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# The Story of Agent Orange

## U.S. Veteran Dispatch Staff Report November 1990 Issue

It is the war that will not end. It is the war that continues to stalk and claim its victims decades after the last shots were fired. It is the war of rainbow herbicides, Agents Orange, Blue, White, Purple, Green and Pink. This never-ending legacy of the war in Vietnam has created among many veterans and their families deep feelings of mistrust of the U.S. government for its lack of honesty in studying the effects of the rainbow herbicides, particularly Agent Orange, and its conscious effort to cover up information and rig test results with which it does not agree.

### STUDY CANCELED

On August 2, 1990, two veteran's groups filed suit in U.S. District Court in Washington, D.C., charging that federal scientists canceled an Agent Orange study mandated by Congress in 1979 because of pressure from the White House. The four year, \$43 million study was canceled, according to the Centers for Disease Control (CDC) in Atlanta, because it could not accurately determine which veterans were exposed to the herbicide used to destroy vegetation in Vietnam. The American Legion, Vietnam Veterans of America and other veteran's groups are charging a massive government cover-up on the issue of herbicide exposure because of the hundreds of millions of dollars in health care and disability claims that would have to be paid. The results of the scientific studies are rigged, claim many veterans, to exonerate the government which conducted the spraying and the chemical companies which produced the herbicides. Until there is a true study of the effects of Agent Orange, say the veterans - a study devoid of government interference and political considerations, the war of the rainbow herbicides will go on. Charges of a White House cover-up have been substantiated by a report from the House Government Operations Committee. That report, released August 9, 1990, charges that officials in the Reagan administration purposely "controlled and obstructed" a federal Agent Orange study in 1987 because it did not want to admit government liability in cases involving the toxic herbicides. Government and industry cover-ups on Agent Orange are nothing new, though. They have been going on since before the herbicide was introduced in the jungles of Vietnam in the early 1960s.

### PLANTS GIVEN CANCER

Agent Orange had its genesis as a defoliant in an obscure laboratory at the University of Chicago during World War II. Working on experimental plant growth at the time, Professor E.J. Kraus, chairman of the school's botany department, discovered that he could regulate the growth of plants through the infusion of various hormones. Among the discoveries he made was that certain broadleaf vegetation could be killed by causing the plants to experience sudden, uncontrolled growth. It was similar to giving the plants cancer by introducing specific chemicals. In some instances, deterioration of the vegetation was noticed within 24-48 hours of the introduction of the chemicals. Kraus found that heavy doses of the chemical 2,4-dichlorophenoxyacetic acid (2,4-D) could induce these growth spurts. Thinking this discovery might be of some use in the war effort, Kraus contacted the War Department. Army scientists tested the plant hormones but found no use for them before the end of the war. Civilian scientists, however, found Kraus' plant hormones to be of use in everyday life after the war. Chemical sprays that included 2,4-D were put on the market for use in controlling weeds in yards, along roads and railroad rights of way.

## **ARMY EXPERIMENTS WITH DEADLY DEFOLIANTS**

The Army continued to experiment with 2,4-D during the 1950s and late in the decade found a potent combination of chemicals which quickly found its way into the Army's chemical arsenal. Army scientists found that by mixing 2,4-D and 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) and spraying it on plants, there would be an almost immediate negative effect on the foliage. What they didn't realize, or chose to ignore, was that 2,4,5-T contained dioxin, a useless by-product of herbicide production. It would be twenty more years until concern was raised about dioxin, a chemical the Environmental Protection Agency (EPA) would later call "one of the most perplexing and potentially dangerous" known to man. According to the Encyclopedia Britannica, "The toxicity of dioxin renders it capable of killing some species of newborn mammals and fish at levels of five parts per trillion (or one ounce in six million tons). Less than two millionths of an ounce will kill a mouse. Its toxic properties are enhanced by the fact that it can pass into the body through all major routes of entry, including the skin (by direct contact), the lungs (by inhaling dust, fumes or vapors), or through the mouth. Entry through any of these routes contributes to the total body burden. Dioxin is so toxic, according to the encyclopedia, because of this: "Contained in cell membranes are protein molecules, called receptors, that normally function to move substances into the cell. Dioxin avidly binds to these receptors and, as a result, is rapidly transported into the cytoplasm and nucleus of the cell, where it causes changes in cellular procession." After minimal experimentation in 1961, a variety of chemical agents was shipped to Vietnam to aid in anti-guerilla efforts. The chemicals were to be used to destroy food sources and eliminate foliage that concealed enemy troop movements.

## **RAINBOW HERBICIDES**

The various chemicals were labeled by color-coded stripes on the barrels, an arsenal of herbicides known by the colors of the rainbow, including Agent Blue (which contained arsenic), Agent White, Agent Purple, and the lethal combination of 2,4-D and 2,4,5-T, Agent Orange. On January 13, 1962, three U.S. Air Force C-123s left Tan Son Nhut airfield to begin Operation Hades (later called Operation Ranch Hand), the defoliation of portions of South Vietnam's heavily forested countryside in which Viet Cong guerrillas could easily hide. By September, 1962, the spraying program had intensified, despite an early lack of success, as U.S. officials targeted the Ca Mau Peninsula, a scene of heavy communist activity. Ranch Hand aircraft sprayed more than 9,000 acres of mangrove forests there, defoliating approximately 95 percent of the targeted area. That mission was deemed a success and full approval was given for continuation of Operation Ranch Hand as the U.S. stepped up its involvement in Vietnam.

