AGENT ORANGE: THE AIR FORCE DOES IT AGAIN (Senate - March 09, 1990)

[Page: S2550]

Mr. DASCHLE. Mr. President, it has been almost 2 years since I pointed out for the record some of the recurring problems related to the Air Force Ranch Hand study on the health effects of veterans' exposure to agent orange. The Ranch Hand Study, or `Air Force Health Study,' is a longitudinal study of the mortality and morbidity rates for Air Force veterans who participated in the U.S. defoliation and crop destruction missions in Vietnam, Operation Ranch Hand.

Specifically, the Air Force has shown a clear tendency since 1984 to characterize the results of the Ranch Hand Study in a way that is intended to `reassure' veterans and, of course, quiet the calls for agent orange compensation, regardless of the study's actual findings. Unfortunately, the Air Force's release on February 23, 1990, of its 1987 Followup Examination Results fits very easily into the Air Force's consistent pattern of down-playing the importance--and sometimes denying the existence--of evidence relatcd to the harmful health effects of exposure to agent orange.

Let me explain how we got to this point before I outline the significance of the Air Force's treatment of this most recent report.

RANCH HAND: 1984-88

In January 1984, the scientists in charge of the Ranch Hand Study issued a draft baseline morbidity report that described some very serious health problems in the Ranch Hand veterans and stated that the Ranch Handers, by a ratio of five to one, were generally less well than the veterans in the control group. The opening sentence of the draft report's conclusion was clearly stated: `It is incorrect to interpret this baseline study as `negative.'

After the Ranch Hand Advisory Committee, which operates under the White House Agent Orange Working Group of the Domestic Policy Council, got its hands on the document, the final report was changed in some very important ways. Most notably, the table and exposition explaining that the Ranch Handers were generally less well than the controls was omitted, and the final conclusion was altered substantially. The statement that the baseline study was not negative was completely omitted, and the study was described as `reassuring.'

At the Air Force's press conference when the study was released, the Air Force tried to do exactly what the draft report had advised against--interpret the study as negative. Some of the major findings of the study were all but explained away--the increase in skin cancers was probably caused by overexposure to the Sun; and the birth defects in the Ranch Hand children, whose parents reported about twice as many abnormalities, seemed to be minor. The Air Force also suggested that the birth defects increase might have been caused by overreporting of defects by Ranch Hand parents. The birth defects would be studied further in a separate reproductive outcome report.

The Air Force scientist who designed the study and served as the chief statistician, apparently not realizing the constraints of Air Force politics, stated at the press conference that the study's findings were `of concern.' He was subsequently removed from the project.

The day after the press conference, the news media all carried the same Air Force message--that the Ranch Hand Study was negative and that veterans should be `reassured.' The actual contents of the study itself became virtually irrelevant.

itself became virtually irrelevant.

By late 1984, the Air Force scientists had investigated the skin cancer and birth defect findings and concluded that, contrary to their earlier reports: First, the skin cancers were not caused by overexposure to the Sun; and second, the increase in birth defects was not due to overreporting by parents, nor were the birth defects necessarily minor. No public statement was made to correct the previous information. In fact, in late 1985, Col. William Wolfe, who heads the Ranch Hand Study, reinforced the incorrect information when he: First, was quoted in the press as saying the study results were `encouraging;' and second, repeated the 1984 press conference claims that the birth defects appeared to be minor and, very possibly, the result of overreporting by Ranch Hand parents.

That public statement in 1985 by Colonel Wolfe is even more troubling when it is pointed out, by Colonel Wolfe himself in a letter to me dated August 25, 1987, that `[a] report of the analyses of these data [the birth defects] was submitted to the Advisory Committee in 1984 but they recommended that it not be published.' The Air Force has refused to release to me that draft reproductive outcome report, which found a doubling of birth defects in the Ranch Hand children, and has still not released the final report. I believe that veterans and the general public deserve timely, accurate information about anything that may affect their health or their children's health, and the Air Force delays with respect to this birth defects information constitutes a serious breach of the public trust. Unfortunately, the story doesn't end there.

In 1987, 2 years had gone by without an Air Force statement on the new findings. An updated morbidity report, `First Followup Examination Results,' was released. Certainly one would expect to read in the Air Force's press release, or in the press clippings, some clarification of the 1984 assessment of skin cancers and birth defects, but none was to be found. The 1987 report did admit for the first time that the exposure index used in the Ranch Hand Study is limited, but it failed to emphasize how severe and important the limitations are, and the only mention of the issue was a few words buried in the report. There certainly was no press release--no effort to educate the public on the misleading statements of the past.

The 1987 report's executive summary concluded, `In full context, the results of this study must be viewed as additional reassuring evidence that, at this time, the current state of health of the Ranch Hand participants is unrelated to herbicide exposure in Vietnam.' To understand just how irresponsible that statement is, we need to look beyond the fact that is was misleading in that the study actually found statistically significant group differences that showed the Ranch Hands to be less well than the control in some serious health areas. To understand just how irresponsible that statement is, we need to understand what the implications of the exposure index's limitations are.

As the Air Force scientists acknowledge, the effect of the exposure index's limitations, which have been described to me by the Air Force as severe, is misclassification. This means that the `control

group' mistakenly includes people who were actually exposed to agent orange/dioxin, and that the `exposed' group mistakenly includes people who were never actually exposed. This misclassification dilutes both groups and has the effect of making their differences appear smaller than they acutally are. In some cases, group differences may be hidden completely. In other words, if the exposure index were accurate, more and bigger group differences would almost inevitably appear.

If the exposure index is not an accurate measure--or even a good measure--of exposure, and if group differences were identified in spite of that fact, then it is irresponsible to say that the group differences are `unrelated to herbicide exposure.' Faced with the Air Force's apparent insistence on continuing to `reassure' veterans by glossing over these key facts, I decided to go straight to the source--the Air Force scientists.

In 1988, I met with Col. William Wolfe, the chief investigator of the Ranch Hand Study, Dr. Joel Michalek, a scientist who became a principal investigator after the 1984 report, and Dr. Richard Albanese, the previous principal investigator who had suggested that some of the findings were `of concern.' We talked about the problem inherent in the exposure index and, therefore, the conclusions, and the fact that a new exposure index based on actual Agent Orange/dioxin levels in the blood would be developed so the data could be reanalyzed. We talked about the fact that the birth defects, skin cancers, and possibly the systemic cancers, were serious problems. We talked about the fact that there had been no public acknowledgement by the Air Force of this information that was available four years earlier.

In that meeting in my office, the Air Force agreed to publish a paper, which had been written in 1985 by Wolfe, Albanese, and Michalek, to announce this `new' information. The paper was published as an official Air Force document, but the names of Colonel Wolfe and Dr. Michalek were removed, and the Air Force did virtually all it could to discredit the report. Also, every Air Force press release or quote I have seen since that time ignores what I see as the very real need to get that information to veterans and the general public.

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1990 RANCH HAND UPDATED

Incredibly, the Air Force's release on February 23 of its 1990 morbidity report, `1987 Followup Examination Results,' looks like an instant replay of the events of 2 years ago. The 1990 report is the latest episode in the Air Force miniseries that pits the truth against administration and Air Force policy. As I said earlier, the Air Force management's handling of this most recent report displays their inability to be even-handed in the reporting of this important health information.

In spite of the facts reported in the study itself, Air Force rhetoric promotes the illusion that the study found `no evidence of a link' between the Ranch Hands' health and exposure to agent orange/dioxin. In spite of the substantial list of health problems found in the Ranch Hand veterans, Air Force rhetoric promotes the illusion that the Ranch Hands have no justification for their concerns.

Allow me to outline the findings of the 1990 report and compare them to the statements about those findings that made their way into the public arena.

In the `1987 Followup Examination Results' released by the Air Force in February 1990, statistically significant group differences with a harmful impact on the Ranch Hand veterans were detected in several health areas, including: All cancers--skin and systemic--combined, both verified and suspected; skin cancers alone; hereditary and degenerative neurological diseases; coordination abnormalities; psychological and sleep disorders; certain dermatologic disorders; pulse irregularities; increase in thyroid stimulating hormone [TSH]; among black Ranch Hands, higher mean counts for `natural killer cells' as compared to blacks in the control group; and among Ranch Hands who are heavy smokers, more abnormal composite skin reactions as compared to heavy smokers in the control group. These are not my interpretations; this information appears in the Ranch Hand report itself.

