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Agent Orange Brief

Prepared by the Environmental Medicine Office
VA Central Office, Washington, DC

October 1988

The Agent Orange Briefs are a series of fact sheets designed to answer questions regarding Agent Orange and related matters. The Environmental Medicine Office at VA headquarters in Washington, D.C. prepared the fact sheets and is responsible for their content. That office plans to update the Briefs on a regular basis. Copies of all Briefs are maintained by the Agent Orange Coordinator at all VA medical centers. Comments about existing Briefs and ideas for future issues should be sent to the Environmental Medicine Office (10B/A0), Veterans Administration Central Office, 810 Vermont Avenue, N.W., Washington, D.C. 20420. The following Briefs are currently available:

1. Agent Orange - General Information
2. Agent Orange Registry
3. Agent Orange Litigation
4. Agent Orange - Research Problem
5. Agent Orange - Priority Treatment Program
6. Agent Orange and Birth Defects
7. Agent Orange and Chloracne
8. Agent Orange and VA Disability Compensation
9. Agent Orange and Soft Tissue Sarcoma
10. Agent Orange and Related Research - VA Efforts
11. Agent Orange and Related Research - Non-VA Efforts
12. Agent Orange and Non-Hodgkin's Lymphoma
13. VA Publications on Agent Orange and Related Matters



Agent Orange Brief

Prepared by the Environmental Medicine Office
VA Central Office, Washington, DC

October 1988

No. 1

AGENT ORANGE - GENERAL INFORMATION

What is Agent Orange?

Agent Orange was a herbicide, or defoliant, which was used in Vietnam to kill unwanted plant life and to remove leaves from trees which otherwise provided cover for the enemy. Agent Orange was a mixture of chemicals containing equal amounts of the two active ingredients, 2,4-D and 2,4,5-T. The name, "Agent Orange," came from the orange stripe on the 55-gallon drums in which it was stored. Other herbicides, including Agent White and Agent Blue, were also used in Vietnam to a much lesser extent.

Why are Vietnam veterans concerned about Agent Orange?

In the 1970's some veterans became concerned that exposure to Agent Orange might cause delayed health effects. One of the chemicals (2,4,5-T) in Agent Orange contained minute traces of 2,3,7,8-tetrachlorodibenzo-p-dioxin (also known as TCDD or dioxin), which has caused a variety of illnesses in animal studies. A more recent study of agricultural workers exposed to 2,4-D suggested that that chemical may be related to a particular cancer.

When and where was Agent Orange used in Vietnam?

Fifteen different herbicides were shipped to and used in Vietnam between January 1962 and September 1971. Over 80 percent of the herbicides sprayed in Vietnam was Agent Orange, which was used between January 1965 and April 1970. Herbicides other than Agent Orange were used in Vietnam prior to 1965, but to a very limited extent. The total area sprayed with herbicides between 1962 and 1965 was small, less than 7 percent of the total acreage sprayed during the Vietnam conflict. Rapid yearly increases in the annual number of acres sprayed occurred from 1962 to 1967. The number of acres sprayed reached a maximum in 1967, leveled off slightly in 1968 and 1969, and declined rapidly in 1970 prior to the termination of spraying in 1971. During this time more than 20 million gallons of herbicides were sprayed over 6 million acres, some of which were sprayed more than once. More than 3.5 million acres of South Vietnam -- approximately 8.5 percent of the country -- were sprayed one or more times. Spraying occurred in all 4 military zones of Vietnam.

Heavily sprayed areas were inland forests near the demarcation zone; inland forests at the junction of the borders of Cambodia, Laos, and South Vietnam; inland forests north and northwest of Saigon; mangrove forests on the southernmost peninsula of Vietnam; and mangrove forests along major shipping channels southeast of Saigon. Crop destruction missions were concentrated in northern and eastern central areas of South Vietnam.

What should concerned veterans do?

In 1978, the Veterans Administration set up a special examination program for Vietnam veterans who were worried about the long-term health effects of exposure to Agent Orange. Vietnam veterans who are interested in participating in this program should contact the nearest VA medical center for an examination. An appointment usually can be arranged within two to three weeks.

What can a veteran expect from this examination?

Veterans who participate in the examination program are asked a series of questions about their possible exposure to herbicides in Vietnam. A medical history is taken, a physical examination is performed, and a series of basic laboratory tests, such as a chest x-ray, urinalysis, and blood tests, are done. No special Agent Orange tests are offered since, there is no test to show if a veteran's medical problem was caused by Agent Orange or other herbicides used in Vietnam. There are tests that show the level of dioxin in human fat and blood, but such tests are not done by the VA because they do not help veterans in any way. In scientific studies, people with "high" levels of dioxin are in the same general health as those with "low" dioxin levels. Almost everyone has some dioxin in his body. If the examining physician thinks it is medically indicated, consultations with other physicians are set up.

How does a veteran benefit from taking the VA Agent Orange Registry examination?

The veteran is told of the results of the examination and gets a written report. Each veteran is given the opportunity to ask for an explanation and advice. Where medically necessary, a follow-up examination or additional laboratory tests are scheduled. The examination and tests sometime reveal previously undetected medical problems. These discoveries permit veterans to get prompt treatment for their illnesses. Some veterans think they are in good health, but are worried that exposure to Agent Orange and other substances may have caused some hidden illness. The knowledge that a complete medical examination does not show any medical problems can be very reassuring or helpful to these veterans. All examination and test results are kept in the veteran's permanent medical record. This information is also entered into the computerized VA Agent Orange Registry. So far about 230,000 Vietnam veterans have participated in this program. For more information about the VA Agent Orange Registry, see Agent Orange Brief, Number 2.

Can a veteran get treatment for Agent Orange-related illnesses?

In addition to the Agent Orange Registry examination program, the VA also provides special priority treatment to Vietnam veterans for conditions that may be, but are not necessarily, related to Agent Orange exposure. For information about the priority treatment program, see **Agent Orange Brief, Number 5.**

Can veterans get disability compensation for Agent Orange illnesses?

The VA also pays disability compensation to many Vietnam veterans with injuries or illnesses incurred in or aggravated by their military service. Veterans do not have to prove that Agent Orange caused their medical problems to be eligible for compensation. Rather, the VA must determine that the disability is "service-connected." A Veterans Benefits Counselor, at any VA medical center or regional office, can explain the compensation program in greater detail and can assist veterans who need help in applying. For more information about the VA disability compensation program, see **Agent Orange Brief, Number 8.**

What else is the VA doing?