## **SIX TO TWENTY-FIVE TIMES**

### **STRONGER THAN RECOMMENDED**

Over the next nine years, an estimated 12 million gallons of Agent Orange were sprayed throughout Vietnam. The U.S. military command in Vietnam insisted publicly the defoliation program was militarily successful and had little adverse impact on the economy of the villagers who came into contact with it. Although the herbicides were widely used in the United States, they usually were heavily diluted with water or oil. In Vietnam, military applications were sprayed at the rate of three gallons per acre and contained approximately 12 pounds of 2,4-D and 13.8 pounds of 2,3,5-T.

The military sprayed herbicides in Vietnam six to 25 times the rate suggested by the manufacturer. In 1962, 15,000 gallons of herbicide were sprayed throughout Vietnam. The following year that amount nearly quadrupled, as 59,000 gallons of chemicals were poured into the forests and streams. The amounts increased significantly after that: 175,000 gallons in 1964, 621,000 gallons in 1965 and 2.28 million gallons in 1966. The pilots who flew these missions became so proficient at their jobs that it would take only a few minutes after reaching their target areas to dump their 1,000-gallon loads before turning for home. Flying over portions of South Vietnam, Laos and Cambodia that had been sprayed, the pilots could see the effects of their work.

Many of them adopted a grim fatalism about the job. Over the door of the ready room for Ranch Hand pilots at Tan Son Nhut Airport near Saigon hung this sign: "Only You Can Prevent Forests."

### **MAKERS KNEW OF DANGER TO HUMANS**

Unknown to the tens of thousands of American soldiers and Vietnamese civilians who were living, eating and bathing in a virtual omnipresent mist of the rainbow herbicides, the makers of these chemicals were well aware of their long-term toxic effects, but sought to suppress the information from the government and the public, fearing negative backlash. Of particular concern to the chemical companies was Agent Orange, which contained dioxin. Publicly, the chemical companies said dioxin occurred naturally in the environment and was not harmful to humans. Privately, they knew otherwise. A February 22, 1965 Dow Chemical Corporation internal memorandum provided a summary of a meeting in which 13 executives discussed the potential hazards of dioxin in 2,4,5-T. Following that meeting, Dow officials decided to meet with other makers of the chemical and formulate a stance on Agent Orange and dioxin. In March 1965, Dow official V.K. Rowe convened a meeting of executives of Monsanto, Hooker Chemical, which operated the Love Canal dump, Diamond Alkali, the forerunner of Diamond-Shamrock, and the Hercules Powder Co., which later became Hercules, Inc. According to documents uncovered only years later, the purpose of this meeting was "to discuss the toxicological problems caused by the presence of certain highly toxic impurities" in samples of 2,4,5-T. The primary "highly toxic impurity" was 2,3,7,8 TCDD, one of 75 dioxin compounds.

### **CONCERN OVER DIOXINS KEPT QUIET**

Three months later, Rowe sent a memo to Ross Mulholland, a manager with Dow in Canada, informing him that dioxin "is exceptionally toxic, it has a tremendous potential for producing chloracne (a skin disorder similar to acne) and systemic injury." Rowe ordered Mulholland in a postscript to the letter that "Under no circumstances may this letter be reproduced, shown or sent to anyone outside of Dow." Among those in attendance at one of the meetings of chemical company officials was John Frawley, a toxicologist for Hercules, Inc. In an internal memorandum for Hercules officials, Frawley wrote in 1965 that Dow was concerned the government might learn of a Dow study showing that dioxin caused severe liver damage in rabbits. Dow was concerned, according to Frawley, that "the whole industry will suffer." Frawley said he came away from the meeting with the feeling that "Dow was extremely frightened that this situation might explode" and lead to government restrictions. The concern over dioxins was kept quiet and largely out of the public view. The U.S. government and the chemical companies presented a united front on the issue of defoliation, claiming it was militarily necessary to deprive the Viet Cong of hiding places and food sources and that it caused no adverse economic or health effects to those who came into contact with the rainbow herbicides, particularly Agent Orange.

### **AIR FORCE KNEW OF HEALTH DANGER**

But, scientists involved in Operation Ranch Hand and documents uncovered recently in the National Archives present a somewhat different picture. There are strong indications that not only were military officials aware as early as 1967 of the limited effectiveness of chemical defoliation, they knew of potential long-term health risks of frequent spraying and sought to keep that information from the public by managing news reports. Dr. James Clary was an Air Force scientist in Vietnam who helped write the history of Operation Ranch Hand. Clary says the Air Force knew Agent Orange was far more hazardous to the health of humans than anyone would admit at the time. "When we (military scientists) initiated the herbicide program in the 1960s," Clary wrote in a 1988 letter to a member of Congress investigating Agent Orange, "we were aware of the potential for damage due to dioxin contamination in the herbicide. We were even aware that the 'military' formulation had a higher dioxin concentration than the 'civilian' version, due to the lower cost and speed of manufacture. However, because the material was to be used on the 'enemy,' none of us were overly concerned. We never

considered a scenario in which our own personnel would become contaminated with the herbicide. And, if we had, we would have expected our own government to give assistance to veterans so contaminated."

### **MILITARY DOWNPLAYS USE OF HERBICIDES**

Aware of the concern over the use of herbicides in Vietnam, particularly the use of Agent Orange, the U.S. Military Assistance Command, Vietnam (MACV), attempted to put the proper public relations spin on information concerning Operation Ranch Hand by announcing a "revision" in its policy on the use of herbicides. It was not so much a revision of the policy as it was an appearance of a revision of the policy as it was an appearance of revision, as is evident in a memorandum signed by Gen. R.W. Komer, deputy to Gen. William Westmoreland for civil operations and RD support (CORDS). "The purpose of this exercise would be to meet criticisms of excessive use of defoliants by clarifying that they will no longer be used in large areas, while in reality not restricting our use of defoliants (since they are not now normally used in this area anyway). In addition, there would be an escape clause . . . which would permit the use of defoliants even in the prohibited area provided that a strong case could be made to MACV/JGS. "Appearing to restrict the use of defoliants in this manner would (a) help meet US and Vietnamese criticism of these operations; (b) increase peasant confidence so that they would grow more rice; (c) be of psywar (psychological warfare) value by suggesting that large areas were sufficiently pacified by now that large scale defoliants use was no longer necessary." But the idea that the spraying of herbicides could be confined to a limited area as suggested in this memo was known to be futile as early as 1962.

### **MIST DRIFT**

One of the first defoliation efforts of Operation Ranch Hand was near a rubber plantation in January, 1962. According to an unsigned U.S. Army memorandum dated January 24, 1966, titled "Use of Herbicides in Vietnam," studies showed that within a week of spraying, the trees in the plantation "showed considerable leaf fall." "The injury to the young rubber trees occurred even though the plantation was located some 500 yards away and upwind of the target at the time of the spray delivery." The memo went on to say that "vapors of the chemical were strong enough in concentration to cause this injury to the rubber." These vapors, "appear to come from 'mist drift' or from vaporization either in the atmosphere from 'mist drift' or from vaporization either in the atmosphere or after the spray has settled on the vegetation." The issue of "mist drift" continued to plague the defoliation program. How far would it drift? How fast? Wind speed and direction were of major concerns in answering these questions. Yet, there were other questions, many of which could not be answered. What happened in humid weather? How quickly did the chemicals diffuse in the atmosphere or were they carried into the clouds and dropped dozens of miles away? How long would the rainbow herbicides linger in the air or on the ground once they were sprayed? A November 8, 1967 memorandum from Eugene M. Locke, deputy U.S. ambassador in Saigon, once again addressed the problem of "mist drift" and "significant damage" to rubber plantations from spraying earlier in the year. According to Locke, "the herbicide damage resulted from a navigational error; some trees in another plantation had been defoliated deliberately in order to enhance the security of a U.S. military camp. The bulk of the herbicide damage must be attributed, however, to the drift of herbicide through the atmosphere. This drift occurs (a) after the spray is released from the aircraft and before it reaches the ground, and/or (b) when herbicide that has already reached the ground vaporizes during the heat of the day, is carried aloft, then moved by surface winds and eventually deposited elsewhere. "There is a lack of agreement within the Mission regarding the distances over which the two kinds of drift can occur. When properly released (as required at 150 feet above the target, with winds of no more than 10 mph blowing away from nearby plantations) herbicide spray should fall with reasonable accuracy upon its intended target. The range of drift of vaporized herbicide, however, has not been scientifically established at the present time. In recognition of this phenomenon and to minimize it, current procedures require that missions may be flown only during inversion conditions, i.e., when the temperature on the land and in the atmosphere produces downward currents of air. Estimates within the

Mission of vaporized herbicide drift range from only negligible drift to distances of up to 10 kilometers and more." Ten kilometers and more. More than six miles. In essence, troops operating more than six miles from defoliation operations could find themselves, their water and their food doused with chemical agents, including dioxin-laced Agent Orange. And they wouldn't even know it. More than four months later, on March 23, 1968, Gen. A.R. Brownfield, then Army Chief of Staff, sent a message to all senior U.S. advisors in the four Corps Tactical Zones (CTZ) of Vietnam. Brownfield ordered that "helicopter spray operations will not be conducted when ground temperatures are greater than 85 (degrees) Fahrenheit and wind speed in excess of 10 mph." But the concern was not for any troops operating in the areas of spraying, as was evident in the memo, but for the rubber plantations. The message ordered that "a buffer distance of at least two (2) kilometers from active rubber plantation must be maintained." No such considerations were given for the troops operating in the area.

### **PROJECT PINK ROSE**

One of the U.S. government's worst planned and executed efforts to use herbicides was a secret operation known as "Project Pink Rose." According to a recently declassified report on "Project Pink Rose," the operation had its genesis in September 1965 when the Joint Chiefs of Staff received a recommendation from the Commander in Chief Pacific "to develop a capability to destroy by fire large areas of forest and jungle growth in Southeast Asia." On March 11, 1966, a test operation known as "Hot Tip" was documented at Chu Pong mountain near Pleiku when 15 B-52s dropped incendiaries on a defoliated area. According to the declassified memo, "results were inconclusive but sufficient fire did develop to indicate that this technique might be operationally functional." What neither the government nor the chemical companies told anyone was that burning dioxins significantly increases the toxicity of the dioxins. So, not only was the government introducing cancer causing chemicals into the war, it was increasing their toxicity by burning them. Nevertheless, "Project Pink Rose" continued. In November, 1966, three free strike target areas were selected: one in War Zone D and two in War Zone C. Each target was a box seven kilometers square. The target areas were double and triple canopy jungle. The areas were heavily prepped with defoliants, the government dumping 255,000 gallons on the test sites. The three sites were bombed individually, one on January 18, 1967, another January 28, 1967 and the last on April 4, 1967. According to the memo, "the order and dates of strikes were changed to properly phase Pink Rose operations with concurrent ground operations." Which means that U.S. and Vietnamese troops were living and fighting in these test sites on which 255,000 gallons of cancer causing defoliants had been dumped. The results of "Project Pink Rose" were less than favorable. According to the memo, "The Pink Rose technique is ineffective as a means of removing the forest crown canopy." The conclusion: "Further testing of the Pink Rose technique in South Vietnam under the existing concept be terminated."

### **DEFOLIANTS DUMPED ON PEOPLE AND INTO WATER SUPPLIES**

In addition to the planned dumps of herbicides, accidental and intentional dumps of defoliants over populated areas and into the water supplies was not unusual, according to government documents. A memorandum for the record dated October 31, 1967, and signed by Col. W.T. Moseley, chief of MACV's Chemical Operations Division, reported an emergency dump of herbicide far from the intended target. At approximately 1120 hours, October 29, 1967, aircraft #576 made an emergency dump of herbicide in Long Khanh Province due to failure of one engine and loss of power in the other. Approximately 1,000 gallons of herbicide WHITE were dumped from an altitude of 2,500 feet. No mention was made of wind speed or direction, but chemicals dropped from that height had the potential to drift a long way. Another memorandum for the record, this one dated January 8, 1968 and signed by Col. John Moran, chief Chemical Operations Division of MACV, also reported an emergency dump of herbicide, this time into a major river near Saigon. "At approximately 1015 hours, January 6, 1968, aircraft #633 made an emergency dump over the

Dong Nai River approximately 15 kilometers east of Saigon when the aircraft experienced severe engine vibration and loss of power. Approximately 1,000 gallons of herbicide ORANGE were dumped from an altitude of 3,500 feet."

## **CHEMICAL COMPANY EMPLOYEES DEVELOP SKIN PROBLEMS**

The chemical companies continued to insist that the herbicides in general, and Agent Orange in particular, had no adverse effects on humans. This despite Dow's concerns about human exposure to Agent Orange expressed internally in 1965 but hidden from the government. And this despite evidence at the plants producing Agent Orange that workers exposed to it suffered unusual health problems.

The Diamond Alkali Co. in Newark, New Jersey, was one of the major producers of Agent Orange for the government. Spurred by Pentagon officials to make their production schedules to "help the war effort," patriotic employees at Diamond Alkali eagerly sought to fill their quotas. But some of Diamond Alkali's employees began suffering what were described as "painful and disfiguring" skin diseases, according to the doctor who treated more than 50 of the employees in the early and mid 1960s. "They (the employees) were aware of what was going on," said Dr. Roger Brodtkin, head of dermatology at the University of Medicine and Dentistry of New Jersey. "No one worried much about the skin disease because everyone was determined to make production schedules." Brodtkin said he alerted state health officials of the problem, but got little response. "They came out, all of them, said Brodtkin. "They looked around and they said, 'Ah hah,' and left. Nothing was done." Brodtkin later discovered that many of Diamond Alkali's employees involved in the manufacture of Agent Orange were suffering a variety of ailments. "We discovered that not only were these people getting skin disease, but they were also showing some indication of liver damage," he said. It was not until 1983 that the state of New Jersey got around to testing the soil around the plant. It found hazardous levels of dioxin. New Jersey Gov. Thomas Kean urged residents living within 300 yards of the plant to move. It was not until 1968 that scientists began raising some concerns about the use of the rainbow herbicides in Vietnam.

## **STATE DEPARTMENT EXONERATES CHEMICAL COMPANIES**

Part of their concern came following a November 1967 study by Yale University botany Professor Arthur Galston. Galston did some experiments with Agent Orange and other herbicides to determine whether they were dangerous to humans and animals. Galston was unable to come to any definite conclusions on Agent Orange, but advised that continued use of it might "be harmful" and have unforeseen consequences. The American Association for the Advancement of Science (AAAS) in the summer of 1968 sent a letter to the Secretaries of State and Defense urging a study to determine the ecological effects of herbicide spraying in Vietnam. That letter prompted a cable from Secretary of State Dean Rusk to the U.S. Embassy in Saigon. The cable, dated August 26, 1968, sought additional information but informed embassy officials of the tactic State was going to take in its reply to the AAAS. "The Department of State's proposed reply notes that the limited investigations of the ecological problem which have been conducted by agencies of the USG thus far have failed to reveal serious ecological disturbances, but acknowledges that the long-term effect of herbicides can be determined definitively only by long-term studies." Rusk suggested releasing "certain non-sensitive" portions of a study on the ecological effects of herbicide spraying in Vietnam done earlier that year by Dr. Fred H. Tschirley, then assistant chief of the Corps Protection Research Branch, Corps Research Division of the U.S. Department of Agriculture in Beltsville, Maryland. Tschirley went to Vietnam under the auspices of the State Department early in 1968 and returned with exactly the report the U.S. government and the chemical companies wanted. Tschirley foresaw no long-term ecological impact on Vietnam as a result of the herbicide spraying. In addition, in his report of April 1968, later reprinted in part in the February 21, 1969 issue of

Science magazine, Tschirley exonerated the chemical companies. "The herbicides used in Vietnam are only moderately toxic to warm-blooded animals," Tschirley wrote. "None deserves a lengthy discussion except for Agent Blue (cacodylic acid), which contains arsenic." This despite evidence within the chemical companies that dioxin, the most toxic ingredient in Agent Orange, was responsible for health problems in laboratory animals and workers at the plants that produced the chemical. "There is no evidence," Tschirley wrote, "to suggest that the herbicides used in Vietnam will cause toxicity problems for man or animals." Rusk urged Tschirley's report be made public. In his cable to Saigon, he wrote: "Its publication would not only help avoid some awkwardness for Tschirley, but would provide us with valuable documentation to demonstrate that the USG is taking a responsible approach to the herbicide program and that independent investigation has substantiated the Midwest Institute's findings that there have been no serious adverse ecological consequences." What Rusk did not mention was that Tschirley's report had been heavily edited, in essence changing its findings.

### **USE OF CHEMICALS CONTINUES IN VIETNAM**

While the debate over the danger of Agent Orange and dioxin heated up in scientific circles, the U.S. Air Force continued flying defoliation sorties. And the troops on the ground continued to live in the chemical mist of the rainbow herbicides. They slept with it, drank it in their water, ate it in their food and breathed it when it dropped out of the air in a fine, white pungent mist. Some of the troops in Vietnam used the empty Agent Orange drums for barbecue pits. Others stored watermelons and potatoes in them. Still others rigged the residue laden drums for showers. Former Marine Danny Gene Jordan remembers sitting on Hill 549 near Khe Sanh in the spring of 1968, waiting for night and cooking his C-rations. Jordan had been in country just a few weeks and was still learning his way around, so he wasn't sure why the five C-123s approaching his unit would be flying so low and in formation. "They're defoliating," one of his buddies told him. Then came the mist, like clouds floating out of the back of the C-123s, soaking the men, their clothes and their food. For the next two weeks, the men of Jordan's unit suffered nausea and diarrhea. Jordan returned from Vietnam with an unusual amount of dioxin in his system. More than 15 years later, he still had 50 parts per trillion, considered abnormally high. He also had two sons born with deformed arms and hands. The spraying continued unabated in 1968, even though, according to military records, it apparently was having minimal effects on the enemy. A series of memorandums uncovered in the National Archives and now declassified indicate that defoliation killed a lot of plants, but had little real effect on military operations.

### **ADVANTAGES VERSES DISADVANTAGES DISCUSSED**

As early as 1967 it had become clear that herbicide spraying was having few of the desired effects. According to an undated and unsigned USMACV memorandum, Rand Corporation studies in October 1967, concluded "that the crops destruction effort may well be counterproductive." According to the memo, "The peasant, who is the target of our long range pacification objectives, bears the brunt of the crop destruction effort and does not like it." Col. John Moran, chief of the Chemical Operations Division of MACV, wrote a memorandum dated October 3, 1968, and titled "Advantages and Disadvantages of the Use of Herbicides in Vietnam" that provides some key insights into the defoliation program.

"The effect of defoliation on the enemy, in itself, is of little military value," Moran wrote. "Its military potential is realized only when it is channeled into selected targets and combined with combat power to restrain the enemy from using an area or pay the cost in men and material from accurately delivered firepower." Disadvantages of defoliation were more numerous, according to the memorandum. "The herbicide program carries with it the potential for causing serious adverse impacts in the economic, social and psychological fields," Moran wrote. Ecologically, according to the memorandum, "Semideciduous forests, especially in War Zone C and D, have been severely affected. The regeneration of these forests could be seriously retarded by repeated applications of herbicide." An unsigned, undated memorandum written sometime late in 1968 provided even more details about the negative impact of defoliation. Regarding the effect of VC/NVA combat



and infiltration capability, the memo reported that "Very few PWs who have infiltrated even mention the effects of US herbicide operations. Some state that they have seen areas where the vegetation has been killed, but do not mention any infiltration problems caused by the defoliation. There are indications that US herbicide operations have had a negligible effect on NVA infiltration and combat operations." The psychological effects of defoliation, according to the memorandum, were twofold; they either hardened the resolve of the VC/NVA or angered the Vietnamese farmers whose crops were destroyed. "Some enemy soldiers may become more dedicated to the elimination of those who 'ravage the countryside.' In addition, Allied herbicide operations may provide good material for enemy propaganda efforts aimed at fermenting an anti-US/GVN (Government of Vietnam) attitude among the population." The reaction of the civilians affected by herbicide spraying is even more noticeable according to the memo. "The obvious reaction of the peasant whose labors have been destroyed is one of bitterness and hatred. He will frequently direct this hatred toward both the US/GVN, for accomplishing the destruction, and the VC/NVA, for bringing it about. If he has previously leaned toward the VC, he is likely to side with them completely after the crop destruction. He is aided in making this decision by the incessant propaganda of the VC cadre who decry the 'barbarous crimes perpetrated by the Americans and their lackeys.'" So, while Operation Ranch Hand provided no long or short term military benefits, it also provided neither long nor short term psychological benefits. If anything, it embittered the civilian population of Vietnam and drove it closer to the Viet Cong and NVA. And no one yet was sure what eventually would be the effect on the health of those exposed to the chemicals. Operation Ranch Hand was shown by late 1968 to be a bankrupt strategy, one devoid of good sense, good planning or good intentions.

#### **ORANGE AEROSOL DISCOVERED**

Meanwhile, the military continued to learn just how toxic Agent Orange could be. On October 23, 1969, an urgent message was sent from Fort Detrick, Maryland, to MACV concerning cleaning of drums containing herbicides. The message provided detailed instructions on how to clean the drums and warned that it was particularly important to clean Agent Orange drums. "Using the (Agent) Orange drums for storing petroleum products without thoroughly cleaning of them can result in creation of an orange aerosol when the contaminated petroleum products are consumed in internal combustion engines. The Orange aerosol thus generated can be most devastating to vegetation in the vicinity of engines. Some critics claim that some of the damage to vegetation along Saigon streets can be attributed to this source. White and Blue residues are less of a problem in this regard since they are not volatile." Not only was Agent Orange being sprayed from aircraft, but it was unwittingly being sprayed out of the exhausts of trucks, jeeps and gasoline generators. In March 1969, Lt. Col. Jim Corey, deputy chief of CORDS in I Corps reported to his boss, R.M. Urquhart, unusual defoliation in Da Nang. "A large number of beautiful shade trees along the streets in the city of Da Nang are dead or dying," Corey wrote. "This damage appears to be entirely a result of defoliation chemicals." There was no evidence of insect or fungus damage to the vegetation, according to the memo. "In every instance of tree and garden plot damage," Corey wrote, "empty defoliant barrels are either present in the area or have been transported along the route of the damage." The use of herbicides was not confined to the jungles. It was widely used to suppress vegetation around the perimeters of military bases and, in many instances, the interiors of those bases.

#### **LAB TESTS ON ANIMALS CURTAIL**

##### **SOME USE OF AGENT ORANGE**

Nevertheless, the use of Agent Orange throughout Vietnam was widespread through much of 1969. Then, late in the year a study done by Bionetics Research Laboratories showed that dioxin caused deaths and stillbirths in laboratory animals. The tests revealed that as little as two parts of dioxin per trillion in the bloodstream was sufficient to cause deaths and abnormal births. And some GIs were returning home from Vietnam with 50 parts per trillion, and more, in their bloodstream. When the report was released by the Food and Drug

Administration, the White House, on October 29, 1969, ordered a partial curtailment of the use of Agent Orange in Vietnam. On November 4, 1969, a message went out from Joint Chiefs of Staff to Commander in Chief Pacific (CINCPAC) and MACV. "A report prepared for the National Institute of Health presents evidence that 2,4,5-T can cause malformation of offspring and stillbirths in mice, when given in relatively high doses. This material is present in the defoliant (Agent) Orange. "Pending decision by the appropriate department on whether this herbicide can remain on the domestic market, defoliation missions in South Vietnam using Orange should be targeted only for areas remote from population. Normal use of White or Blue herbicides can continue, but large scale substitution of Blue for Orange will not be permitted."

### **USE OF AGENT ORANGE FINALLY ENDED**

Despite the order, some troops continued to use Agent Orange when they ran out of the other rainbow herbicides. Finally, in early 1971, the U.S. Surgeon General prohibited the use of Agent Orange for home use because of possible harmful effects on humans and on June 30, 1971, all United States defoliation operations in Vietnam were brought to an end.

### **VETS BEGIN DEVELOPING HEALTH PROBLEMS**

As soldiers who had served in Vietnam attempted to settle back into civilian life following their tours, some of them began to develop unusual health problems. There were skin and liver diseases and what seemed to be an abnormal number of cancers to soft tissue organs such as the lungs and stomach. There also seemed to be an unusually high number of birth defects among children born to Vietnam veterans who had been exposed to Agent Orange. Some veterans experienced wild mood swings, while others developed a painful skin rash known as chloracne. Many of these veterans were found to have high levels of dioxin in their blood, but scientists and the U.S. government insisted there was no link between their illnesses and Agent Orange. In the mid 1970s, there was renewed interest in dioxin and its effects on human health following an industrial accident in Seveso, Italy, in which dioxin was released into the air, causing animal deaths and human sickness.

### **EPA BANS USE OF AGENT ORANGE IN U.S.**

Then, in 1979, the Environmental Protection Agency banned the use of Agent Orange in the United States when a large number of stillbirths were reported among mothers in Oregon, where the chemical had been heavily used. While veterans clamored for help from the Veterans Administration, the government responded either slowly, or not at all. In 1979, a National Veterans Task Force on Agent Orange was formed and legislation finally was passed by Congress at the urging of Rep. Tom Daschle (D-SD), a Vietnam veteran who became a U.S. Senator, to commission a large scale epidemiological study of veterans who had been exposed to the herbicide. That proved to be only the beginning of the battle over Agent Orange. Over the next four years, the VA examined an estimated 200,000 veterans for medical problems they claimed stemmed from Agent Orange and other herbicides used in Vietnam. But many of those examined were dissatisfied with their examinations. They claimed the exams were done poorly and often in haste by unqualified medical personnel. Many veterans also claimed that the VA seemed to have a mind set to ignore or debunk Agent Orange connected disability complaints. **CLASS ACTION SUIT FILED** Fed up with what they perceived as government inaction on the Agent Orange issue, veterans filed a class action lawsuit in 1982 against the chemical companies that had made Agent Orange. Among the companies named were Dow Chemical Co. of Midland, Michigan; Monsanto Co. of St. Louis, Missouri; Diamond Shamrock Corp. of Dallas, Texas; Hercules Inc. of Wilmington, Delaware; Uniroyal Inc. of Middlebury, Connecticut; Thompson Chemical Corp. of Newark, New Jersey and the T.H. Agriculture and Nutrition Co. of Kansas City, Missouri. By the early 1980s, some of the chemical companies' dirty little secrets about dioxin were beginning to leak out.

## **TIMES BEACH**

Times Beach was an idyllic little community of about 2,200 residents in the rolling farmlands of eastern Missouri 20 miles southwest of St. Louis. It was an ideal place to live and raise children, with plenty of open spaces, two story wood frame houses, quiet streets and none of the pollution, poverty or crime of the inner city. Or so it seemed. Unknown to the residents of Times Beach, for several years in the mid 1970s, dioxin laced oil had been sprayed on the town's roads to keep down the dust. Times Beach was one of 28 eastern Missouri communities where the spraying had been done. But none of the others had the levels of dioxin contamination of Times Beach, parts of which had dioxin levels of 33,000 parts per billion, or 33,000 times more toxic than the EPA's level of acceptance. The contamination was so bad that the government decided the only way to save the town's residents from further damage from dioxin was to buy them out and move them out. In early 1983, the U.S. government spent \$33 million buying the 801 homes and businesses in Times Beach and relocating its 2,200 residents. The entire town was fenced in and guards were brought in to keep out the curious. "Caution, Hazardous Waste Site, Dioxin Contamination," read the signs leading into Times Beach. What had been a comfortable little community became a ghost town. It remains a ghost town today because of dioxin contamination. So, while the government was paying off the residents of Times Beach because of dioxin contamination, it continued to deny that Vietnam veterans who had been exposed to Agent Orange and its dioxin were at risk.

## **AMA DOWNPLAYS DIOXIN DANGER**

While the government was busily buying up Times Beach and evacuating its residents, the American Medical Association was coming under attack from environmental health specialists for its stance on dioxin. In its June 1983 convention, the AMA adopted a resolution calling for a public information campaign on dioxin to "prevent irrational reaction and unjustified public fright." "The news media have made dioxin the focus of a witch hunt by disseminating rumors, hearsay and unconfirmed, unscientific reports," the resolution read, in part. That position was overwhelmingly supported by President Ronald Reagan in a speech at the AMA convention, calling the resolution "a positive step toward a more reasonable public debate" on the issue. But Dr. Samuel Epstein, professor of occupational and environmental medicine at the University of Illinois Medical Center in Chicago, called the AMA "incompetent and ignorant" for its stance on dioxin. "The AMA's contribution in this area is a profound disservice and consistent with their established record of extreme conservatism and lack of information and demonstrated lack of concern for preventive medicine," said Epstein. And Dr. Paul Wiesner, an assistant director of the CDC said that "Evidence is increasing that there is an association with a rare form of tumor called soft tissue sarcoma after occupational exposure (to dioxin)."

## **STUDIES CONTRADICTORY AND CONFUSING**

By 1983, the results of studies of Agent Orange and dioxin exposure began to trickle in. They were, for the most part, contradictory and confusing. A series of studies conducted between 1974 and 1983 by Dr. Lennart Hardell, the so called Swedish studies, showed a link between exposure to Agent Orange and soft tissue sarcomas and non-Hodgkin's lymphoma. And in July 1983, the Department of Health and Human Services (HHS) released a report citing "an association" between dioxin exposure and incidence of soft tissue sarcoma. "The early warning sign has gone up," said Dr. Edward Brandt, Jr., assistant secretary of the HHS. This was also the year of the Times Beach buy out and growing nationwide concern over dioxin. Few people knew what it was and only Vietnam veterans and researchers knew what it could do to the human body. In December 1983, the EPA announced a nationwide plan to clean up more than 200 dioxin contaminated sites, including 50 plants where 2,4,5-T had been manufactured. The cost of the cleanup was put at \$250 million and was expected to take four years. But barely two months later, in February, 1984, the U.S. Air Force released the first part of a three part study on Operation Ranch Hand pilots and crewmen. It concluded that the 1,269 pilots and crewmen involved in the herbicide spraying program in Vietnam suffered no higher death or serious illness rates than the general

