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**AUTOIMMUNE DYSFUNCTION IN VIETNAM VETERANS: UPDATE**

The oral statement of  
Michael N. Sovick  
Vice-Chairman

THE OKLAHOMA AGENT ORANGE FOUNDATION  
P.O. Box 849  
Lexington, OK 73051

Member of the National Vietnam Veterans Coalition

Member of the Agent Orange Coordinating Council

before the

INSTITUTE OF MEDICINE  
Washington, D.C.

Committee to Review the Health Effects in  
Vietnam Veterans of Exposure to Herbicides

June 19, 1997

[Printed on recycled, unbleached paper]

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- 3a. Letter from John J. Weaver, Lt. Col., USAF, Congressional Inquiry Division, Office of Legislative Liaison, Department of the Air Force, Washington, D.C. 20330. To: Honorable Don Bonker, House of Representatives, Wash., D.C. 20515, dated 3 Feb. 1987, one page.

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4. DEFOLIANTS RED, RED/WHITE, AND THE USE OF GREEN AFTER 1965.

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I want to thank the Institute of Medicine, the Study Director and the Committee for the opportunity to speak. I am one of many Vietnam veterans who have been an advocate for other Vietnam veterans while volunteering for the Oklahoma Agent Orange Foundation. This Foundation is a not-for-profit educational group that has been active and affiliated with the National Vietnam Veterans Coalition since 1983. For the past fifteen years, we have been providing accurate and timely information to Vietnam veterans and their families about the toxic herbicides and insecticides that were used in Vietnam. Today, I will focus on autoimmune disease that affects connective tissue and the apparent increase in such diseases in Vietnam veterans and other groups with phenoxy herbicide and dioxin exposure.

Although I'm sure most everyone knows that autoimmune diseases do not have a separate ICD code, I wanted to emphasize that the lack of such a code means that accurate rates of autoimmune diseases in any population are difficult to determine precisely. For example, in the mortality portion of the CDC Vietnam Experience Study, one case of systemic lupus erythematosus ("lupus" or SLE) was discovered only after a review of the medical records. (35) Obviously, one case is not significant, even though there were no cases found in the non-Vietnam veteran control group; however, this case does illustrate the fact that death certificate data is often incomplete. Sometimes individuals suffering with lupus will not be diagnosed as such because of the inherent difficulties of diagnosing a disease whose symptoms may wax and wane. An additional complicating factor is the fact that lupus mimics many other diseases. In particular, males suffering with lupus may remain undiagnosed because lupus is uncommon in males. The rate of incidence for males is one-tenth the incidence of lupus in women, which is 10 in 10,000.

Most of the studies and surveys showing a relationship between connective tissue diseases and herbicide/dioxin exposure involve small cohorts. This evidence is compelling because of similar findings; for example, positive anti-nuclear antibody (ANA) profiles for such diverse groups, as U.S. and Vietnamese veterans and chemical company workers, with either environmental or occupational dioxin exposure. A brief review of the findings I provided in 1992 is as follows:

Over seventeen years ago, Science News reported "a high incidence of autoimmune antibodies...smooth muscle and nuclear components" in Vietnam veterans exposed to dioxin when compared with the general population. (1) This study found 65% of the Vietnam veteran cohort ANA positive. We first learned about this research by watching a "Barney Miller" episode on TV in December 1980. (2) With the knowledge gained through communication with one of the researchers (4) of the "Barney Miller" study, our Foundation funded a small survey. Blood drawn from 4 Vietnam veterans exposed to dioxin was sent to a different university from the one that did the "Miller" study. Three of the four veterans had positive ANA profiles and/or antibodies to their DNA. (30) Furthermore, surprisingly, along with the lab results, a possible diagnosis, mixed connective tissue disease, was included by Dr. Gordon C. Sharp. Since then, we have learned that mixed connective tissue disease is probably a clinical subset of systemic lupus erythematosus, or "SLE".

In 1986, White et al. (17) suggested that "...properly conducted epidemiological studies might reveal a prevalence of autoimmune dysfunctions in high risk groups exposed to dioxins." Interestingly, two epidemiologic studies of those with potential dioxin exposure, T.M. Frazier, 1982 (6) and Breslin et al., 1988 (21) show excesses for diseases of the musculoskeletal system and connective tissue; respectively, among agricultural workers and Vietnam veterans.

In November 1986, we began a national campaign to provide information about autoimmune diseases to Vietnam veterans and the public at large. (18-20). Since then, many Vietnam veterans have provided us with their military and medical history and a diagnosis of SLE. The best example of these diagnoses, is a survey sent to us in 1990 which suggested that Vietnam veterans have about twice the expected background rate of SLE. (28) In 1988, Jennings et al. confirmed previous studies by finding a statistically significant excess of ANA positive individuals in a group of chemical plant workers exposed to dioxin compared to others without known exposure. (22) In fact, there were no positive ANA profiles in the control group! In 1991, McConnachie and Zahalsky reported that "autoimmunity was evidenced by elevation of TAI phenotype frequencies and a 21% incidence of anti-smooth muscle [and anti-nuclear] antibody" in those exposed to pentachlorophenol, a chlorinated compound known to be contaminated with various dioxins. (31)

Now, I will update the Committee on the information on autoimmune diseases recently discovered in studies published prior to 1992 and those studies which have become available since September 1992.