The report states that these and other problems cannot necessarily be related to agent orange/dioxin exposure, as they do not always show a `dose-response' relationship. Of course, a dose-response relationship cannot be established without knowing who has the dose. That is the key known weakness of this study. For perhaps the first time, the report clearly states that the exposure index used in the data analysis `is not a good measure of actual dioxin exposure,' and I applaud the scientists for being

straightforward on that issue. However, given the inadequacy of the exposure index and what we know about the effects of misclassification--that it artificially minimizes or completely masks real group differences--the report's statement that the troublesome findings cannot be related to agent orange/dioxin exposure is extremely misleading.

To be fair, I should point out that the Air Force scientists are well aware of this problem. That is exactly why they are pursuing a more accurate exposure index based on blood samples. They will reanalyze all the Ranch Hand Study data using the new index, and that is exactly what they should do. That report, which has also been delayed, is now scheduled for completion next year.

The upshot of this situation is that the first and second followup morbidity reports are essentially moot. They were both outdated before they were begun. I am not saying that they should not have been done, though that is certainly a legitimate question, but they have both been handled improperly by the Air Force.

Now, why should I say that if I just finished saying that, in the report, the Air Force finally admitted the inadequacy of the exposure index? Because most people do not see the acutal report. They see the newspaper clippings describing the report on the basis of what the Air Force public relations staff tells the press. In the case of the most recent morbidity report, they have read that the Air Force report `finds no evidence of a link between the health of study participants and exposure to herbicides in Vietnam.' What they have read is patently false. There is evidence, though it is not yet definitive, of a link between health problems and exposure, and that evidence will probably be stronger when the new exposure index is used in the data analysis.

One might say that this was an innocent mistake on the part of the Air Force--that these issues are very complicated and difficult to discuss in a way that the public can understand, or that, since I am constantly calling for the government to give veterans the benefit of the doubt, I should give the Air

Force the benefit of the doubt. My answer to that is that I have given the Air Force the benefit of the doubt too many times already.

After meeting with me in 1988, the Air Force pledged to work with me to get the complete truth out to veterans who might be affected by the results of the Ranch Hand Study and to the general public. In spite of that pledge, and in spite of the actual findings of their research, the Air Force has consistently misrepresented the facts in their public statements, particularly in the press.

This is no innocent mistake; I have pointed out the `mistakes' repeatedly, and the Air Force, apparently belligerently, has continued to make them. It is hard to describe the frustration I feel at hearing the Air Force defend the integrity of its science and then make public pronouncements that undermine it. The only reasonable conclusion I can draw is that the Air Force is playing politics with an issue that affects the health and lives of American veterans and their families--as issue that could eventually impact all Americans.

In pursuing research on agent orange, the Air Force's job is not to present a certain posture or contribute to a particular Air Force or government policy with respect to government liability or compensation. It is not the Air Force's job to tell the scientists how to do their work or how to characterize their results. The Air Force's job is to pay for the research and to give capable, unbiased scientists the autonomy to present timely, accurate information to the public. I regret that Air Force management, with the help of the White House Agent Orange Working Group, has so far succeeded in doing what it should not do, and failed in doing what it should.

In conclusion, Mr. President, the Air Force's latest is more of the same. I anxiously await their upcoming data analysis that will be based on a new, more accurate exposure index, and I anxiously await their birth defects data that should have been released years ago. But, for now, I must express my profound disappointment that the Air Force has again chosen to sacrifice the truth for false reassurance.

I ask unanimous consent that the following supporting documents be printed at this point in the **Record**: First, a November 29, 1985, article from the San Antonio Express quoting Colonel Wolfe's comments about birth defects; second, an August 25, 1987, letter to me from Colonel Wolfe, Dr. Michalek, and Dr. Albanese regarding the 1984 moribidity results and birth defects data; third, a February 23, 1990, letter to me from Air Force Deputy Surgeon General James Sanders that accompanied the 1990 morbity update; fourth, the executive summary of the 1990 morbidity update; fifth, a UPI story quoting Air Force officials upon release of the 1990 morbidity update; and sixth, statements that Senator **John Kerry** and I made on April 14, 1988, pointing out some of the previous discrepancies between Ranch Hand rhetoric and Ranch Hand reality.

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There being no objection, the material was ordered to be printed in the **Record,** as follows:

Study Disputes Exposure, Agent Orange Death Rates

(BY JAMES COBURN)

Agent Orange exposure during the Vietnam War hasn't affected the death rate of men who were exposed the most, a new Brooks AFB study indicates.

Col. William H. Wolfe, a Brooks physician who has been a study leader since the Air Force began the investigation in October 1978, said in an interview Thursday that `results of what we have found so far are encouraging.'

Noting that there have been fewer deaths among the 1,237 Air Force men exposed to the defoliant than among several camparison groups of non-exposed men. Wolfe expressed the hope that the latest report will `alleviate a lot of fear' among those exposed to Agent Organge.

Wolfe, chief of the Epidenology Division of the School of Aerospace Medicine at Brooks, said that researchers have `not found anything we can link directly to the herbicide since physical examinations began in January 1982 for the exposed group and a similar group of Air Force men who weren't exposed.

Some 12 million gallons of Agent Orange which contained trace amounts of doxin were sprayed from Air Force C-123 planes between January 1962 and April 1970 to destroy jungle canopies that concealed communist forces in Southeast Asia.

Limits were placed on the use of doxin because it caused problems in laboratory animals. Wolfe said, and defoliant used after April 1970 did not contain doxin.

Agent Orange also was used to destroy Viet Cong rice fields, but that use was ordered stopped after miscarriages were reported among Vietnamese women near the sprayed area.

More birth defects have been reported by parents in the exposed group than by parents in the unexposed

comparison group, a previous study report revealed. It also was reported that the exposed group had more skin cancer.

Wolfe said Thursday, however, that the latest study had determined there was `no difference' between the two groups when only major birth defects were considered.

Another round of physical examinations for the two groups began in May and are scheduled for completion in March.

Wolfe said that the 1955-88 cost of the study, because private firms are under contract to perform the examinations, compile data and make surveys, is about $22.5 million.

Some 25-to-30 Epidemology Division personnel at Brooks are monitoring the study, scheduled to run until 2002.

Wolfe said that researchers currently are examining all birth defects that have occurred among the 7,000 children in both groups. The incidence of skin cancer is being examined to see if there was a difference between the groups in exposure to the sun, he added.

It is possible, he explained, that the exposed group is reporting minor birth defects that aren't being considered defects by parents in the unexposed group.

Wolfe said that some of the Air Force men being studied `were 1,000 times more exposed (to Agent Orange) than ground forces in a direct spray pattern on a one-time basis.'

Bullets ruptured tanks holding the chemical, he said, and maintenance crews were `kneeling in the stuff' to repair the damage.

He added that the chemical worked well to clean off grease and men `cleaned their hands with it.' The substance is `absorbed very rapidly through the skin,' he noted.

At the height of its use, Wolfe said, 35 or 36 aircraft were spraying the defoliant on a daily basis.

Air crews also were exposed to the spray, he said since side doors normally were left open to reduce the heat and cockpit windows were left open to lessen the chance of injury from window fragments.

The spraying program was dubbed Operation Ranch Hand, so the study was named Operation Ranch Hand II.

The latest study report comes after a $180 million settlement by chemical companies that made the herbicide was approved early this year. More than 180,000 veterans filed claims for the money, with some 4,600 Texans filing the largest number.

Wolfe said that the companies may have settled to avoid the costs of lengthy litigation.

Also, President Reagan signed a bill in October that provides temporary compensation for two years to veterans who have developed a skin disease conclusively linked to Agent Orange.

Wolfe said that the disease, a severe facial condition called chloracne, was not present in the Air Force men exposed. He said that the skin eruptions, which aren't fatal, are predominately found among people

who were exposed during industrial accidents involving the herbicide.

Mortality figures released with the latest report show 55 deaths (4.4 percent) among the Ranch Hand personnel and 285 deaths (4.6 percent) among the 6,171 men in the comparison group.