In addition to the efforts described above (that is, Agent Orange Registry examination program, priority treatment, and disability compensation), the VA is doing research to learn more about the possible adverse health effects of Agent Orange exposure. The VA has completed two studies about possible connections between Vietnam service and specific kind of cancers called soft tissue sarcomas, and a large scale study of mortality among Vietnam veterans. For information about soft tissue sarcoma, see **Agent Orange Brief, Number 9.** For information about VA research efforts, see **Agent Orange Brief, Number 10.** In 1981, the VA published a two-volume report reviewing scientific literature on herbicides in the United States and throughout the world. This publication was updated with an additional two volumes in 1984, 1985, 1986, 1987, and 1988. Lay language summaries of the scientific reviews have also been published. The VA has also published a series of monographs regarding Agent Orange-related matters. For additional information on these publication, see **Agent Orange Brief, Number 13.** Since 1979, the VA has been part of an interagency group monitoring and coordinating Agent Orange- and dioxin-related research within the Federal government. The VA has two advisory committees to assist the Administrator, who leads the VA, in developing appropriate policy.

What are other government agencies doing?

Many other Federal agencies are also doing scientific studies on this subject. The CDC (Centers for Disease Control), Air Force, National Institute for Occupational Safety and Health, National Cancer Institute, and Environmental Protection Agency have all been involved in research. The CDC published an important study in 1984 regarding Vietnam veterans' risks of fathering babies with birth defects. The VA provided partial funding for this study. CDC investigators found that Vietnam veterans were not at increased risk of fathering a child with birth defects. The

VA also funded the CDC Vietnam Experience Study published in 1987 and 1988. CDC is currently pursuing a Selected Cancers Study on behalf of the VA. The Air Force is conducting a long-term study of mortality and morbidity among the men involved in the herbicide spraying missions. The National Institute for Occupational Safety and Health is maintaining a registry of individuals exposed to dioxins and other chemicals in the workplace. The National Cancer Institute has studied the health effects of herbicides on selected agricultural workers. The Environmental Protection Agency is working with the VA on the Retrospective Study of Dioxins and Furans in Adipose Tissue. A considerable amount of research has been undertaken by Federal agencies. According to a special report issued by the Domestic Policy Council's Agent Orange Working Group in September 1987, "There are 70 ongoing projects and 80 completed projects." The report indicates "that over \$91 million has been spent on the completed projects, an additional \$120 million has been spent" on the ongoing projects. Several States also have undertaken research efforts to learn more about the possible health effects of Agent Orange and the Vietnam experience upon our Nation's veterans. Research being done by non-VA agencies and organizations is more fully described in Agent Orange Brief, Number 11.

Where is additional information available?

There is at each VA medical center a specially trained "Environmental Physician" responsible for the conduct of Agent Orange Registry examinations. These individuals participate in regularly scheduled nationwide conference calls and receive mailouts from VA headquarters updating them on the latest developments on Agent Orange. Each facility also has an "Agent Orange Coordinator" to facilitate the Agent Orange program. As indicated above, other Agent Orange Briefs provide additional information on specific Agent Orange concerns and issues. The Agent Orange Briefs are available at all VA medical centers. The Environmental Medicine Office (10B/A0), Veterans Administration Central Office, 810 Vermont Avenue, N.W., Washington, D.C. 20420, is another good source of information on this subject. The Environmental Medicine Office used to be known as the Agent Orange Projects Office.

Agent Orange Brief

Prepared by the Environmental Medicine Office
VA Central Office, Washington, DC

No. 2

October 1988

AGENT ORANGE REGISTRY

What is it?

In mid-1978 the Veterans Administration (VA) set up a register of Vietnam veterans who were worried that they may have been exposed to chemical herbicides which might be causing a variety of ill effects and who took an extensive medical examination offered at all VA facilities. The Agent Orange Registry is a computerized index of those examinations.

What should a participating veteran expect?

Each veteran participating in this voluntary program, offered at all VA medical centers, is given the following baseline laboratory studies: chest x-ray (if one has not been done within the past 6 months); complete blood count; blood chemistries and enzyme studies; and urinalysis. Evidence is also sought concerning the following potentially relevant symptoms or conditions: altered sex drive; congenital deformities (birth defects) among children; neoplasms or cancers, including soft tissue sarcoma and lymphoma (including non-Hodgkin's lymphoma); repeated infections; sterility; and difficulties in carrying pregnancies to term (a problem experienced by the wives of some Vietnam veterans).

How does a veteran benefit from taking the Agent Orange Registry examination?

The examination provides the participating veteran with an opportunity to receive a complete health evaluation and answers to questions concerning the current state of knowledge regarding the relationship between herbicide exposure and subsequent health problems. Following completion of the examination, the veteran is given the results of the physical exam and laboratory studies. This information is provided to the veteran by both a face-to-face discussion with a physician familiar with the health aspects of the Agent Orange issue and a follow-up letter summarizing the results of the examination. Occasionally, previously undetected medical problems are found. With prompt attention, many times these illnesses may be successfully treated. The Registry permits the VA to contact veterans for further testing if continuing research efforts should make this action advisable.

Does the Agent Orange Registry have an impact on research efforts?

The Registry provides a means of detecting clues or suggestions of specific health problems in the event that unexpected or unusual health trends show up in this group of veterans. Such clues could then form the basis for the design and conduct of specific scientific studies.

Who is eligible?

Any veteran, male or female, who had active military service in the Republic of Vietnam between 1962 to 1975, and expresses a concern relating to exposure to herbicides may participate in the Registry. Eligible veterans who want to participate in this program should contact the nearest VA medical facility for an appointment. A veteran who did not serve in Vietnam is not eligible for the Agent Orange Registry examination. Similarly, the spouses and children of veterans are not eligible for this examination.

What are the limitations and uses of the Registry?

It is important to understand that the Agent Orange Registry is not a scientific study. Because of the self-selected nature (that is, the individuals decide themselves to be part of the Registry rather than being "chosen" in a scientific manner) of the Registry participants, this group of veterans cannot, with any scientific validity, be viewed as being representational of Vietnam veterans as a whole. Therefore, the health-related information collected cannot be used for scientific research. The information can, however, be used to detect possible health trends, as noted above, and can provide some useful facts about the group itself. For example, it is possible to show the numbers in each branch of military service, the period(s) of service in Vietnam, kinds of symptoms veterans are experiencing, and some of the results of the physical examinations. From this type of information, it is possible to develop the relative frequency or internal proportional distribution of certain health problems. That is, we could find that health condition "A" is appearing in five times as many Registry participants as problem "B." However, since participation in the Registry program is entirely voluntary, one cannot make statistically valid comparisons directly between this group of veterans and other groups of veterans or non-veterans.

Who has participated in the Registry?

More than 230,000 Vietnam veterans have already participated in this program. Although the program is now more than 10 years old, hundreds of veterans are still contacting the VA each week for their initial Registry examination. Many of these veterans have no medical problems; others present a wide range of ailments. Veterans interested in receiving the Agent Orange Registry examination should contact the nearest VA medical center.

If a veteran who has participated in the Agent Orange Registry examination program changes residence who should he or she contact?

A veteran who moves after receiving the Agent Orange examination should contact the Agent Orange Coordinator at the nearest VA medical center and the Agent Orange Clerk (200/397B), VA Data Processing Center, 1615 East Woodward Street, Austin, Texas 78772. Both the old and new addresses should be indicated.

If a Vietnam veteran receives an Agent Orange Registry examination, does that automatically make him or her eligible for disability compensation?

No. Veterans who wish to be considered for disability compensation must file a claim for that benefit. Many Agent Orange Registry participants have no medical problems. For more information regarding disability compensation, see Agent Orange Brief, Number 8.

Who should be contacted for additional information regarding the Agent Orange Registry?

At each VA medical center there is a specially trained "Environmental Physician" responsible for the conduct of Agent Orange Registry examinations. These individuals participate in regularly scheduled nationwide conference calls and receive mailouts from VA headquarters updating them on the latest developments on Agent Orange. Each medical center also has an Agent Orange Coordinator who has a great deal of information about the Agent Orange Registry and related matters. The VA medical center libraries also have considerable information, including videotapes, regarding Agent Orange. The Environmental Medicine Office (10B/A0), Veterans Administration Central Office, 810 Vermont Avenue, N.W., Washington, D.C. 20420, is another good source of information on this subject.

Agent Orange Brief

Prepared by the Environmental Medicine Office
VA Central Office, Washington, DC

No. 3

October 1988

AGENT ORANGE LITIGATION

What is it?

In re "Agent Orange" Product Liability Litigation is the name of the class action lawsuit brought by Vietnam veterans and their family members against seven chemical companies for injuries the veterans believed were caused by exposure to Agent Orange and other herbicides in Vietnam. More than 200,000 veterans joined the class action claiming a large number of diseases they believe related to Agent Orange. On May 7, 1984, a settlement was reached in which the manufacturers agreed to pay \$180 million. Since the suit did not go to trial, no specific diseases were associated with Agent Orange, and it has been difficult to determine who should receive this money.

What is the status of this settlement?

For more than four years, various groups challenged the settlement for a variety of reasons. In mid-1988 the U.S. Supreme Court declined to review rulings that dismissed lawsuits brought by veterans and others who challenged the settlement. Currently, the survivors of deceased Vietnam veterans and totally disabled veterans who were exposed to Agent Orange are scheduled to receive settlement funds. It is anticipated that the first payments will be made in 1989. The Court has designated Aetna Life Insurance Company to serve as the claims administrator for the program.

Are the VA and other government agencies involved in this settlement?

No. Neither the Veterans Administration nor any other Federal agency is directly involved in the distribution of the settlement assets.

How can an individual or group get additional information on the settlement?

Information can be obtained by either calling a toll-free telephone number, 1-800-225-4712 (recorded message), or by writing to the Agent Orange Veteran Payment Program, P.O. Box 110, Hartford, Connecticut 06104.

Agent Orange Brief

Prepared by the Environmental Medicine Office
VA Central Office, Washington, DC

No. 4

October 1988

AGENT ORANGE - RESEARCH PROBLEM

Why was the CDC Agent Orange Study cancelled?

In December 1979, Congress directed the VA to conduct a large-scale epidemiological study to determine if Agent Orange has caused health problems in Vietnam veterans. For approximately 3 years the VA and its contractor attempted to develop an adequate protocol or study design. The VA, at the suggestion of Congress, then transferred responsibility of the study to the Centers for Disease Control (CDC). Unfortunately after several years of research, CDC found that military records were unable to identify individuals who were exposed to Agent Orange in Vietnam. Subsequently, CDC did a special Agent Orange Validation Study to determine the feasibility of conducting the Agent Orange Study using indirect estimates of exposure to Agent Orange from military records (and self reports) and by comparing such measures with serum levels of 2,3,7,8-TCDD (dioxin). CDC maintained that the findings of the Agent Orange Validation Study confirmed conclusively that neither military records nor veterans' self reports of exposure to Agent Orange can identify exposed individuals needed for a full scale study. This conclusion was agreed to by the Science Panel of the Domestic Policy Council Agent Orange Working Group and Agent Orange Advisory Panel of the Congressional Office of Technology Assessment. Consequently, the study was cancelled. It should be noted that some people believe that an index of Agent Orange exposure for ground troops can still be developed. Scientists in New Jersey are using different study methodologies involving small groups of exposed subjects in different categories of military units.

What can be done?

While the CDC Agent Orange Study could not be successfully completed, a substantial number of related research efforts have been completed and published, and other scientific studies are ongoing. The VA, CDC, Air Force, and several other agencies and organizations are doing this important research. For information about these projects, see Agent Orange Briefs, Numbers 10 and 11.

Who should be contacted for additional information regarding the cancellation of the CDC Agent Orange Study and the difficulties experienced in pursuing Agent Orange research?

Questions concerning the CDC Study can be directed to the Center for Environmental Health, Centers for Disease Control, Atlanta, Georgia 30333. Other matters can be handled by the Environmental Physician at the nearest VA medical center or by the Environmental Medicine Office (10B/A0), Veterans Administration Central Office, 810 Vermont Avenue, N.W., Washington, D.C. 20420.

Agent Orange Brief

Prepared by the Environmental Medicine Office
VA Central Office, Washington, DC

No. 5

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AGENT ORANGE - PRIORITY TREATMENT PROGRAM

What is it?

The VA (Veterans Administration) provides certain health care services to any veteran of the Vietnam era (August 5, 1964 - May 7, 1975) who may have been exposed to dioxin in a herbicide used for military purposes in Vietnam. Proof of service in Vietnam is required. Without affirmative evidence to the contrary, a Vietnam veteran's contention of exposure will be accepted. Health care services under this program are limited to hospital and nursing home care in VA facilities and outpatient care in VA facilities on a pre- or post-hospitalization basis or to prevent a need for hospitalization.

Health care services will be provided without regard to the veteran's age, service-connected status or the veteran's ability to pay for the expenses of such care. Veterans receiving outpatient care under this program will be given priority ahead of nonservice-connected veterans and equal to former Prisoners of War who are receiving care for nonservice-connected conditions.

A decision by the VA that a veteran is eligible for health care does not constitute a basis for service-connection or in any way affect determinations regarding service-connection.

Who is eligible for this priority treatment?

When a Vietnam veteran requests VA medical care he or she will be evaluated clinically through a physical examination and appropriate diagnostic studies. This may, but need not, be the Agent Orange Registry examination. If such an examination has been completed within the prior 6 months, only those procedures which are medically indicated by the current circumstances need be repeated. Where the findings reveal a condition requiring treatment, the responsible VA staff physician will make a determination as to whether the condition resulted from a cause other than exposure to dioxin or herbicides. In making this determination, the physician should consider that the following types of conditions are not ordinarily considered to be due to such exposure:

- (1) congenital or developmental conditions, e.g., spina bifida; scoliosis.
- (2) conditions which are known to have pre-existed military service.
- (3) conditions resulting from trauma, e.g., deformity or limitation of motion of an extremity.

- (4) conditions having a specific and well established etiology, e.g., tuberculosis; gout.
- (5) common conditions having a well recognized clinical course, e.g., inguinal hernia; acute appendicitis.

On occasion, the responsible staff physician may find that a veteran requires care for one or more of the conditions listed above, but that the patient presents complicating circumstances that make the provisions of care under this program appropriate. After consultation with the Chief of Staff and the Environmental Physician authorization for priority treatment may be granted.

Under what authority does the VA provide this priority treatment?

The Veterans' Health Care, Training, and Small Business Loan Act of 1981, Public Law 97-72, enacted November 3, 1981, established the priority treatment. The Veterans' Administration Health-Care Amendments of 1985, Public Law 99-166, enacted December 3, 1985, extended the program through September 30, 1989. The Veterans' Administration Adjudication Procedure and Judicial Review Act extended the program through December 31, 1990.

Where can a veteran obtain additional information on this priority treatment program?

Questions concerning priorities for medical care should be directed to the Medical Administration Service of the nearest VA medical center.

Agent Orange Brief

Prepared by the Environmental Medicine Office
VA Central Office, Washington, DC

No. 6

October 1988

AGENT ORANGE AND BIRTH DEFECTS

Does exposure to Agent Orange or service in Vietnam increase the likelihood of a veteran fathering a child with birth defects?

One of the most emotional aspects of the Agent Orange issue is the concern that exposure to herbicides in Vietnam may have caused or contributed to the risks of having babies with birth defects. Literally thousands of Vietnam veterans have fathered children with abnormalities. Considering the fact that approximately 2.6 million veterans served in Vietnam and the fact that 3-6 percent of all children are born with some kind of defect, scientists expect to see many children with abnormalities among the offspring of Vietnam veterans. Unfortunately, in many instances scientists cannot explain what caused these birth defects. Research has been conducted to determine whether exposure to Agent Orange or military service in Vietnam may have increased the risk of fathering children with birth defects. Based on the research completed to date, the answer seems to be "no." The Australian birth defects study, the CDC (Centers for Disease Control) birth defects study, the Air Force Health Study (Ranch Hand), and the CDC Vietnam Experience Study all suggest that Agent Orange is not the most likely cause of the birth defects. Each of these investigations are briefly summarized below.

Case-Control Study of Congenital Anomalies and Vietnam Service (Birth Defects Study) - Report to the Minister for Veterans' Affairs - January 1983 - Prepared by J. W. Donovan and others. This Australian investigation involved examination of the hospital and laboratory records of infants born with birth defects in three populous areas of Australia between the years 1966 and 1979. In all, 34 hospitals and 4 laboratories cooperated fully with the investigating team. Whenever the birth of an infant with a defect was found, it was matched to a healthy control infant born in the same hospital, to a mother of similar age, and as close as possible in time to the birth of the child with the defect. The fathers of both cases (for this study, a case is a baby with a birth defect) and controls (for this study, a control is a baby without a birth defect) were identified in 8,517 instances and those identified were compared with a list of every man who served in the Australian Army between 1962 and 1972, the period of Australian involvement in Vietnam. Fathers who served in the Army during this period were then classified according to whether they had served in Vietnam. The important finding of the study is that 127 of the fathers of children with birth defects were Vietnam veterans and 123 veterans were among the fathers of healthy children. This indicates that there is no evidence that Army service in Vietnam increased the risk of fathering a child with a birth defect.

Vietnam Veterans' Risks for Fathering Babies with Birth Defects -

August 1984 - U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, Center for Environmental Health. Vietnam veterans' risks for fathering babies with major structural birth defects were assessed using a case-control study. Information regarding military service in Vietnam was obtained from interviews with mothers and fathers of babies in case and control groups and from review of military records. Vietnam veterans did not have an increased risk of fathering babies with defects. Furthermore, Vietnam veterans who had greater estimated opportunities for Agent Orange exposure were not at greater risk for fathering babies with all types of defects combined.

Air Force Health Study (Project Ranch Hand II) - An Epidemiologic Investigation of Health Effects in Air Force Personnel Following Exposure to Herbicides - Periodic reports on morbidity (health problems) -

Prepared by George D. Lathrop, William H. Wolfe and others. The February 1984 Baseline Morbidity Study Results indicated that there was no significant differences between the Ranch Hand (the military unit that did most of the herbicide spraying in Vietnam) and control groups with regard to severe or moderate birth defects. Based on parental reports, however, Ranch Hand offspring showed significantly more minor birth defects (birth marks, etc.). In 1988, Air Force investigators indicated the baseline findings of overall group differences in reported birth defects are being reinvestigated with full medical record verification of the birth defects reported on all children fathered by study participants. Over 6,000 medical records are under review. The Air Force expects to complete this analysis in late 1989.

Health Status of Vietnam Veterans - Reproductive Outcomes and Child

Health - The Centers for Disease Control Vietnam Experience Study - May 1988. The Vietnam Experience Study was a multidimensional assessment of the health of Vietnam veterans. From a random sample of enlisted men who entered the U.S. Army from 1965 through 1971, 7,924 Vietnam and 7,364 non-Vietnam veterans participated in a telephone interview; a random subsample of 2,490 Vietnam and 1,972 non-Vietnam veterans also underwent a comprehensive medical examination. Children of Vietnam veterans were not more likely to have birth defects recorded on hospital birth records than were children of non-Vietnam veterans. The rates of total, major, minor, and suspected defects were similar among children of Vietnam and non-Vietnam veterans.

What can a Vietnam veteran now assume about the risks of birth defects?

Many Vietnam veterans have produced children with birth defects. In the future, Vietnam veterans will produce more children with birth defects. Unfortunately, that much is a certainty. The critical question is "are Vietnam veterans more likely than other men to father children with birth defects? Based on all we know from the scientific research described above and studies of dioxin-contaminated areas in Times Beach, Missouri, and Seveso, Italy (where investigators recently concluded "that the data collected contain no evidence ... that in the population of the Seveso area exposed to dioxin, there was greater risk of producing congenitally

malformed offspring."), Vietnam veterans do not seem to be at increased risk of fathering children with birth defects. (A relatively small number of women served in Vietnam. It is unlikely that many of them were exposed to Agent Orange. Research is underway to learn more about what effects Vietnam service may have had on their health. There is no scientific evidence that women have mothered an unexpected high number of children with birth defects.)

Where can a concerned veteran get additional information about birth defects?

In October 1985, the VA published a monograph entitled "Birth Defects and Genetic Counseling." This publication was distributed to all VA medical center libraries in 1985. A limited supply of complimentary copies is currently available from the Environmental Medicine Office (10B/A0), Veterans Administration Central Office, 810 Vermont Avenue, N.W., Washington, D.C. 20420. The March of Dimes Birth Defects Foundation is also an excellent source of information on this subject. The address is Professional Education, March of Dimes Birth Defects Foundation, 1275 Mamaroneck Avenue, White Plains, New York 10605.

Agent Orange Brief

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No. 7

October 1988

AGENT ORANGE AND CHLORACNE

What is chloracne?

Chloracne is a skin condition that looks like common forms of acne that affect teenagers. At present, chloracne is the only well established long-term effect of exposure to TCDD or dioxin, the contaminant found in one of the ingredients of Agent Orange.

What does chloracne look like and where does it appear?

The first sign of chloracne may be excessive oiliness of the skin. This is accompanied or followed by the appearance of numerous blackheads. In mild cases the blackheads may be limited to the area around the eyes extending along the temples to the ears. In more severe cases blackheads may appear in many places on the body, especially over the malar (or cheek bone) area, other facial areas, behind the ears, and along the arms. The blackheads are usually accompanied by fluid-filled cysts and by an increased or darker growth of body hair. The skin may become thicker and flake or peel. In severe cases, the acne may result in open sores and permanent scars. The condition fades slowly after exposure. Minor cases may disappear altogether, but more severe cases may persist for years after the exposure.

Physicians, even dermatologists, sometimes have difficulty in distinguishing chloracne from other more common skin disorders. While chloracne may be a sensitive indicator of exposure to dioxins in some people, it may not be in other individuals who had equal or greater exposure to dioxins. The absence of chloracne is not necessarily a reliable basis for concluding that a person has not been exposed to a chemical which is known to cause chloracne.

Has chloracne been a problem for a large number of Vietnam veterans?

No, it has not. Of course, many veterans have complained of skin problems. Skin ailments are the most common medical problem in veteran and non-veteran populations.

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Prepared by the Environmental Medicine Office
VA Central Office, Washington, DC

No. 8

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AGENT ORANGE AND VA DISABILITY COMPENSATION

What is disability compensation and who is eligible for this benefit?

Veterans who are disabled by injury or disease incurred or aggravated during active service in the line of duty during wartime or peacetime service and discharged or separated under other than dishonorable conditions are eligible for monthly payments from the Veterans Administration. The amount of these payments, called disability compensation, is based on the degree of disability. For example, a veteran with a 30 percent service-connected disability would receive more money than a veteran with a 10 or 20 percent disability. A veteran who is totally disabled would receive substantially more than a veteran with a lesser disability.

Does exposure to Agent Orange qualify Vietnam veterans for disability compensation?

No. Mere exposure to Agent Orange and other chemicals used in military service does not automatically qualify Vietnam veterans for compensation. As mentioned above, payments are based on disabilities. Many Vietnam veterans who were exposed to Agent Orange have no serious medical problems. Some Vietnam veterans have disabilities clearly unrelated to their military service. For example, a Vietnam veteran may have been in an automobile accident 10 or 15 years after leaving military service. Under the law, disability compensation can only be approved for conditions incurred in or aggravated during military service.

If a veteran has a disability that he or she believes was caused by Agent Orange exposure or some other aspect of military service, what should he or she do?

To receive disability compensation, the veteran must file an application for such benefits. For information or assistance in applying, the veteran can write, call, or visit a veterans benefits counselor at the nearest VA regional office or VA office, or a local veterans service organization representative.

What should a veteran do if his or her claim for disability compensation is denied by the VA?

While the VA provides billions of dollars to veterans and their survivors in disability compensation each year, the VA is not able to approve every

claim. When a claim is denied, the VA provides the applicant with the reason for this action as well as detailed information regarding appeal rights.

If a Vietnam veteran receives an Agent Orange Registry examination, does that automatically make him or her eligible for disability compensation?

No. Veterans who wish to be considered for disability compensation must file a claim for that benefit. Many Agent Orange Registry participants have no medical problems whatsoever.

Agent Orange Brief

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VA Central Office, Washington, DC

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AGENT ORANGE AND SOFT TISSUE SARCOMAS

What are soft tissue sarcomas?

The term "soft tissue sarcoma" is used to describe a group of approximately 25 different types of malignant tumors which arise from body tissues such as muscle, fat, blood and lymph vessels and connective tissues (that is distinct from hard tissue such as bone or cartilage). These tumors are relatively rare.

Why are Vietnam veterans concerned about soft tissue sarcomas?

The possibility that exposure to phenoxy herbicides, such as Agent Orange, may have caused rare forms of cancer in humans such as soft tissue sarcoma was suggested in 1979 and 1981 by small scale studies conducted in Sweden. These studies showed that persons reporting occupational exposure to phenoxy herbicides may have a 5 to 6 fold higher risk of developing soft tissue sarcoma as compared to persons without such exposure.

Have more recent research results supported or conflicted with the Swedish studies finding regarding soft tissue sarcomas?

A number of scientific studies of soft tissue sarcoma among people who may have been exposed to herbicides and/or dioxins have been published in the past few years. Some studies suggested a possible association between these exposures and an increased risk of some cancers, but none showed an increased risk of soft tissue sarcomas on the magnitude cited by the Swedish researchers, and the majority of these investigations showed no association at all. Mortality studies conducted by Massachusetts and West Virginia indicated that there might be a link between service in Vietnam and soft tissue sarcoma. The small number of deaths in the West Virginia study makes it possible that these findings were the results of chance rather than real association. A New York State study showed that fewer Vietnam veterans died of soft tissue sarcoma than Vietnam-era veterans who did not serve in Vietnam. A study in New Zealand of soft tissue sarcomas and exposure to phenoxy herbicides and chlorophenols, a National Cancer Institute study of agricultural herbicide use and risk of lymphoma and soft tissue sarcoma in Kansas, the VA (Veterans Administration) Vietnam veterans mortality study, and two VA studies of the relationship between soft tissue sarcomas and military

service in Vietnam have not supported the findings of the Swedish researchers. At the present time, there is no conclusive evidence linking soft tissue sarcomas in Vietnam veterans with herbicides or military service in Vietnam. Very few cases of soft tissue sarcomas are appearing in the Agent Orange Registry. Research on soft tissue sarcoma and other cancers is continuing.

Where can a veteran get additional information on this subject?

Information on soft tissue sarcomas and related matters can be obtained at VA medical center libraries, from the Environmental Physicians at every VA medical center, or from the Environmental Medicine Office (10B/AO), Veterans Administration Central Office, 810 Vermont Avenue, N.W., Washington, D.C. 20420.

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AGENT ORANGE AND RELATED RESEARCH

VA EFFORTS

Vietnam Veterans Mortality Study (Proportionate Mortality Study of Army and Marine Corps Veterans of the Vietnam War) - The results of this study were released in September 1987. Patterns of mortality among 24,235 Army and Marine Corps Vietnam veterans were compared with that of 25,685 non-Vietnam veterans using standardized proportional mortality ratios. The study subjects were a random sample of deceased Vietnam era veterans identified in a VA computerized benefit file. Military service information was obtained from military personnel records, and cause of death information from death certificates. Statistically significant excess deaths were observed among Army Vietnam veterans for motor vehicle accidents, non-motor vehicle accidents and accidental poisonings. Similar findings have been reported in other studies of Vietnam veterans. Suicides were not elevated among Vietnam veterans. Marine Corps Vietnam veterans appeared to have an increased mortality from lung cancer and non-Hodgkin's lymphoma. The study did not investigate possible causes of these findings. Follow-up research is now underway. The study was published in the Journal of Occupational Medicine in May 1988.

Soft Tissue Sarcoma Study (Soft Tissue Sarcoma and Military Service in Vietnam: A Case Control Study) - This study was conducted of men who were of draftable age during the Vietnam conflict to examine the association of soft tissue sarcomas with military service in Vietnam as well as other environmental risk factors. A total of 217 soft tissue sarcomas cases selected from the Armed Forces Institute of Pathology were compared to 599 controls for Vietnam service occupational and non-occupational exposure to various chemicals, occupational history, medical history, and life-style (smoking, alcohol, coffee, etc.). The results of the study indicate that Vietnam veterans did not have an increased risk of soft tissue sarcoma when compared to those men who had never been in Vietnam. The study was published in the Journal of the National Cancer Institute in October 1987.

Soft Tissue Sarcoma Review (Soft Tissue Sarcomas and Military Service in Vietnam: A Case Comparison Group Analysis of Hospital Patients) - This study reviewed soft tissue sarcoma cases among Vietnam era veterans who were admitted to VA medical centers during the period 1969-1983. This effort compared location, histopathology and relative frequency of soft tissue sarcomas between Vietnam veterans and non-Vietnam veterans. The

study showed that for this group of veterans, service in Vietnam did not increase the risk of developing this type of cancer. The VA's Office of Environmental Epidemiology worked with the VA's Pathology Service and the Armed Forces Institute of Pathology on this research. The findings were published in the Journal of Occupational Medicine in December 1986.

Adipose Tissue Study (Retrospective Study of Dioxins and Furans in Adipose Tissue) - The VA, in cooperation with the Environmental Protection Agency, is in the process of performing a very detailed analysis of tissue specimens from approximately 200 males of the Vietnam era age group. The specimens will be analyzed for 2,3,7,8-TCDD and several other related dioxins and furans to determine if service in the military, especially service in Vietnam, has resulted in increased levels of these compounds as compared to civilians of the same age group. In addition, the study will help to answer the concerns of many veterans regarding the relationship between dioxin levels in their bodies and the risk of developing health problems. It is anticipated that this study will be completed in late 1988 or early 1989.

Specially Solicited Investigator Initiated Research - The VA is funding several investigator-initiated Agent Orange-related research projects. These studies are designed to increase our knowledge regarding the possible adverse health effects of exposure to Agent Orange and its dioxin contaminant. Individual research projects are in varying stages of completion at VA medical centers throughout the Nation.

Women Vietnam Veterans Health Study - The Consolidated Omnibus Budget Reconciliation Act of 1985, enacted April 7, 1986, directed the VA to provide for the conduct of a scientific study of any long-term adverse health effects experienced by women who served in the Armed Forces in Vietnam. The study will examine health effects, which may have resulted from traumatic experiences during such service, from exposure during Vietnam service to phenoxy herbicides, including Agent Orange, to other herbicides, chemicals, or environmental hazards or from any other experience or exposure during such service. A protocol for the conduct of the study was prepared for the VA by its contractor, New England Research Institute. The protocol, after a review conducted by the Congressional Office of Technology Assessment's Advisory Committee, and the Science Panel of the Agent Orange Working Group, was modified in accordance with recommendations of those review groups. It is anticipated that a contract for the conduct of the the study will be awarded in 1989.

Where can a veteran obtain additional information on VA Agent Orange research and studies on related matters?

Information on these subjects can be obtained at the VA medical center libraries, from the Environmental Physicians or Agent Orange Coordinator at every VA medical center, or from the Environmental Medicine Office (10B/AO), Veterans Administration Central Office, 810 Vermont Avenue, N.W. Washington, D.C. 20420.



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AGENT ORANGE AND RELATED RESEARCH

NON-VA EFFORTS

CDC Epidemiological Study (Epidemiologic Studies of the Health of Vietnam Veterans - Mandated by Public Law 97-72 and Public Law 96-151) - This project is actually three studies: the Vietnam Experience Study, designed to evaluate the overall impact of military service in Vietnam on those who served there; the Agent Orange Exposure Study, intended to assess the possible adverse health effects on Vietnam veterans of exposure to the herbicide; and the Selected Cancers Study, designed to determine the risks of developing specific types of cancer among Vietnam veterans. The Veterans Administration is providing full funding to the Centers for Disease Control for this research.

Vietnam Experience Study - There are two components of this study: mortality (death) and morbidity (disease). The mortality effort (Postservice Mortality Among Vietnam Veterans) revealed that total mortality in Vietnam veterans was 17% higher than for other veterans. The excess mortality occurred mainly in the first five years after discharge from active duty and involved motor vehicle accidents, suicide, homicide, and accidental poisonings. Thereafter, mortality among Vietnam veterans was similar to that of other Vietnam-era veterans, except for drug-related deaths, which continued to be elevated. An unexpected finding was a deficit in deaths from diseases of the circulatory system among Vietnam veterans. The excess in postservice mortality due to external causes among Vietnam veterans is similar to that found among men returning from combat areas after World War II and the Korean War. The results of this study component were published in the Journal of the American Medical Association in February 1987.

The morbidity component of the Vietnam Experience Study (Health Status of Vietnam Veterans) indicated that the Vietnam and non-Vietnam veterans studied were similar in terms of level of education, employment, income, marital status, and satisfaction with personal relationships. Certain psychological problems, however, were significantly more common among Vietnam veterans than among non-Vietnam veterans. These included depression, anxiety, and alcohol abuse or dependence. About 15% of Vietnam veterans suffered from combat-related, post-traumatic stress disorder at some time during or after military service, and 2.2% had the disorder during the month before the examination. During the telephone

interview, Vietnam veterans reported current and past health problems more often than did non-Vietnam veterans, although results of medical examinations showed few current differences in physical health between the Vietnam veterans and non-Vietnam veterans groups. The Vietnam veterans had more hearing loss. Also, among a subsample of participants who had semen samples evaluated, Vietnam veterans had lower sperm concentrations and lower average proportions of "normal" sperm cells. Despite differences in sperm characteristics, Vietnam and non-Vietnam veterans have fathered similar numbers of children. Children of Vietnam veterans were not more likely to have birth defects recorded on hospital birth records than were children of non-Vietnam veterans. The rates of total, major, minor, and suspected defects were similar among children of Vietnam and non-Vietnam veterans. The results of the morbidity component were published in the Journal of the American Medical Association in May 1988.

Agent Orange Exposure Study - This study was designed to evaluate the health effects of possible exposure to herbicides (primarily Agent Orange), utilizing information contained in military records. This component was put on hold in January 1986 because of problems related to the exposure assessment of veterans who served in Vietnam. More specifically, it was determined that a study based solely on military records was not possible because of the considerable potential for misclassification of exposure status. Subsequently, the Centers for Disease Control conducted a TCDD validation study to compare military records-based estimates with current serum dioxin levels. The results of this study led the Domestic Policy Council's Agent Orange Working Group and the Congressional Office of Technology Assessment to conclude that the Agent Orange Exposure Study cannot be conducted. Consequently, this study component was cancelled.

Selected Cancers Study - This study was designed to determine if Vietnam veterans are at increased risk of contracting any of five specific cancers: soft tissue sarcoma, lymphoma, nasal, nasopharyngeal, and liver cancer. Data collection for this study component began in January 1985 and will continue through mid-1989. Publication of the Selected Cancers Study findings is currently targeted for mid-1990.

Questions concerning the conduct of the studies described above should be referred to the Centers for Disease Control, Atlanta, Georgia 30333.

Air Force Health Study (An Epidemiologic Investigation of Health Effects in Air Force Personnel Following Exposure to Herbicides) - This study is being conducted to determine whether long-term adverse health effects exist following contact with herbicides and whether these medical problems can be attributed to occupational exposure to Agent Orange. The study consists of mortality and morbidity components, with follow-up efforts. The investigation focuses on the Air Force personnel attached to Operation Ranch Hand, responsible for the great majority of herbicide spraying missions. Members of the Ranch Hand unit had frequent and repeated exposure to Agent Orange. Individuals in the comparison group had served in numerous flying organizations that transported cargo to, from, and within Vietnam but were not involved in the aerial spray

operations of Agent Orange. Air Force investigators have issued a series of mortality and morbidity assessments. The mortality assessments have shown that the Ranch Hand population is doing about the same as the comparison group, with no unusual causes of death, increased frequency of death, or evidence suggesting death at younger ages. Because of the "healthy veteran effect," (that is, only healthy people are allowed to serve in our Armed Forces) both groups are surviving significantly longer than similarly aged civilians. The morbidity assessments showed only minor differences between the Ranch Hands and the comparisons, and these differences were not considered to be indicators of dioxin-related disease. Within the next year, investigators plan to issue the second follow-up morbidity report, additional annual mortality reports, and an expanded birth defects study.

CDC Birth Defects Study (Vietnam Veterans' Risks for Fathering Babies with Birth Defects) - This study, conducted by the Centers for Disease Control with funding from the Veterans Administration, Department of Defense, and the Department of Health and Human Services, assessed Vietnam veterans' risks for fathering babies with major structural birth defects. Information regarding military service in Vietnam was obtained from interviews with mothers and fathers of babies in case and control groups and from review of military records. Vietnam veterans did not have an increased risk of fathering babies with defects. Vietnam veterans who had greater estimated opportunities for Agent Orange exposure were not at greater risk for fathering babies with all types of defects combined. The study results were published in the Journal of the American Medical Association in August 1984.

Agricultural Herbicide Use and Risk of Lymphoma and Soft-Tissue Sarcoma - This population-based case-control study of soft-tissue sarcoma, Hodgkin's disease, and non-Hodgkin's lymphoma in Kansas found farm herbicide use to be associated with non-Hodgkin's lymphoma. This National Cancer Institute study indicated that the relative risk of non-Hodgkin's increased significantly with number of days of herbicide exposure per year and latency. Men exposed to herbicides more than 20 days per year (regardless of the number of years of herbicide use) had a 6 fold increased risk of non-Hodgkin's lymphoma relative to nonfarmers. Excesses were associated with the use of certain herbicides, specifically 2,4-dichlorophenoxyacetic acid (2,4-D), one of the ingredients of Agent Orange. Soft tissue sarcomas was not associated with herbicide exposure. This study supports findings from Sweden and the U.S. that suggests non-Hodgkin's lymphoma is associated with farm herbicide use. The results of the study were published in the Journal of the American Medical Association in September 1986.

Soft Tissue Sarcoma and Non-Hodgkin's Lymphoma in Relation to Phenoxyherbicide and Chlorinated Phenol Exposure in Western Washington - This National Cancer Institute-funded population-based case-control study was conducted in western Washington State to evaluate the relationship between occupational exposure of men aged 20-79 to certain herbicides and other chemicals and the risks of developing soft tissue sarcoma and non-Hodgkin's lymphoma. Occupational histories and other information were obtained by personal interviews for 128 soft tissue sarcoma cases

and 576 non-Hodgkin's Lymphoma cases, diagnosed between 1981 and 1984, for 694 randomly selected controls without cancer. The results demonstrated small but significantly increased risks of developing non-Hodgkin's lymphoma in association with some occupational activities where certain herbicides have been used in combination with other types of chemicals, particularly for prolonged periods. They do not demonstrate a positive association between increased cancer risks and exposure to any specific herbicide alone. Moreover, these findings provide no evidence of increased risks of developing non-Hodgkin's lymphoma associated with chlorinated phenol exposure or of developing soft tissue sarcoma associated with exposure to either class of chemical. The results were published in the Journal of the National Cancer Institute in May 1987.

In addition to the scientific investigations described above, the Department of Agriculture, Environmental Protection Agency, Armed Forces Institute of Pathology, National Cancer Institute, National Institute for Occupational Safety and Health, and several other Federal agencies are doing or have completed research to discover more about the possible adverse health effects of exposure to Agent Orange and other herbicides used in Vietnam. According to a special report issued by the Domestic Policy Council's Agent Orange Working Group in September 1987, there are 70 ongoing projects and 80 completed projects. The report indicates that over \$91 million has been spent on the completed projects, an additional \$120 has been spent on the ongoing projects.

A number of States have also conducted research on Agent Orange and Vietnam veterans. Mortality studies of Vietnam veterans were completed in New York, Wisconsin, West Virginia, and Massachusetts. Studies and/or surveys have also been done in Iowa, New Jersey, and several other States.

The Veterans Administration also is closely monitoring research being conducted in other countries.

Where can a veteran get more information about Agent Orange research and studies on related matters?

Information on these subjects can be obtained at the VA medical center libraries, from the Environmental Physician or Agent Orange Coordinator at every VA medical center, or from the Environmental Medicine Office, (10B/AO), Veterans Administration Central Office, 810 Vermont Avenue, N.W., Washington, D.C. 20420.

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AGENT ORANGE AND NON-HODGKIN'S LYMPHOMA

What is non-Hodgkin's lymphoma?

The term "non-Hodgkin's lymphoma" is used to describe a group of malignant tumors that affect the lymph glands and other lymphatic tissue. These tumors are relatively rare (about 3% of all cancers that occur among the U.S. general population), and although survival has improved during the past 15 years, these diseases tend to be fatal.

Why are Vietnam veterans concerned about non-Hodgkin's lymphoma?