Recently discovered information provides more evidence of excess cases lupus. The 1990 CDC Selected Cancer Study found a statistically significant excess of lupus in male Vietnam veterans with non-Hodgkin's lymphoma (NHL) when compared with the control group. (36) In addition, a 1989 paper from the Armed Forces Institute of Pathology reported 3 lupus cases in a random, "blind," morphologic study of tissue from Vietnam veterans compared to one case in the non-Vietnam group. (37)

Since 1992, the most interesting paper is by Phan et al. (1993), who reported that some Vietnamese veterans had a significant elevation of anti-nuclear antibodies (ANA). Those veterans were exposed to Agent Orange/Dioxin in sprayed areas of southern Vietnam during the war. (38) This paper was presented in Hanoi at the 2nd International Symposium on Herbicides in War: The long-term effects on man and nature, November 1993. Phan et al. also reported significantly higher numbers of natural killer cells ("NK cells") in the exposed group of Vietnamese veterans. Similarly, Jennings et al., 1988 (22) reported significantly increased NK cells, in addition to anti-nuclear antibodies, in workers occupationally exposed to dioxin.

Furthermore, since my 1992 presentation, two additional studies of groups exposed to other chlorinated compounds have reported significant excesses of positive ANA profiles. McConnachie and Zahalsky, in 1992, reported on "Immune alterations in humans exposed to the termiticide technical chlordane (39); and Thrasher et al., in 1993, published similar "Immunologic abnormalities in humans exposed to chlorpyrifos [dursban]," a termiticide that replaced chlordane. (40) According to Dr. Janette D. Sherman, dursban (another Dow Chemical Company product) is a 2,4,5-T analog. (41)

Also, during Dr. Michael Harbut's presentation before the Committee on September 9, 1992, he described his clinical experience with Vietnam veterans by discussing 3 representative cases. Two cases had elevated ANA profiles. Of these two cases one had a rheumatological disease that was diagnosed by a rheumatologist after referral by Dr. Harbut; however, the other case remained an undiagnosed illness. (42)

As I mentioned in the beginning, my focus is autoimmune connective tissue diseases. However, a recent report from Vietnam suggests an increase of multiple sclerosis in Vietnamese. (43) Thus, further research is needed to determine which, if any, of the many other autoimmune diseases are in fact elevated after phenoxy herbicide/dioxin exposure.

Finally, I have two other brief items of interest for the Committee. First, in a series of letters to former U.S. Congressman Don Bonker, the U.S. Air Force described a Ranch Hand control group member who worked in a Dow Chemical plant manufacturing 2,4-D. The Air Force also documents herbicide exposure to 28 controls which seem to exceed most exposures in the Ranch Hand study group.

Second, a Vietnam veteran made an important discovery in formerly classified documents released by the National Archives. These documents from the Combat Development Experimentation Center/JGS in Vietnam appear to describe the shipments of Agent Red, Agent Red and White, and an Agent Green within Vietnam in 1968. This is about the time that the Service Herbs Tapes begin documenting unknown agent sprays. The Committee should determine the chemical composition, the dioxin content, if any, and the possible human health consequences of exposure to these new agents/herbicides/defoliant.

Copies of my presentation, the references used, and the documents I have mentioned are contained in these folders intended for each Committee member.

Thank you for your attention to our concerns.



## COMBAT DEVELOPMENT AND [EXPERIMENTATION] TEST CENTER

Operation Ranch Hand: The Air Force and Herbicides in Southeast Asia 1961-1971, by William A. Buckingham, Jr., Office of Air Force History, USAF, USG Printing Office, Wash., DC, 1982, 253 pages.

Later that same month [April, 1961]... Among the military actions recommended was one to "...assist the G.V.N. [Government of (South) Vietnam] to establish a Combat Development and Test Center in south Vietnam to develop, with the help of modern technology, new techniques for use against Viet Cong forces." [p. 10]

Meanwhile, the proposal to conduct a major defoliation operation was being more fully developed. As early as September 23, a joint State-Defense message had stated that emergency actions were needed to support the Diem government and suggested that defoliants for an operational program be included in a list of items to be delivered without delay. The Combat Development and Test Center developed a massive operational program at about the same time on the basis of favorable results from test on manioc and on jungle foliage. [p. 14]

In a message dated December 3, Ambassador Nolting in Saigon continued to recommend that the Ranch Hand aircraft carry civilian markings and their crews wear civilian clothes. His recommendation anticipated political problems with the International Control Commission (ICC) established under the Geneva Accords of 1954. The ICC had the authority to inspect shipments of military equipment entering South Vietnam. A shipment of 15,000 pounds of cacodylic acid (blue\*) and 20,000 gallons of pink\* and green\* herbicides for use in crop destruction had by this time arrived unannounced in Saigon by military aircraft, and had bypassed ICC inspection. A large sea shipment could not be hidden from the commission's scrutiny. Ambassador Nolting was concerned that when the shipment of chemicals for use in defoliation arrived by commercial ship consigned to the MAAG, he would be unable to fit it under an existing ICC credit or justification of title. He therefore recommended that these chemicals be manifested as civilian cargo consigned to the United States Operations Mission (USOM) in South Vietnam, exempting them from inspection. "Civilian" aircraft and crews would, he felt, be necessary to maintain consistency with "civilian" chemical. He noted that both MAAG and USOM favored this course of action. [p. 26-7]

The acquisition of defoliants occurred on an expedited basis. As rapidly as truckload lots accumulated, shipments left the factories for the docks at Oakland, California, where port workers loaded 111,000 gallons of purple and 49,000 gallons of pink on the SS Sooner State which sailed for Saigon on December 15, 1961 and arrived on January 8, 1962. The remaining chemicals, 17,000 gallons of purple and 31,000 gallons of pink, were loaded on the USNS S.O. Bland which had a sailing date later in December. The drums carried no military markings and were consigned only to "Country 77," a shipping designation for Vietnam. [p. 29-30]