According to the mortality rate of the general U.S. Anglo male population, Wolfe added, there should have been about 90 deaths (7 percent) among Anglo men exposed to Agent Orange instead of the 51 that occurred.

A study of Army and Marine personnel who were exposed to Agent Orange is just beginning.

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DEPARTMENT OF THE AIR FORCE,
USAF SCHOOL OF

Aerospace Medicine (**AFSC**),
Brooks Air Force Base, TX, August 25, 1987

Hon. Thomas Daschle,
U.S. Senate, Washington, DC.

[Page: S2553]

Dear Senator Daschle: In response to your recent letter concerning that Air Force epidemiologic study of the health effects of Agent Orange, Dr. Joel Michalek, Dr. Richard Albanese and I have prepared the following comments in response to your specific questions. Dr. Albanese was a study principal investigator from 1978 to 1984. Dr. Joel Michalek was a major study contributor from 1978 to 1984 and has been a principal investigator since, while I have served as principal investigator since 1978.

a. Reference your paragraph 1. Verification of all reported birth defects in the children fathered by the participants in our study was conducted using medical records and birth certificates in 1984. Sixty-one percent of the defects reported by the Ranch Handers and their wives and 63% of those reported by the comparisons were verified as being codable defects. These percentages were not statistically different, and there is no evidence of differential reporting of these data. The Ranch Hand children had increased numbers of birth defects, but the increase was in those children born to mothers who smoked during pregnancy. There was no evidence of any association with herbicide exposure but such an association cannot be said to have been ruled out. A report of the analyses of these data was submitted to the Advisory Committee in 1984 but they recommended that it not be published. The verification of all reported birth defects has resolved one source of possible bias in the study of reproductive endpoints (overreporting). However, potential bias from underreporting remains. The negative reports on the remaining 5,614 children are currently being verified by medical record review. This is a very time-consuming process due to difficulties in locating and obtaining records. Many of these `children' are now adults and their consent must be obtained before records can be requested. I anticipate completion of this effort by November 1988. The verified data will then be analyzed and the results will be released after review by the Advisory Committee appointed by the Agent Orange Working Group.

b. Reference your paragraph 2. A series of flight tests was performed in C-123 aircraft in 1981 by Major Stephen L. Meek as background for a master's degree thesis at the University of Washington School of Public Health. The results of his work were considered in the development of the exposure assessments

used in our data analyses. Unfortunately, technical difficulties were encountered in the conduct of the study, and the data were not as helpful in clarifying exposure as we all had hoped. Further preliminary work was conducted by the Air Force Occupational and Environmental Health Laboratory to assess the feasibility of using glycerin as a simulant. However, full-scale simulations were not conducted due to operational difficulties. Additionally, significant difficulties were encountered in developing scenarios that accurately reflect the actual in-flight conditions prevailing during the 9 years the combat missions were flown. The recent development of a technique to determine dioxin levels in serum will provide a direct measure of individual exposure without reliance on the assumptions and uncertainties implicit in simulation studies.

c. Reference your paragraph 3. In May 1984, Dr. Bernadine Bulkley (formerly of the Office of Science and Technology Policy) asked that we verify several of the baseline report results. However, these verifications were already underway by our staff prior to her request. A meeting occurred with the staff of the Office of Science and Technology Policy in October 1986 to provide them with an update of the Air Force study. No technical direction was received at that time. They have acted as advocates of the program to obtain legislative support. The Air Force Surgeon General's office and the Air Force Systems Command (AFSC) headquarters have had no control over the science of the study. AFSC and intervening staff offices have managed funding and personnel resources, relieving the program scientists of these burdensome but important administrative tasks.

d. Reference your paragraph 4. The Advisory Committee for our study was appointed by the Agent Orange Working Group. The baseline report sent to the Advisory Committee was essentially the same as the published report. The committee recommended several editorial changes in writing style and emphasis but felt no additional data analyses were indicated. They felt the Executive Summary should be expanded, emphasis should be placed on an explanation of elements used in determining causality, and other minor `wordsmithing' changes should be made. The comments of the committee were included in the final report. The initial morbidity report contained `followup' analyses of data which, unfortunately, are subject to misinterpretation. This difficulty has been mitigated in the second morbidity report by strict adherence to a preset statistical protocol. Specifically, while the increment in Ranch Hand cancer appears limited to the skin, a systemic increase cannot be unambiguously ruled out. Similarly, the increased reported birth defect rate may not be confined to minor lesions.

e. Reference your paragraph 5. All interactions with the Advisory Committee have been purely technical in nature, dealing exclusively with epidemiologic and statistical issues. The concerns of veterans were foremost in the initial decisions in 1978 and 1979 to proceed with this study. Although a veterans' group representative was not on the committee, veterans' concerns are addressed. We are committed to caring for the Air Force community, including retired and separated Air Force veterans. Their welfare is our first priority.

f. Reference your paragraph 6. The Australian, Centers for Disease Control (CDC), and Air Force studies are relatively consistent in their conclusions. However, while they do not assert a causal relationship between Agent Orange and adverse health, a clear exoneration of the defoliant and its dioxin contaminant is not supported. All of these studies, including the Air Force-sponsored research, suffer from some limitations. The studies have been limited in their ability to accurately measure individual levels of exposure to the chemicals, and a more precise estimation of exposure is needed before definitive conclusions can be made. The CDC birth defect and Air Force studies are the only ones specifically addressing Agent Orange with dioxin exposure. The others are limited to the effects of Vietnam service, and the findings cannot be interpreted as the result of Agent Orange. All of these studies suffer from misclassification of exposure. The opportunity to make more accurate exposure assessments in our study is available with the serum dioxin assay. Design problems in the CDC and the Australian birth defect

studies were apparent in their inability to control for the pre-Vietnam reproductive experience of the study groups. Similarly, the lack of medical verification of the birth certificate data is a significant weakness in these studies. Due to the small number of deaths occurring to date in these relatively young populations, all of the mortality studies suffer from low statistical power to detect increases in important disease categories. Despite their limitations, these six studies have been conducted as carefully and as scientifically as possible, and they have made major contributions toward the clarification of the Agent Orange/dioxin controversy.

g. Reference your paragraph 7. The weight of scientific evidence from epidemiologic studies in humans does not confirm a link between Agent Orange and adverse health nor does it rule out such a link. Continued surveillance is definitely indicated. Latency periods for malignant disease are just being reached, and studies have identified several findings which need to be reevaluated in subsequent examinations to determine their clinical relevance. At this time, Agent Orange cannot be implicated or exonerated.

h. Reference your paragraph 8. Additional work in establishing exposure through the use of the serum dioxin assay is needed. This assay will reduce uncertainties in estimating individual exposures and will significantly decrease any misclassification in the analysis of the data from the Air Force study. We are currently working with the CDC to implement this procedure for the analysis of the 1987 physical examination data. This procedure will improve our exposure assessments and should support more solid statistical and epidemiologic conclusions if it is applied *all* participants, including the comparisons. In the context of the Air Force study, the dioxin assay presents a unique opportunity to clarify the dioxin issue.

i. Reference paragraph 9. The principal investigators in the Epidemiology Division have full and final responsibility for the science of the study. The Advisory Committee has scientific oversight of the study and works closely with the Air Force team. The Air Force management structure limits its impact on the study to purely administrative matters of funding, manpower and equipment management. In October 1984, the Commander of the USAF School of Aerospace Medicine resolved an impasse among the principal investigators concerning the format of the 1984 Mortality Report. It was later very clear that his solution was scientifically correct. All reports are released by the Air Force Surgeon General in the form approved by the Advisory Committee. The report of the 1985 physical examinations is currently being prepared for review by the Advisory Committee, and public release is expected in the fall of this year. Similarly, the 1987 update of the ongoing mortality study is expected in January or February 1988.

j. Reference your paragraph 10. The principal investigators have attended scientific meetings in this and other countries to freely exchange information on the Agent Orange/dioxin issue. Telephone and mail contacts are equally unrestricted. For a time after the release of the first morbidity report in February 1984, all public inquiries were coordinated through the Public Affairs Office; all questions were answered by designated individuals.

I hope this material is of assistance to you and your staff.

