem other than the internal combustion engine. However, the companies are committed to the thesis that the internal combustion engine will be the final answer, although our experts believe that the array of attachments and special devices which will be required will be cumbersome, unreliable and expensive. An engine with much lower inherent pollution qualities still seems to be a desirable goal.

Our panel concludes that there are several lines of investigation not being pursued by the automotive industry which should be investigated elsewhere, and they believe that some government financing along the lines proposed by DOT and HEW would be most desirable and most productive.

I recommend that the President tentatively authorize a budget item of between \$10 and \$15 million for this purpose in fiscal 1971, and that he secure recommendations from the Bureau of the Budget on how this research program should be managed as between DOD and HEW.

The panel of experts which I have set up will make additional studies and will be glad to advise with DOT and/or HEW in sharpening up their plans and insuring that these funds are productively and usefully expended.

A handwritten signature in dark ink, appearing to read 'L. A. DuBridge', with a stylized, cursive script.

Lee A. DuBridge
Science Adviser

cc: John Whitaker

CROSS REFERENCE INDEX

Date: December 18, 1969

INDEX: WHITE HOUSE-Envir.

To: The President

From: DuBridge/

Summary: National Envir. Teach-in 4/70

FILED: WHITE HOUSE-President

Indexer: vg

Remarks:

December 19, 1969

MEMORANDUM FOR

John Ehrlichman

*White House
JF Ennis*

Subject: Recommendation to pursue non-conventional vehicle development

The attached paper briefly outlines the rationale for a Federally supported program leading to development of technological alternatives to the internal combustion engine.

While we cannot be certain that the proposed program will be successful, it seems to me well worth supporting. If it succeeds, the gains to society will be enormous. If we eventually need such a vehicle, the costs of not having one will be tremendous. I recommend that funds for this program be included in the budget, and the program be referred to in the State of the Union Address.

LD
Lee A. DuBridge
Science Adviser

Attachment

cc:
OST File & Chron
LAD File & Chron
JLB File & Chron
Dr. Gouse

JLBuckley:ew

RATIONALE FOR FEDERAL SUPPORT OF A NON-CONVENTIONAL VEHICLE DEVELOPMENT PROGRAM

THE PROBLEM:

To achieve the quality of air the people of this nation want, it will be necessary to have extremely low emissions from automobiles. There is a small but finite probability that the internal combustion engine will not be able to meet these low standards. Present efforts to develop alternative technologies are inadequate. Public interest demands that a viable alternative be available.

WILL THE AUTOMOTIVE INDUSTRY MEET THIS NEED? IF NOT, WHY NOT?:

The industry has an enormous investment in the internal combustion engine. They have worked vigorously on gas turbines and will market them in trucks and buses. Unless there is an unexpected breakthrough in high temperature materials technology, however, turbines will be too expensive for passenger cars. The industry has made a policy decision that other technologies are not feasible.

The auto industry is working hard on reducing pollution from the internal combustion engine and apparently believes that the public will find their best efforts acceptable. Even if a satisfactory internal combustion engine is developed, high expenditures for levels of maintenance, throughout the life of the car, and inspection to assure compliance will be necessary to assure satisfactory performance of this inherently polluting propulsion system. Contrary to the industry's claims, some attractive alternate technologies would not cause large dislocation in our economic system.

There is no incentive for the auto industry to pursue other technologies vigorously. There is no real competitor, and at this time they therefore control the level of air quality achievable.

WHAT COULD THE FEDERAL GOVERNMENT DO?:

Objective -

Because projected emission requirements for automotive vehicles may not be economically met with the technologies now pursued by the

industry, we must ensure that adequate alternate technologies are acquired by

- Federally supporting research and development.
- Additional work by the industry in response to Federal intervention.
- Undertaking of speculative research by the private sector outside of automotive industry.

Assumptions -

Informed judgments indicate that there is a reasonable chance that the internal combustion engine cannot be made clean enough to meet projected emission requirements.

There is a reasonable chance that some unconventional propulsion systems will be acceptable.

The Plan -

A flexible long-term plan could be announced; its major features would permit

- Staged contract development of attractive technologies not being pursued by NASA, DOD, or the automotive industry.
- Funding of large development through prototype programs if attractive proposals are forthcoming.
- Purchase, at a substantial premium, for test and evaluation, completed prototypes that meet projected emission and performance standards.
- Termination of any technological path as soon as it is clear that objectives cannot be met.
- Termination or shift of programs as soon as adequate alternate is developed.

IS THE PLAN WORKABLE? :

Firms outside of the industry can be expected to participate in the Federal program. At present these firms will not commit risk capital because of the difficulty of entering the vehicle market. If the Federal government shows itself to be clearly behind the development of low pollution vehicles, the possibility for these firms to recover their investment capital is greatly enhanced to break into the market, either by selling technology to the industry or independently marketing automotive vehicles. In any case these firms would make a profit on any contract on research and development with the Government.

SHOULD THE FEDERAL GOVERNMENT INVEST ITS "RISK CAPITAL" IN THIS VENTURE? :

If in 1980 it becomes clear that the ICE cannot be sufficiently controlled, the public health consequences could be disastrous. Work on unconventional power sources now will either give us an early warning that if the ICE is not controlled more drastic measures, such as the rationing of cars, must be instituted, or else give us a feasible alternative.

If technology is available, growing public opinion will make imposition of 1980 air quality standards politically feasible.

If the President does not take adequate steps to solve the automotive air pollution problem he will be severely criticized. Even if unconventional power sources are found to be unfeasible, the President will probably be praised for his efforts.

CROSS REFERENCE INDEX

Date: Deveember 23, 1969

INDEX: WHITE HOUSE-Envir.

To: Bill Lear/Lear Motor

From: DuBridge/OST

Summary:Auto pollution

FILED: WHITE HOUSE-President

Indexer:vg

Remarks: