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 Purple, Agent White, and Agent Blue, were also used in Vietnam to a much lesser extent. Republic of Korea forces used small amounts of Agent Orange in 1968-69 in the area from the Civilian Control line to the southern boundary of the Demilitarized Zone. According to the Department of Defense, only Republic of Korea troops were involved in the actual spraying of Agent Orange in Korea. However, it is possible that some US Military personnel may have been exposed to herbicides in Korea. Agent Orange and other herbicides used in Vietnam were tested or stored elsewhere, including, many military bases in the United States.

When and where was Agent Orange used in Vietnam?

Fifteen different herbicides were shipped to and used in Vietnam between January 1961 and 1971. Agent Orange accounted for over most of the herbicides sprayed in Vietnam. Agent Orange 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. However, a recent study released in April 2003 found that while relatively small amounts of highly dioxin-contaminated Agents Purple and Pink were sprayed in the early 1960s, these agents might have deposited a relatively large percentage of the total dioxin. 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 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 19 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 time. Spraying occurred in all 4 military zones of Vietnam.
In Korea, Agent Orange was used by the Republic of Korea Forces in 1968-69. Use was restricted to a strip of land just south of the demilitarized zone and North of the civilian control line. The strip extended along the line for many kilometers. Department of Defense officials have advised us that US troops did not do the spraying. Heavily sprayed areas included 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.

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 laboratory animals. More recent studies have suggested that the chemical may be related to a number of malignancies and other disorders.

What should concerned veterans do?

In 1978, the Veterans Administration, now known as the Department of Veterans Affairs (VA), 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, known as the Agent Orange Registry, should contact the nearest VA medical center for an examination. Since September 2000, Veterans who served in Korea in 1968 or 1969 are also eligible for the examination. Furthermore, beginning in August 2001, VA has offered the Registry examination to all other U.S. veterans who may have been exposed to dioxin or other toxic substances in a herbicide during the conduct of or as a result of testing, transporting, or spraying of herbicides for military purposes.

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 (if appropriate), urinalysis, and blood tests, are done. If the examining physician thinks it is medically indicated, consultations with other physicians are scheduled.

No special Agent Orange tests are offered since there is no test to show if Agent Orange or other herbicides used in Vietnam caused a veteran’s medical problems. There are tests that show the level of dioxin in human fat and blood, but VA does not do such tests because there is serious question about their value to veterans. In January 1992, VA signed a contract with the National Academy of Sciences (NAS) under which, among other things, the NAS considered the feasibility and possible value of dioxin level blood tests for Vietnam veterans who apply for VA medical care or VA disability compensation. In its July 1993 report (published in 1994 as the Veterans and Agent Orange: Health Effects of Herbicides Used in Vietnam), the NAS concluded that individual TCDD levels in Vietnam veterans are usually not meaningful because of common background exposures to TCDD, poorly understood variations among
individuals in TCDD metabolism, relatively large measurement errors, and exposure to herbicides that did not contain TCDD.

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

The veteran is informed of the results of the examination during a personal interview and gets a follow-up letter further describing the findings. Each veteran is given the opportunity to ask for an explanation and device 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 Registry participants. 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, more than 375,000 Vietnam veterans have participated in this program. For more information about the VA Agent Orange Registry, see Agent Orange Brief, B1.

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

Yes. Section 102, Public Law 104-262, the Veterans' Health Care Eligibility Reform Act of 1996, provides that VA is required to furnish hospital care and medical services, and may furnish nursing home care to veterans exposed to herbicides in Vietnam. There are some restrictions. VA cannot provide such care for a (1) disability which VA determines did not result from exposure to Agent Orange, or (2) disease which the National Academy of Sciences has determined that there is "limited/suggestive" evidence of no association between occurrence of the disease and exposure to a herbicide agent. For additional information about eligibility, see Agent Orange Brief, B2.

Can veterans get disability compensation for Agent Orange illnesses?

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, VA must determine that the disability is "service-connected." A Veterans Services Representative, 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, call 1-800-827-1000 or see Agent Orange Brief, B3.

What conditions have been "service-connected" based on evidence of an association with Agent Orange (or other herbicides used in Vietnam)?

The number of diseases that VA has recognized as associated with, but not necessarily caused by, Agent Orange exposure has expanded considerably during the 2000's. The following conditions are now presumptively recognized for service-connection for Vietnam veterans based on exposure to Agent Orange or other herbicides: chloracne (a skin disorder), porphyria cutanea tarda, acute or subacute transient peripheral neuropathy (a nerve disorder), Type 2 diabetes and numerous cancers [non-Hodgkin’s lymphoma, chronic lymphocytic leukemia, soft tissue sarcoma, Hodgkin’s disease, multiple myeloma, prostate cancer, respiratory cancers...
(including cancers of the lung, larynx, trachea, and bronchus), and chronic
lymphocytic leukemia).

In addition, Vietnam veterans’ children with the birth defect spina bifida are
eligible for certain benefits and services. In 1999, VA announced that statutory
authority would be sought for similar benefits and services for children with birth
defects who were born to women Vietnam veterans. Legislation was enacted November
1, 2000. Implementing regulations, published in the Federal Register on July 31,

What else is VA doing?

In addition to the efforts described above (that is, Agent Orange Registry
examination program, medical treatment eligibility, and disability compensation), VA
is doing research to learn more about the possible adverse health effects of Agent
Orange exposure.

The Environmental Epidemiology Service (EES), in Washington, DC, is the premiere
office for Vietnam/Agent Orange-related research within VA. EES investigators have
completed two studies about possible connections between Vietnam service and
specific kinds of cancers called soft tissue sarcomas, a large scale study of
mortality among Vietnam veterans, a study regarding the relationship between Vietnam
service and non-Hodgkin’s lymphomas, a study of dioxin in adipose (fat) tissue,
several mortality study follow-up efforts, mortality studies of individuals in the
Army Chemical Corps in Vietnam, an analysis of post-traumatic stress disorder (PTSD)
among Vietnam veterans in the Agent Orange Registry, a study of the relationship
between Vietnam service and Hodgkin’s disease, a study of the relationship between
military service in Vietnam and the risk of death from trauma and selected cancers,
an analysis of testicular cancer among Agent Orange Registry participants, a study
of suicide among wounded Vietnam veterans, and a study of the relationship between
lung cancer and military service in Vietnam. EES had assistance from others on
several of these research projects. For information about these studies and ongoing
VA research efforts, see Agent Orange Brief, C2

In 1981, VA published a two-volume report reviewing scientific literature on
herbicides in the United States and throughout the world. This publication was
1991, 1992, 1993 and 1994. (These annual updates were discontinued to avoid
duplication of the ongoing scientific literature review by the National Academy of
Sciences, a non-governmental organization under contract with VA.) Lay language
summaries of the VA’s scientific reviews have been published to help non-scientists
understand this complex issue. VA has also published a series of monographs
regarding Agent Orange-related matters. For additional information on these
publications, see Agent Orange Brief, B4. From 1979 to 1994, VA was part of an
interagency group monitoring and coordinating Agent Orange-related and dioxin-
related research within the Federal government. The interagency group ceased
operation in 1994. VA also has been aided by two VA-administered advisory
committees, which made valuable recommendations to the Administrator/Secretary of
Veterans Affairs regarding appropriate policy for compensation, research, outreach,
and related matters.

What are other government departments and agencies doing?
Many other Federal departments and agencies have pursued and/or have also conducted scientific studies on this subject. The Centers for Disease Control and Prevention (CDC), Air Force (USAF), National Institute for Occupational Safety and Health (NIOSH), National Cancer Institute (NCI), and Environmental Protection Agency (EPA) have all been involved in research. The CDC published an important study, partially funded by VA, in 1984 regarding Vietnam veterans' risks of fathering babies with birth defects. CDC investigators found that overall Vietnam veterans were not at increased risk of fathering a child with birth defects. VA also funded the CDC Vietnam Experience Study published in 1997 and 1988, and the CDC Selected Cancers Study published in 1990. The USAF is conducting a long-term study of mortality and morbidity among the men involved in the herbicide spraying missions. Air Force researchers have issued numerous reports regarding their findings in this ongoing project. This important project is scheduled for termination in 2006. NIOSH is maintaining a registry of individuals exposed to dioxins and other chemicals in the workplace. NCI has studied the health effects of herbicides on selected agricultural workers. EPA worked with VA on the determination of dioxin in adipose tissue. The Armed Forces Institute of Pathology collaborated with VA on soft tissue sarcoma research.

Obviously, Federal departments and agencies have undertaken a considerable amount of research. According to the final report of the Domestic Policy Council's Agent Orange Working Group issued in 1994, "There are 38 ongoing projects and 189 completed projects." The report indicates, "over $127 million has been spent on the completed projects, an additional $86 million has been spent" on the ongoing projects, and that "$70 million is estimated to be necessary over the next ten years to complete the current 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, C3.