Sincerely,
WILLIAM H. WOLFE,

Colonel, USAF, MC,
Chief, Epidemiology Division.

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U.S. AIR FORCE,
Bolling AFB, DC, February 23, 1990.

Hon. Tom Daschle,
Steering Committee, Vietnam Veterans in Congress, U.S. Senate, Washington, DC.

[Page: S2554]

Dear Senator Daschle: I am pleased to provide you a copy of the summary of the third morbidity review of `The Air Force Health Study, An Epidemiologic Investigation of Health Effects in Air Force Personnel Following Exposure to Herbicides.' This study, the 1987 Follow-up Examination Results (May 1987 to January 1990), compares the health of 995 Air Force members who conducted aerial herbicide spraying missions in Southeast Asia (Operation Ranch Hand) with a comparison group of 1,299 matched by age, race and occupation.

Like the earlier 1982 and 1987 studies, this follow-up again finds no evidence of a link between the health of study participants and exposure to herbicides in Vietnam. While relatively few health differences were found between the two groups, continued medical surveillance is warranted.

This report does not apply the results of the serum dioxin assays in the study participants. A complete report comparing the serum assay results to the medical findings of this study is expected next year.

Additional work is currently underway to evaluate the possible relationship between the serum dioxin levels of fathers and the presence of birth defects in their children. This report should be completed by the end of the year.

I will keep you apprised of our progress as our efforts continue. It is only through the work of our scientists that the many complex questons concerning Agent Orange can be addressed equitably.

Sincerely,
JAMES G. SANDERS,

Major General, USAF, MC,
Deputy Surgeon General.

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Executive Summary--1987 Followup Morbidity Report

The Air Force Health Study is an epidemiologic investigation to determine whether adverse health effects exist and can be attributed to occupational exposure to Herbicide Orange. The study consists of mortality and morbidity components, based on a matched cohort design in a nonconcurrent prospective setting with followup studies. The Baseline study was conducted in 1982, and the first two followup morbidity studies were performed in 1985 and 1987. The purpose of this report is to present the results of the 1987 followup.

In the Baseline morbidity study, each living Ranch Hand was matched to the first living and compliant member of a randomly selected Comparison set based on age, race, and military occupation, producing an

approximate 1:1 contrast. The Comparisons had served in numerous flying organizations that transported cargo to, from, and within Vietnam but were not involved in the aerial spraying of Herbicide Orange. All previous participants and refusals, newly located study members, and replacements (marched on reported health status) were invited. Eighty-four percent (995/1,188) of the eligible Ranch Hands and 77 percent (939/1,224) of the eligible Original Comparisons participated in the 1987 followup examination and questionnaire process. Participation among those who were fully compliant at Baseline was very high. Ninety-two percent of the Ranch Hands and 93 percent of the Comparisons who were fully compliant at Baseline also participated in the 1987 followup. In total, 2,294 study subjects, 995 Ranch Hands and 1,299 Comparisons, participated in the 1987 followup.

The followup study was conducted under contract to the Air Force by Science Applications International Corporation, in conjunction with the Scripps Clinic and Research Foundation and the National Opinion Research Center. Most of the data were collected through face-to-face interviews and physical examinations conducted at the Scripps Clinic in LaJolla, California. Other data sources included medical and military records and the 1982 and 1985 data bases. As a contract requirement, all data collection personnel were unaware of each participant's exposure status, and all phases of the study were monitored by stringent quality control. The statistical analyses were based on analysis of variance and covariance, chi-square tests, Fisher's exact tests, general linear models, logistic regression, proportional odds models, t-tests, and log-linear models, all of which were specified in an analytical plan written prior to data analysis.

The questionnaire and physical examination data were analyzed by major organ system. The primary focus was on the assessment of differences between the Ranch Hand and Comparison groups based on data from the 1987 followup. Additionally, dose-response relationships within the Ranch Hand group were examined, and longitudinal assessments of differences in the changes of the two groups between the examinations were conducted for selected variables.

In the analyses in this report, Ranch Hand exposure to dioxin was quantified by use of a calculated index based on the quantity of herbicides containing dioxin sprayed each month and the number of Ranch Hands assigned to each occupational category in those months. The statistical relationships between the evaluated conditions and the calculated index were assessed for significance and patterns suggestive of dose-response. However, early results of serum dioxin studies in Ranch Hand personnel conducted at the Centers for Disease Control indicate the calculated index is not a good measure of actual dioxin exposure. Therefore, the results of analyses using the calculated exposure index should be interpreted with caution. A full report relating the serum assay results to the medical data contained in this report is expected in 1991.

The fixed size of the Ranch Hand cohort limits the ability of the study to detect group differences, particularly for the rare occurrences of soft tissue sarcoma and non-Hodgkin's lymphoma. The study has virtually no statistical power to detect low to moderate group differences for these malignancies. The study has good power to detect relative risks of 2.0 or more with respect to disease occurring at prevalences of at least 5 percent in the Comparison group, such as basal cell carcinoma.

Self-perception of health, appearance of illness or distress, relative age, and percent body fat were similar in the two groups. There has been a decline in the percentage of individuals reporting their health as fair or poor in both groups since the Baseline examination. A significantly greater percentage of Ranch Hands than Comparisons, however, had abnormal erythrocyte sedimentation rates. Only three participants (two Ranch Hands and one Comparison) had rates in excess of 100 mm/hr. The Comparison had lung cancer and died in early 1989. In neither of the Ranch Hands was a diagnosis established during the course of the 1987 followup. A significant difference was also detected at the 1985 followup examination, and it will be

important to monitor the sedimentation rates in subsequent examinations.

For all verified neoplasms combined, Ranch Hands had a significantly greater frequency than the Comparisons. Ranch Hands also had a marginally significant greater frequency than the Comparisons when suspected neoplasms were included in the analysis. Because cancers fall into systemic or skin categories, group contrasts were performed within each category. Analyses restricted to systemic neoplasms revealed no significant differences between the Ranch Hands and Comparison groups. Focusing only on skin neoplasms, Ranch Hands had significantly or margnally significant higher frequencies for the following categories: all verified skin neoplasms, all verified and suspected skin neoplasms, all verified malignant skin neoplasms, and sun exposurerelated malignant skin neoplasms. Significant group differences for the sun exposurerelated malignant skin neoplasms are not surprising because approximately 90 percent of the participants with those neoplasms had verified basal cell carcinomas, and Ranch Hands had significant or marginally significant higher frequencies of verified basal cell carcinoma than the Comparisons.

The neurological assessment did not disclose significant findings detrimental to the health of the Ranch Hands, although several differences were noted. Of the six reported and verified neurological diseases and disorders,
the only significant finding was that Ranch Hands had a higher incidence of hereditary and degenerative neurological diseases. Unadjusted analyses for the 30 physical eaxamination variables showed marginally more balance/Romberg sign and coordination abnormalities in the Ranch Hand group than in the Comparison group. In the adjusted analyses, a significant difference in the relative risk for the cranial nerve index (without range of motion) occurred with insecticide exposure. Stratified results showed that among those who had never been exposed to insecticides, significantly more Ranch Hands than Comparisons were abnormal on this index. Of those who had been exposed to insecticides, the percentage of abnormalities on this index was marginally higher in the Comparisons. The adjusted analysis for coordination detected two significant group-by-covariate interactions (group-by-occupation and group-by-insecticide exposure). Stratified analyses found a significant group difference for enlisted groundcrew after excluding the group-by-insecticide exposure interaction, and a significant adjusted group difference overall after excluding both group-by-covariate interactions. Ranch Hands had significantly more coordination abnormalities than Comparisons for each analysis. The trend of increasing abnormality in the enlisted groundcrew for coordination will be more fully evaluated in the analyses of serum 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) levels.

The psychological assessment was based on the analysis of 52 variables, which included reported illnesses verified by medical record review, reported sleep disorders, and scores from two clinical psychological tests. The results showed that significant or marginally significant differences between the Ranch Hands and the Comparisons were found for some verified psychological disorders, reported sleep disorders, and the self-administered Symptom Checklist-90-Revised and Millon Clinical Multiaxial Inventory psychological examinations. For these differences, the Ranch Hands generally manifested higher percentages of abnormalities or higher mean scores than the Comparisons. However, this is not surprising since individuals who perceive themselves as having been harmed might be more likely to report the symptoms found to be significant in this analysis. These results will be reexamined for positive correlations between the complaints and dioxin levels when the serum assay data become available. Additionally, significant group-by-covariate interactions were frequently observed in the adjusted analysis, which often made direct contrast of the two groups with adjustment for significant covariates difficult. The covariates of age, alcohol history, and presence of post-traumatic stress disorder showed strong effects on many of the psychological measurements. There was generally a lack of consistency in the findings of similar viables in the psychological tests.

The gastrointestinal assessment found no significant group difference for historical liver disease, historical and current ulcer, and current hepatomegaly. The Ranch Hand alkaline phosphatase mean was significantly higher than the Comparison mean, but group differences for the other laboratory examination variables (aspartate aminotransferase, alanine aminotransferase, gamma-glutamyl transpeptidase, total bilirubin, direct bilirubin, lactic dehydrogenase, cholesterol, high density lipoprotein [HDL], cholesterol-HDL ratio, triglycerides, creatine kinase, and fasting glucose) were not significant.

In the dermatologic assessment, no cases of chloracne were diagnosed. For participants with no history of acne before the start of the first Southeast Asia (SEA) tour, a greater percentage of Ranch Hands than Comparisons reported the occurrence of acne after the start of the first SEA tour. However, the anatomic pattern of these lesions was not suggestive of chloracne. No other significant group differences were detected in the remainder of the analyses. The exposure index and longitudinal analyses were also essentially negative; the few positive findings were inconsistent with dose-response effects and the available knowledge of current serum TCDD levels in the Ranch Hand group.

The cardiovascular evaluation showed that the health of the two groups was similar for reported and verified heart disease and central cardiac function. With regard to peripheral vascular function, the Ranch Hands manifested a marginally higher mean diastolic blood pressure than the Comparisons, but the percentage of individuals with a diastolic blood pressure above 90 mm Hg was not significantly different in the two groups. The Ranch Hands had a marginally higher percentage of individuals with carotid bruits, and there were also significant, or marginally significant, differences with respect to femoral pulses, dorsalis pedis pulses, and three aggregates pulse indices (leg, peripheral, and all pulses), as assessed by manual palpation. Significantly more pulse abnormalities in the Ranch Hands were also found at Baseline, when pulses were measured by manual palpation, but not in the 1985 followup, when both manual and Doppler measurements were utilized.

In the hematologic evaluation, red blood cell count, hemoglobin, hematocrit, mean corpuscular volume, mean corpuscular hemoglobin, and mean corpuscular hemoglobin concentration were not significantly different in the two groups. The mean white blood cell and platelet counts were significantly greater in the Ranch Hands than in the Comparisons, but the magnitude of the difference was small in each case. The difference in platelet counts was signficant despite that in the longitudinal analysis of the changes from Baseline to the 1987 followup examination, platelet counts in the Ranch Hands decreased to a significantly greater degree than in the Comparisons. The percentage of individuals with abnormally high platelet counts was also significantly greater in the Ranch Hand group, but the relative risk was less than 2. In addition, no platelet count was elevated into a pathologic range. Exposure index analysis did not generally support dose-response relationships.

The groups did not differ significantly in reported history of kidney disease/stones or for urinary protein, urinary occult blood, urinary white blood cell count, blood urea nitrogen, or urine specific gravity based on unadjusted analyses. In the adjusted analyses, there was no pattern of results that suggested a detriment to either group.

For the endocrinologic assessment, the Ranch Hand thyroid stimulating hormone (TSH) mean was marginally significantly higher than the Comparison TSH mean, but results of the TSH discrete analysis did not show statistically significant group differences. Mean levels for triiodothyronine percent (T3 %) uptake, testosterone, and 2-hour postprandial glucose were similar between groups. The percentage of abnormal levels for each of these variables, and the composite diabetes indicator, was higher for the Ranch Hand group than for the Comparison group, but none of these differences was statistically significant. Self-reported data on current thyroid function and past history of thyroid disease were similar between groups. Also, the percentages of participants with thyroid or testicular abnormalities diagnosed

at the physical examination were not statistically different between groups. Overall, the endocrinologic health status of the Ranch Hand group does not appear substantially different from the Comparison group.

For the immunologic assessment of the 1987 followup, Ranch Hands and Comparisons did not differ on the cell surface markers, functional stimulation tests, total lymphocyte counts, or quantitative immunoglobulins. Statistical analyses of the natural killer cell assay variables adjusting for covariate information were conducted within the Black and nonblack strata. These analyses showed that Black Ranch Hands had higher adjusted mean counts and average percent releases than the Black Comparisons for the natural killer assay measures. The meaning of this observation is unknown. Without adjusting for covariate information, significantly more Ranch Hands had a possible abnormal reading on the composite skin reaction test than the Comparisons. Adjusting for covariate information resulted in performing group contrasts on the composite skin reaction variable within strata of the lifetime cigarette smoking history variable. For the heavier smoking participants, significantly more Ranch Hands had a possibly abnormal reading on the composite skin reaction test than the Comparisons. Within the other strata, there were no significant differences.

The pulmonary health of the two groups was reasonably similar based on the analyses without adjustment for covariates, although the Ranch Hands had significantly more thorax and lung abnormalities and marginally higher prevalence rates for hyperresonance. When significant interactions involving group were ignored, no significant differences were found in the adjusted analyses. Exploration of the interactions did not identify a consistent pattern. The adverse effects of smoking were evident in all analyses.

The process of inferring causality is complex and must be based on careful consideration of many factors. Any interpretations of the data must consider the biological plausibility, clinical significance, specificity and consistency of the findings, and a host of statistical factors, such as strength of the association, lack of independence of the measurements, and multiple testing. Based on direct and indirect evidence, it is concluded that this study is free of overt bias and the measurement systems used to obtain the data were accurate and valid.

In summary, there is not sufficient evidence at this time to implicate a causal relationship between herbicide exposure and adverse health in the Ranch Hand group. No cases of chloracne or porphyria cutanea tarda, the two most commonly accepted effects of dioxin exposure, were detected in this study. There was a single case of soft tissue sarcoma in each group and one case of non-Hodgkin's lymphoma in a Ranch Hand. The differences noted indicate that reanalysis using dioxin body burden levels and continued medical surveillance are warranted.

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[Page: S2555]

Third Air Force Study on Agent Orange: `No Link'

(BY ROBERT MACKAY)

Washington, UPI: The Air Force said Friday its third follow-up study has found again `no evidence of a link' between the health of Vietnam veterans and their exposure to the defoliant Agent Orange.

However, it said a separate collaborative study with the Centers for Disease Control in Atlanta to measure blood dioxin levels in Air Force study groups found `substantially elevated levels of dioxin' in the veterans who sprayed the chemical as compared to low levels for ground troops.

A report comparing those collaborative-study results to the medical findings in the Air Force's latest separate study is expected to be released in 1991, the Air Force said.

The Air Force study--based on questionnaires and physical examinations--compared the health of 995 Air Force members who conducted herbicide-spraying missions over Southeast Asia, `Operation Ranch Hand,' with a comparison group of 1,229 men matched by age, race and occupation.

`Like the 1982 and 1987 studies, this follow-up again finds no evidence of a link between the health of study participants and exposure to herbicides in Vietnam,' the Air Force said in a statement.

`Relatively few health differences were found between the `Ranch Hands' and the `Comparisons,' the Air Force said.

No cases of the skin condition chloracne or the liver disease, porhyria cutanea tarda--the most commonly accepted effects of dioxin exposure--were detected in this study, the Air Force said.

`Since Vietnam, the Ranch Hands have had more basal cell skin cancer, a common and generally easily treatable form of cancer, often associated with sun exposure,' it said. `No increases were evident in the occurrence of systemic cancer.'

Agent Orange, sprayed during the Vietnam War on jungles to deny hideouts to the enemy, is blamed by veterans for causing a rash of diseases.

About 250,000 veterans and their dependents who claimed injuries from the dioxin-contaminated herbicide were awarded $215 million in an out-of-court settlement by seven companies in 1984 following a class-action suit.