The possibility that exposure to phenoxy acid herbicides such as Agent Orange may have caused rare forms of cancer in humans was suggested in Swedish studies published in 1979 and 1981. Investigations in Sweden reported a six-fold increased risk of malignant lymphoma (Hodgkin's Disease and non-Hodgkin's lymphoma combined) among persons occupationally exposed to phenoxy acids or chlorophenols compared to persons without exposure.

Have more recent results supported or conflicted with these Swedish studies?

An analysis using the New Zealand Cancer registry indicated an elevated risk of malignant lymphoma (including non-Hodgkin's lymphoma, Hodgkin's Disease, and multiple myeloma) linked with agricultural occupations; however, further analyses restricted to interviews of non-Hodgkin's lymphoma and control subjects found no significant differences between non-Hodgkin's lymphoma cases and controls regarding their potential exposure to phenoxy herbicides or chlorophenols.

A population-based study in Kansas found a 6-fold excess risk of non-Hodgkin's lymphoma among farmers exposed to herbicides more than 20 days per year (regardless of the number of years of herbicide use) compared to non-farmers. Excesses of non-Hodgkin's lymphoma in Kansas were associated primarily with the use of phenoxy acid herbicides, specifically 2,4-D, one of the ingredients of Agent Orange. Hodgkin's Disease was not associated with herbicide use in Kansas.

A study in Washington State demonstrated small but significantly increased risks of developing non-Hodgkin's lymphoma in association with some occupational activities where phenoxy herbicides have been used in

combination with other types of chemicals, particularly for long periods. The study results did not demonstrate an association between increased cancer risks and exposure to any specific phenoxy herbicide product alone.

A 1987 study of Swedish pesticide applicators, 72% of whom were exposed also to phenoxy herbicides, found no excess risk of non-Hodgkin's lymphoma or Hodgkin's Disease.

Conflicting results have also been seen in studies of Vietnam veterans. No significant excess mortality from non-Hodgkin's lymphoma was reported among New York State Vietnam veterans, Australian Vietnam veterans, U.S. Vietnam veterans in the Centers for Disease Control Vietnam Experience Study or among Air Force "Ranch Hands" who handled and sprayed herbicides in Vietnam. West Virginia Vietnam veterans had an excess of deaths from Hodgkin's Disease compared to non-Vietnam veterans. In a mortality study of U.S. Army and Marine Corps veterans, a significantly higher than expected proportion of non-Hodgkin's lymphoma occurred among U.S. Marine Vietnam veterans, compared to Marines who did not serve in Vietnam. However, this elevation was not found among the Army veterans. The conflicting evidence makes it difficult at the present time to determine whether non-Hodgkin's lymphoma in Vietnam veterans is related to military service, particularly in the absence of adequate information on exposures to phenoxy herbicides. Investigations are continuing.

Where can a veteran get additional information regarding non-Hodgkin's lymphoma?

Information on non-Hodgkin's lymphoma and related matters can be obtained at VA medical center libraries, from the Environmental Physician at every VA medical center, or from the Environmental Medicine Office (10B/A0), Veterans Administration Central Office, 810 Vermont Avenue, N.W., Washington, D.C. 20420.

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VA PUBLICATIONS ON AGENT ORANGE AND RELATED MATTERS

Review of Literature on Herbicides, Including Phenoxy Herbicides and Associated Dioxins - This multi-volume document is primarily designed for use by researchers, physicians, scientists, and others with similar backgrounds. The initial review was mandated by Public Law 96-151 in December 1979. The first two volumes were released in 1981. Updates (in two volume sets) were issued in 1984 and each year thereafter.

Volume I	Analysis of Literature GPO Stock No. 051-000-00154-1	\$9.00
Volume II	Annotated Bibliography GPO Stock No. 051-000-00155-9	\$9.50
Volume III	Analysis of Literature GPO Stock No. 051-000-0164-8	\$9.50
Volume IV	Annotated Bibliography GPO Stock No. 051-000-0165-6	\$3.25
Volume V	Analysis of Literature GPO Stock No. 051-000-00-173-7	\$6.00
Volume VI	Annotated Bibliography GPO Stock No. 051-000-00-173-5	\$2.75
Volumes VII and VIII	Analysis of Literature and Annotated Bibliography GPO Stock No. 051-000-00186-9 (combined document)	\$7.50
Volumes IX and X	Analysis of Literature and Annotated Bibliography Not available from GPO (combined document)	
Volumes XI and XII	Analysis of Literature and Annotated Bibliography Not available from GPO (combined document)	

Synopsis of Scientific Literature on Phenoxy Herbicides and Associated Dioxins - These documents summarize in non-technical language the literature reviews cited above. Number 1 in the synopsis series corresponds with Volumes I - IV of the literature review; Number 2 with Volumes V - VI; Number 3 with Volumes VII - VIII; Number 4 with Volumes IX - X, and Number 5 with Volumes XI - XII.

Monographs - The Veterans Administration Agent Orange Projects Office (now known as the Environmental Medicine Office) has published several technical documents of interest to individuals concerned about the use of herbicides in Vietnam:

Cacodylic Acid: Agricultural Uses, Biologic Effects, and Environmental Fate by Ronald D. Hood, Ph.D. - GPO Stock No. 051-000-00177-0 - \$6.00

Birth Defects and Genetic Counseling by Annemarie Sommer, M.D.

Human Exposure to Phenoxy Herbicides by Terry L. Lavy, Ph.D. - NTIS Accession No. PB 88231857 - \$19.95

To purchase items with GPO stock numbers, write to the Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402. To purchase the monograph with the NTIS accession number, write to the U.S. Department of Commerce, National Technical Information Service, Springfield, VA 22161. The Environmental Medicine Office (10B/AO), Veterans Administration Central Office, 810 Vermont Avenue, N.W., Washington, D.C. 20420, has a limited supply of most of these documents. These items are also maintained in all VA medical center libraries.

Agent Orange Review - This newsletter is prepared by the VA's Office of Public Affairs in Washington, D.C. The "Review" is published periodically to provide information on Agent Orange to concerned veterans and their families. The most recent issue (Volume 6, Number 1) of this newsletter was distributed in October 1988. That issue updates Federal government studies and activities related to Agent Orange and the Vietnam experience. Anyone interested in getting a copy of that issue should contact the Agent Orange Coordinator at the nearest VA medical center or the VA's Office of Public Affairs (003F), 810 Vermont Avenue, N.W., Washington, D.C. 20420.

Agent Orange Brief - The paper you are now reading is one of a series of one-to-four page fact sheets, prepared by the VA's Environmental Medicine Office, to help answer questions about Agent Orange and related matters. The series will be updated on a regular basis. The Agent Orange Coordinator at all VA medical centers has copies of all Agent Orange Briefs. Questions or ideas concerning these fact sheets should be directed to the Environmental Medicine Office (10B/AO), Veterans Administration Central Office, 810 Vermont Avenue, N.W., Washington, D.C. 20420.