What is the National Academy of Sciences doing regarding this issue?

The National Academy of Sciences (NAS), a non-governmental organization, is reviewing all relevant scientific literature and providing advice to the Secretary of Veterans Affairs on a wide range of issues relative to herbicides and dioxin. The NAS project is being undertaken in accordance with Public Law 102-4, the Agent Orange Act of 1991, signed by President Bush on February 6, 1991. The NAS reported its initial findings to VA and Congress in July 1993. The first update report was released on March 14, 1996. The second update was released on February 11, 1999. A special report on the relationship between herbicides used in Vietnam and Agent Orange was released on October 11, 2000. The third update was released on April 19, 2001. The fourth update was released on January 23, 2003. A second special report was issued on February 27, 2002. This special report reassessed the relationship between herbicides and acute myelogenous leukemia in the children of Vietnam veterans. The fifth update was released on March 4, 2005. Future reports are anticipated biennially through 2014 under current law. For a number of years, the NAS was also considering the feasibility of developing a historical herbicide exposure reconstruction model that could be used in Agent Orange-related research efforts. In April 2003, the NAS concluded that with the current technology, a study is feasible. (Copies of these reports are available at www.nap.edu.)
Where is additional information available?

A great deal of information can be obtained from our web site: www.va.gov/AgentOrange. There is an “Environmental Health Clinician” at each VA medical center who is responsible for the conduct of Agent Orange Registry examinations. These individuals participate in regularly scheduled nationwide conference calls and receive periodic mailings from VA headquarters updating them on the latest developments on Agent Orange. Each facility also has an “Environmental Health 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 including the one that you are reading at VA medical centers nationwide. The following Agent Orange Briefs are now available: A1. Agent Orange General Information; A2. Agent Orange Class Action Lawsuit; B1. Agent Orange Registry; B2. Agent Orange - Health Care Eligibility; B3. Agent Orange and VA Disability Compensation; B4. VA Information Resources on Agent Orange and Related Matters; C1. Agent Orange - The Problem Encountered in Research; C2. Agent Orange and Vietnam Related Research - VA Projects; C3. Agent Orange and Vietnam Related Research - Non-VA Projects; D1. Agent Orange and Birth Defects; D2. Agent Orange and Chloracne; D3. Agent Orange and Non-Hodgkin’s Lymphoma; D4. Agent Orange and Soft Tissue Sarcomas; D5. Agent Orange and Peripheral Neuropathy; D6. Agent Orange and Hodgkin’s Disease; D7. Agent Orange and Porphyria Cutanea Tarda; D8. Agent Orange and Multiple Myeloma; D9. Agent Orange and Respiratory Cancers; D10. Agent Orange and Prostate Cancer; D11. Agent Orange and Spina Bifida; D12. Agent Orange and Diabetes; and D13. Agent Orange and Chronic Lymphocytic Leukemia.

The Environmental Agents Service (131), Department of Veterans Affairs, 810 Vermont Avenue, N.W., Washington, DC 20420, is another good source of information on this subject. The telephone number is 202-273-8580. The Environmental Agents Service used to be known as the Environmental Medicine Office. (It was also previously named the Agent Orange Projects Office.)

Veteran’s service organizations (such as The American Legion, Veterans of Foreign Wars of the United States, Disabled American Veterans, Vietnam Veterans of America, AMVETS, and VietNow) and State government entities (including Agent Orange Commissions, Departments or Divisions of Veterans Affairs, Departments of Health) have also provided helpful information to individuals seeking information on this subject.

The initial NAS report, an 800+page document, and the updates are available for purchase from the National Academy Press, 500 Fifth Street, N.W., Lockbox 285, Washington, DC 20055. The telephone numbers are 1-800-624-6242 and 202-334-3313. Copies of these reports were sent to all VA medical center libraries.

Congressional committees, especially the House Committee on Veterans’ Affairs and the Senate Committee on Veterans’ Affairs, have conducted numerous hearings regarding the long-term health effects of exposure to Agent Orange. A great deal of information has been gathered during these hearings. Both committees are located in Washington, DC. The zip code for the Senate Committee is 20510. The zip code for the House Committee is 20515.

This fact sheet was updated in August 2005 and does not include any subsequent developments.