However, the government has contended there is no evidence of a link between Agent Orange--the chief herbicide used in Vietnam--and diseases.

In the latest study, the Air Force said there was a single case of soft-tissue cancer in each of the two groups and one case of non-Hodgkins lymphoma cancer in a Ranch Hand member.

`Although few health differences were noted, continued medical surveillance is warranted,' the Air Force said.

The Air Force study is part of a planned 20-year effort focusing both on the death rate and the disease rate of individuals who sprayed the defoliant over Southeast Asia from 1962-71 as part of Operation Ranch Hand.

Future physical examinations and medical record reviews will be conducted in 1992, 1997 and 2002 to further assess health effects, the Air Force said.

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[Page: S2556]

From the Congressional Record, Apr. 14, 1988

[FROM THE CONGRESSIONAL RECORD, APR. 14, 1988]

Agent Orange and the Theory of Eternal Recurrence

Mr. **Daschle**. Mr. President, there is a saying that `history repeats itself.' Nietzsche espoused the theory of `eternal recurrence,' which, very simply stated, was that historical events are constantly repeated. Whether one wants to call it history repeating itself, eternal recurrence, or `deja vu,' this concept is undeniably applicable to the Agent Orange story.

An Agent Orange history scholar would undoubtedly find a remarkable resemblance between past and present Agent Orange-related stories and events. The Government has historically claimed that there is not enough scientific evidence suggestive of a link between exposure to Agent Orange and diseases suffered by Vietnam veterans to justify compensation for those veterans. The Government continues to repeat that claim in spite of the numerous scientific studies that suggest such a link or, at the very least, cast reasonable doubt on the situation.

The Air Force Ranch Hand study is but one example of the eternal recurrence theory manifested through the Agent Orange story. In 1984, the Air Force released its baseline morbidity report concerning the health effects of exposure to Agent Orange and other toxic herbicides on Air Force personnel in Vietnam. The report was interpreted in various ways, but the Air Force and much of the press characterized the report as `reassuring to the Ranch Handers and to their families.' While I and many other veterans expressed concern about many of the report's findings and dismay at the Air Force's apparent down-playing of those findings, the Ranch Hand study became widely viewed as a `negative' study. I and the other critics were called cynics looking for trouble where it did not exist.

Four years later, the Air Force has released a technical report reassessing the findings and conclusions of the 1984 study. The report cites group differences `in the direction of expected dioxin effects' and explains the severe limitations of the study's exposure index--limitations which, the Air Force admits, require that all the study's data be reviewed in the context of a new, improved exposure index.

It concludes that `dioxin is not exonerated as a causative agent because of the directionality of the observed group differences and the preliminary nature of the exposure index used in the * * * first morbidity report.' The report also clarifies earlier data on cancers and birth defects, stating that cancers are not necessarily limited to the skin, that skin cancers were not caused by sun exposure, that birth defects are not limited to the skin, and that self-reported birth defects have been verified.

It took 4 years to clarify the interpretation of the 1984 morbidity report for the public. It took only 3 days to muddy the waters again.

Three days after the release of the Air Force technical report, a California clinic contracted to perform physical examinations of Ranch Hand personnel released a statement to the press quoting Air Force medical officials calling unidentified `updated results' of the Ranch Hand study `reassuring.' Apparently the `updated results' are from the 6-month-old Ranch Hand first followup morbidity report. The

statement does not mention the more recent technical report or the fact that the 1987 report is subject to the same criticisms facing the original morbidity study.

Mr. President, lest this all get too confusing, I ask that the following items be printed in the **Record** at the conclusion of my statement: First, a 1984 Washington Post editorial written upon the release of the original `reassuring' report, second, my response to the Washington Post editorial, third, a Newsday article outlining the troubling findings of the recently released Air Force technical report, and fourth, an Associated Press story, again calling the Ranch Hand findings `reassuring,' written 1 day later.

If my colleagues will take the time to read these materials, I think they will quickly see why I am moved by the eternal recurrence theme. The events and arguments of 1984 have come back to haunt us, and we still have no definitive information about the relationship between Agent Orange exposure and negative health effects. We do know that Ranch Handers are suffering negative health effects in statistically significant numbers.

The studies will continue, as they should, so that we may someday have a clearer picture of the effects of exposure to Agent Orange and other toxic herbicides. In the meantime, disabled veterans wait for help and for the scientific evidence that we in Congress will consider conclusive enough to justify compensation. As policymakers, we must ask ourselves how long our Nation's veterans should be expected to wait.

Mr. President, I know that Senator Kerry also has something to say on this subject, and I want to take this time to thank him for his work on issues affecting America's veterans. He was a decorated combat veteran in Vietnam and has worked tirelessly on the myriad of issues facing the men and women who defended this country. I am very pleased to be working with him to address the Agent Orange issue.

There being no objection, the material was ordered to be printed in the **Record,** as follows:

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From the Washington Post, Mar. 1, 1984

[FROM THE WASHINGTON POST, MAR. 1, 1984]

New Findings on Agent Orange

Many Vietnam veterans have, for too many years, been suffering from uncertainty about the health effects of exposure to the herbicide Agent Orange. Now, at last, there is scientific evidence that should offer them some measure of comfort. The Air Force has released findings from a study of heavily exposed veterans that found no evidence of either higher death rates or of diseases most strongly suspected of being linked to the types of dioxin found as contaminants in Agent Orange.

The government has been very slow in providing Vietnam veterans with the evidence to which they are entitled about possible long-term effects of their service. As a result it is right that the Veterans Administration--under congressional direction--has already taken the precaution of providing full health care for all veterans exposed to Agent Orange who suffer any disability not attributable to another cause. And, of course, the government should continue its extensive research program.

It is always possible that further study of the Air Force study participants, or the larger studies of the entire Vietnam veteran population being done by the Centers for Disease Control, will provide evidence of linkages between Agent Orange exposure and certain illnesses. But it is certainly encouraging that comparisons between the so-called Ranch Hands--the pilots and crews continuously involved in the spraying operations--and carefully chosen comparison groups found that, with a few possible exceptions, the Ranch Hands do not seem to have been affected by their exposure.

The Ranch Hands did experience higher rates of non-melanomic skin cancer--the commonest form of cancer among the white population--and certain liver and circulatory disorders. They also reported more minor birth defects, neonatal deaths and physical handicaps among their offspring, although these results have not yet been verified. The Air Force plans further study to determine whether these differences can be explained by exposure to sunlight, cigarette and alcohol consumption and other known causal factors.

Most striking is that the study did not find a single case of soft-tissue sarcoma (a form of cancer), chloracne (a severe skin disorder known to be caused by exposure to heavy dose of dioxin) or porphyria cutanea tarda (a rare liver disorder) among the Ranch Hands. A bill passed by the House last month would entitle Vietnam veterans who suffer from these illnesses to the same monetary compensation they would receive if they had suffered direct injury in battle.

Congress is understandably eager to compensate veterans for service-caused injuries. When slow-developing diseases can be reliably linked to service, compensation is certainly justified. But it would be a mistake to undermine the basis for compensation systems--or for warranted extensions of those systems--by indemnifying illness without adequate scientific basis.

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Ranch Hand Reality

(BY CONGRESSMAN TOM DASCHLE)

The Air Force claim that its Ranch Hand Agent Orange study findings can be viewed by Vietnam veterans and their families as reassuring is not supported by the study itself.

Let's again review what the study of personnel who handled Agency Orange in Vietnam actually found. In 5 of 13 health categories investigated, the Air Force Ranch Hand group's health compared unfavorably to that of the comparison group. These findings included higher rates of skin cancer, genitourinary cancers, throat cancer, as well as liver and circulatory disorders. Furthermore, increased rates of minor birth defects were verified in Ranch Hand children while significant increases in neonatal deaths (death within 28 days of birth) and physical handicaps were reported. This is hardly cause for jubilation.

Though the birth defect reports need further clarification, there is evidence for the first time that Vietnam veterans are fathering children who die at an inexplicably young age and are born with birth defects. Previously, these reports have been dismissed as anecdotal. This is no longer possible as the findings occurred in a group with a clear exposure history.

The Post's recent editorial makes much of the fact the Air Force Study found no cases of the three

extremely rare conditions whose victims would be compensated under legislation enacted by the House earlier this year. You fail, however, to note these conditions are so rare in the general population that the discovery of even a single case among Ranch Handers would have been highly unusual. Soft tissue sarcoma, for example, appears at a rate of less than two persons per 100,000. Had the Air Force found just one sarcoma case among the 1,200 exposed Ranch Hands, that would have suggested a sarcoma rate nearly fifty times higher than is normal in the general public. It is little wonder the National Academy of Sciences said in 1979 that the Air Force study would, `lack the statistical power to uncover an effect of moderate strength, such as the uncommon disorders mentioned in the complaints of veterans.'

You also question the wisdom of `undermining' the VA compensation system by indemnifying illness without adequate scientific basis. Nobody, of course, wants to undermine the VA compensation system or award monies without scientific basis. In the case of the three rare disorders covered by our legislation there is scientific basis for linking them with dioxin exposure. This evidence is not rebutted by the Ranch Hand study because that study lacked the statistical power to say anything one way or the other on the issue.

The premise of the legislation, a premise fully as valid today as it was the day before Ranch Hand was released, is that three rare diseases highly correlated to dioxin exposure should entitle the few veterans exposed to Agent Orange, and suffering from these maladies, to the presumption their disorders are service related. To offer them this presumption, and to offer it only until the thorough data promised by the CDC study now underway is available, is surely not too much to ask.

In fact, when entire cities are being bought out and evacuated because of dioxin contamination far lower than that found in Agent Orange, and when forty other conditions--some of which are less scientifically tied to military service than those covered by our bill--are already presumed service related under the current compensation system, I could forgive a Vietnam veteran who might think it too little.

(Congressman Daschle is Chairman of the Vietnam Era Veterans in Congress and is author of legislation to compensate veterans exposed to Agent Orange.)

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From Newsday, Mar. 24, 1988

[FROM NEWSDAY, MAR. 24, 1988]

Study, Agent Orange May Be Culprit

(BY CAROLYN COLWELL)

A new U.S. Air Force study edges closer to saying for the first time that Vietnam veterans' exposure to Agent Orange may have caused serious adverse health effects, particularly in the form of cancer and birth defects.

The report, released Monday by Sens. Tom Daschle (D-S.D.) and John Kerry (D-Mass.), was prepared

by a physician at the U.S. Air Force School of Aerospace Medicine. It takes a new look at data from a 1984 study of personnel in Operation Ranch Hand, in which Agent Orange was sprayed from Air Force planes in Vietnam. In 1984, the data were used to reassure veterans exposed to Agent Orange that they apparently had nothing to worry about.

Agent Orange was a herbicide used to defoliate the jungle. For more than 20 years, veterans have been saying, that their exposure to the herbicide severely damaged their health. But they have been stymied in every effort--in courts in Congress and by the Veterans Administration--to win any compensation. Officials have said they have no scientific proof linking Agent Orange exposure and human illness.

Now, the Air Force has announced that the Ranch Hand sprayers, when compared with noncombat Air Force veterans of Vietnam, statistically have a significantly higher incidence of five of 11 conditions that animal and human studies have linked with exposure to the toxic chemical dioxin, and ingredient in Agent Orange. The five conditions are neoplasia (tumors), birth defects, psychological changes, liver damage and cardiovascular changes.

Dr. Michael Gochfeld, medical adviser to the New Jersey State Agent Orange Commission, said yesterday that the report's conclusions appear spectacularly different from the ones in 1984.

`What they're saying [now] is that if you thought dioxin caused health effects, they're saying that the evidence here says it probably does. Everything I heard in 1984 was that there were no health effects due to dioxin. This [newest study] could not be interpreted that way.'

The latest report said dioxin cannot be ruled out as the cause of such conditions, but neither can it be blamed conclusively.

`Dioxin cannot be confidently identified as the causative agent of these findings,' the report said. At the same time, it added, `dioxin is not exonerated as a causative agent . . .' The report said the data was not conclusive mainly because of problems documenting veterans' exposure to the dioxin in Agent Orange.

The Air Force hopes that these doubts will be eliminated by the analysis of new tests measuring dioxin levels in veterans' blood, said Air Force spokesman Col. William Wolfe, chief of epidemiology at the service's medical school at Brooks Air Force Base, Texas.

Those results will enable researchers to see if there is a correlation between the veterans whose blood shows a high level of dioxin and those who have developed cancers and other conditions believed to be related to dioxin exposure, Wolfe said. `That will answer the question for us,' Wolfe said. `That will be the crowning touch. Once we're not locked into making assumptions, we'll be in an absolutely super spot.'

The Air Force is seeking at least $2.2 million to do the blood testing. Wolfe said.

Whether the results reported Monday were old statistics with new meaning is being debated by veterans advocates and the Air Force.

The Air Force is saying the report essentially repeats the same statistical conclusions announced in its 1984 Ranch Hand study. The difference is that, for the first time, the Air Force is correlating these statistics with studies of the effects dioxin exposure has on animals and humans, and saying that the conditions that might be expected had developed, Wolfe said.

But the Air Force also concedes for the first time that the higher than normal incidence of skin cancer of

Ranch Handers may not be caused by the sun, as it concluded in 1984, Wolfe said. The other new thrust is that the Air Force now believes that the reported higher number of birth defects in Ranch Hand families is more serious than originally assumed, Wolfe said. More research is under way on the birth defect question, he added.

Veterans advocates are greeting the study as the first confirmation by the military of what they've been saying all along--that Agent Orange injured veterans' health.

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Vietnam Veterans Involved in Spraying Suffered No Ill Effects, Study Says

(BY SHARON L. JONES)

La Jolla, Calif.--More than 1,000 Vietnam veterans involved in the spraying of the herbicide Agent Orange show no unusual health problems to date, according to updated results of a government study.

In a statement Thursday, U.S. Air Force medical officials called `reassuring' the findings that the chemical defoliant hasn't caused disease in Vietnam veterans, but warned that the results weren't conclusive.

`This is the definitive study on Agent Orange in Vietnam veterans, and so far it shows that disease is not related to apparent exposure, that there is no increased incidence of major long-term health effects,' Dr. William Wolfe, senior investigator in the government's 20-year Agent Orange probe, was quoted as saying in the statement.

`These results are reassuring,' said Wolfe, chief of epidemiology at the U.S. Air Force School of Aerospace Medicine at Brooks Air Force Base in Texas.

The findings reflect the latest tests of 2,309 veterans in the government's investigation into Agent Orange and its impact on soldiers who handled the dioxin-containing herbicide. The study will conclude in 2002.

Some Vietnam veterans are seeking compensation for ailments they say are tied to exposure to the toxic chemical.

`No matter how good this study is, it will never lay to rest the issue for people who argue they were hurt,' said Dr. Arnold Gass, head of the Agent Orange registry operation at the La Jolla Veterans Administration Medical Center.

He said the study is scientifically sound but handicapped by its focus on Operation Ranch Hand, Air Force servicemen involved in handling and dropping the herbicide from aircraft.

`It doesn't answer the question about what happened to the man in the field,' he said. `The Ranch Handers flew in, flew out. The men in the field were there for days. They didn't take showers.'

Ranch Handers are used because they are assumed by the government to have had the greatest amount of exposure to the chemical.

The study, begun in 1982 and conducted for the past four years at Scripps Clinic and Research Foundation in La Jolla, examined 1,016 men involved in Operation Ranch Hand and 1,293 Air Force veterans not involved in the operation.

Scripps Clinic physicians assessed each participant for general health, malignancy, and the neurological, psychological, gastrointestinal, dermatological, cardiovascular, hematological, renal, endocrine, immunological, pulmonary and nervous systems.

`These examinations found no evidence of a relationship between Agent Orange exposure and adverse health,' the statement said.

`A number of minor medical differences were seen but they appear to be unrelated to exposure to dioxin. They will be monitored and re-evaluated during the next scheduled examinations in 1992.'

Last year, a Veterans Administration study found increased deaths due to lung cancer and certain lymph cancers among Vietnam veteran Marines, providing what veterans' groups called the first clear scientific data implicating Agent Orange.

The Scripps Clinic statement cautioned that the latest results are not conclusive because the study used estimated levels of herbicide exposure based roughly on amount of contact, not by actual bloodstream dioxin levels.

Scientists have recently discovered a way to detect dioxin levels in blood even years after exposure. Analysis of blood samples from 2,010 veterans is expected to be completed within two years.

Thursday's findings were released three days after an Air Force report admitted that an often-cited 1984 government study had been flawed because it didn't make clear that it couldn't exonerate the chemical from veteran's health problems.

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New Concerns on Agent Orange

Mr. **Kerry.** Mr. President, a new report from the Air Force confirms what many Vietnam veterans have known for years--that there are serious health consequences associated with exposure to Agent Orange. The Air Force report was released last month to myself and Senator Tom Daschle. I would like to take this opportunity to commend Senator Daschle, himself an Air Force veteran, for his commitment and persistence in helping to obtain the release of this vital information for Vietnam veterans.

The new Air Force report shows that previous results from the Ranch Hand study on Agent Orange, released in 1984, are seriously flawed. The new report shows that cancers and birth defects among Vietnam veterans who were exposed to Agent Orange and their families are worse than previously reported.

For several years now, veterans have been told by the U.S. Government that there is nothing to worry

about, that Agent Orange was not harmful to their health. The Ranch Hand study was often cited as being `reassuring' to Vietnam veterans. Now we are learning that the Ranch Hand study methodology was flawed, and that the results are not reassuring after all.

Many Vietnam veterans have suspected this truth all along. They have known what the Government has refused to tell them--that they are at greater risk of disease due to their service in Vietnam and their exposure to Agent Orange and other toxic chemicals.

Senator Daschle and I have introduced legislation which would begin the process of compensation of Vietnam veterans who are victims of Agent Orange. This is a long-overdue step which should be taken now, before it is too late for many veterans. While definitive scientific answers may never be available, there is still time to help veterans who are suffering. In a war which was questioned by many, Vietnam veterans gave their country the benefit of the doubt. Let us do the same for them.

I ask that articles from the New York Times and the Boston Herald about the Ranch Hand study be printed in the Record.

There being no objection, the material was ordered to be printed in the Record, as follows:

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From the Boston Herald, Mar. 22, 1988

[FROM THE BOSTON HERALD, MAR. 22, 1988]

Agent Orange Studies `May Be Wrong'

(BY TOM SQUITIERI)

Washington: The U.S. Air Force, admitting its earlier Agent Orange studies minimized health risks, yesterday called for new research on the effects the defoliant had on Vietnam veterans.

A new report, based on four years of study, said previous tests on Agent Orange exposure should be done over `to get a truer picture of how exposure to dioxin affected the health of Vietnam veterans and their families.'

Air Force scientists writing in the report called for major blood analysis of Vietnam veterans this year as the first step--using new technology to determine Agent Orange effects.

The news of the Air Force report, which was finished in February and released after pressure from U.S. Sens. John Kerry (D-Mass.) and Thomas Daschle (D-S.D.), brought a swift reaction from Vietnam veterans, none of whom have been compensated for any Agent Orange injuries.

`How many times are we going to go around and around the circle until they find a crack? We already have got enough evidence to justify compensating those people injured by Agent Orange,' said Barry Kasinitz, a spokesman for the Vietnam Veterans of America. `The Air Force first said no problem, then, `Whoops, we were wrong.'

`We have to stop looking at this as a scientific issue and look at it as a political issue,' Kasinitz said. `If you would have been wounded by being shot, you would have been compensated. If you were wounded by Agent Orange, it's time to start compensating.'

The new information is certain to add public support to legislation introduced last October by Kerry and Daschle that would provide federal compensation to veterans exposed to Agent Orange.

The new report said that in two key areas--cancers and birth defects--errors were found in the original 1984 survey--known as the Ranch Hand Study. Only veterans who dumped the Agent Orange from the aircraft, the so-called `ranch hands,' were examined for the 1979-to-1984 study, not veterans on the ground who were exposed to the toxin.

Until yesterday, the government has said the 1984 Ranch Hand study should be `reassuring' to veterans concerned about the negative health effects of exposure to Agent Orange.

But, according to the new report, cancers among the `Ranch Hand' veterans who were studied are not necessarily limited to the skin, as was concluded four years ago.

The new report also said the skin cancers found in the Ranch Hand veterans were not caused by exposure to the sun, as also suggested in the earlier study.

And birth defects among the Ranch Hand veterans' offspring also were not limited to the skin, as the 1984 report suggested.

`While dioxin cannot be conclusively (linked) to those clinical conditions, the study can no longer be seen as ruling out effects from dioxin exposure on human health,' according to the new report.

Sources on Capitol Hill and elsewhere said the new Air Force research suggested there are links between exposure to Agent Orange and subsequent cancer and birth defects, but Air Force officials were not available for comment.

Kasinitz said the Air Force admission should finally push the federal government into compensating victims of Agent Orange. He said he did not expect it to have any impact on the $180 million out-of-court settlement veterans won from chemical companies in 1984.

`That was a sideshow. When the veterans realized the government was not going anywhere (in compensation) with nowhere else to go, the veterans thought they might get something,' Kasinitz said. `But neither from that settlement fund nor form the V.A. has one dime been paid to veterans.'

From the New York Times, Mar. 23, 1988

[FROM THE NEW YORK TIMES, MAR. 23, 1988]

New Doubts Raised on Agent Orange

Washington, March 22: A new Air Force report has raised questions about some conclusions of an often-cited 1984 Government study that was supposed to be `reassuring' for Vietnam veterans exposed to the herbicide Agent Orange.

The revised study said that while Agent Orange could not be `confidently identified' as the reason for a series of health problems among veterans who handled it, it could not be `exonerated' either. Agent Orange was used by American forces in the Vietnam War in an effort to defoliate areas in which the enemy operated.

The report, released Monday by two Democratic Senators, John Kerry of Massachusetts and Thomas A. Daschle of South Dakota, was hailed by advocates for veterans as a breakthrough.

`For the first time, the Air Force is saying in a major way that they cannot rule out dioxin as the cause of ill-health effects,' said Barry Kasinitz, spokesman for Vietnam Veterans of America.

VETERANS' COMPENSATION SOUGHT

The Senators, both veterans of the Vietnam War, are pushing legislation to compensate veterans who suffer from certain conditions that may be linked to exposure to Agent Orange.

Dioxin, a contaminant of Agent Orange, causes cancer and birth defects in some animal species. Exposures to dioxin can cause skin ailments in humans, but most scientists say that links to cancer or birth defects in humans have not been proved.

The Air Force says it has never categorically ruled out a link between Agent Orange and health problems.

But critics say the 1984 study of Air Force personnel directly involved in spraying Agent Orange in Vietnam gave that impression when it said, `In the full context, the baseline study results should be viewed as reassuring to the Ranch Handers and their families at this time,' Operation Ranch Hand was the Air Force's code name for the aerial spraying of Agent Orange.

`What they're doing is trying to reverse themselves without really saying so,' said Eric Hamburg, an aide to Senator Kerry.

Laura Petrou, a Daschle aide, said, `We have gotten a clear sense that the Air Force wants to work with us to get the truth out.'

SENATORS' CONTENTION REJECTED

The Air Force rejected the Senators' contention that the 1984 study was seriously flawed. `I think that's an overstatement,' said Dr. William Wolfe, chief of epidemiology at the Air Force School of Aerospace Medicine at Brooks Air Force Base in Texas.'

`There are areas of that report that we have less confidence in the conclusions,' said Dr. Wolfe, the senior Air Force investigator in the Agent Orange investigation. But he added that the bulk of the 1984 findings were upheld by the review.

The major problem with the original study, Dr. Wolfe said, was assumptions about exposure that failed to

consider work habits. Government scientists now realize that some members of the armed forces were sloppier than others in handling Agent Orange, and therefore had a greater exposure that was not taken into account, he said.

Mr. Kerry and Mr. Daschle said the 1984 study incorrectly concluded that all birth defects were limited to the skin. They also said the revised study indicated that the 1984 study erred by saying the only type of cancer found among the Agent Orange veterans was skin cancer.

Dr. Wolfe defended the 1984 conclusion saying. `There is an increase in the skin cancer in the exposed group, but not in more serious forms of cancers.'

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