population. But to Vietnam veterans, studying aircrews who had handled drums of Agent Orange, and not the soldiers exposed to it, was like testing the crew of the Enola Gay for the effects of radiation, not the survivors of Hiroshima. Said Maj. Gen. Murphy Chesney, deputy Air Force Surgeon General: "Do I worry as a physician because we used it? The answer is no. I say war is hell, you've got to win it. Agent Orange was a war agent. It was used to protect our ground troops. It saved millions of lives possibly, thousands, anyway, in Vietnam." MACV memorandums written during the war did not support Chesney's claims that Agent Orange saved lives, but no one questioned him on his conclusions because those documents were still classified. The VA, meanwhile, continued to dismiss veterans health complaints if they dealt with exposure to Agent Orange. "A lot of veterans are scared because of early news reports of physical damage, while some among any large number of people are going to have health problems such as a matter of routine natural incidence," said Dr. Barclay Shepard, director of Agent Orange Studies for the VA. "Put that together with disillusionment over the Vietnam War and anger with the government and there is little wonder that many veterans truly believe that they have in some way been hurt. But the evidence has not supported a cause and effect relationship."

### **LAWSUIT SETTLED - VETS WIN, BUT LOSE**

Then on May 7, 1984, came the news that the Agent Orange lawsuit, filed two years earlier, had been settled. Prodded by U.S. District Judge Jack B. Weinstein, attorneys for the veterans and the chemical companies reached an agreement at 4 a.m. the morning the case was to go to trial. At that time, 15,000 veterans and their relatives were involved in the suit, but about 250,000 subsequently filed claims. Under the terms of the settlement, the Vietnam veterans who claimed exposure to Agent Orange would receive \$180 million from the chemical companies. But those companies did not have to accept blame for any injuries that occurred as a result of Agent Orange. The U.S. government was not a party to the litigation. "Thus resolution is a compassionate, expedient and productive means of meeting the needs of the people involved," said David Buzzelli, vice president of government and public affairs for Dow Chemical. Veterans at first were ecstatic. "This is a defeat for the chemical companies. We brought them down to their knees and we got an open admission of guilt," said Rod Rinker of Atlanta, one of the veterans who claimed Agent Orange exposure. Not so, said the chemical companies. "When you look at the overwhelming scientific evidence, Agent Orange is not a reasonable or likely cause of the ill health effects experienced by the veterans," said R.W. Charlton, another Dow spokesman. Despite the release earlier of the results of the Operation Ranch Hand study, 1984 seemed to be a year in which the Vietnam veteran's complaints about Agent Orange and the health problems it caused were being taken seriously. The federal court decision boosted the morale of the Agent Orange claimants. Then Congress chimed in. In late 1984, Congress passed Public Law 98-542, designed to provide compensation for soft tissue sarcoma and required the VA to establish standards for general Agent Orange and atomic radiation compensation. It seemed as if the veterans were winning. But every time a veteran went to the VA seeking compensation for Agent Orange related problems, he was turned away. "Since 1984, Public Law 98-542 has been virtually ignored," said South Dakota Sen. Tom Daschle. "In spite of the intent of Congress, in spite of the efforts of everyone involved in the writing of that law, in spite of our promises to veterans at that time that at long last, after all these years, they would be given the benefit of the doubt, not one veteran in this country has been compensated for any disease other than chloracne." Agent Orange sufferers tried on several occasions to sue the government for its role in use of the herbicide, but their suits were routinely dismissed because of what has come to be known as the Feres Doctrine. In 1950, the Supreme Court ruled in a case involving the death of a military man that the government is not responsible for deaths, injuries or other losses related to military service. Meanwhile, the reality of the settlement reached in the lawsuit with the seven chemical companies began to settle in. The lawyers involved wanted \$40 million off the top for their fees. They had decided in a secret agreement prior to the May 1984 settlement that they would receive a 300 percent return on any investment in time and effort they had made. Many veterans charged that this secret fee agreement by the plaintiff's management committee precluded any incentive for the committee to represent the veterans in the suit. Judge Weinstein decided to give the lawyers \$9.2 million. It

became readily apparent that \$180 million just wasn't enough to take care of the Agent Orange claimants and their families, which had reached more than 200,000 by then. A master plan to divide the settlement noted that the settlement "is simply not large enough." The plan suggested taking \$130 million for a settlement to provide cash payments to eligible veterans or the families of deceased members. Maximum cash payments of \$12,800 to the most qualified claimants, or about 17,000 veterans and their survivors, was suggested. The master plan also suggested using \$52 million to fund a "class assistance foundation" earmarked for benefit programs.

### **TEST RESULTS CONTINUE TO BE MIXED**

Results of Agent Orange tests continued to be mixed. The results varied greatly, depending on who was doing the testing. In December, 1985, the Air Force released the third of its Operation Ranch Hand studies. It confirmed the other two: that there was no evidence that Agent Orange had any adverse affects on those who handled it during the war. "At this time, there is no evidence of increased mortality as a result of herbicide exposure among individuals who performed the Ranch Hand spray operation in Southeast Asia," the Air Force concluded. But in April, 1986, the CDC released a report that showed that the residents of a mobile home park near St. Louis were suffering from liver and immune system damage as a result of their exposure to dioxin laced chemicals. According to the study, the 154 residents of Quail Run Mobile Home Park in Gray Summit, Missouri, near Times Beach southwest of St. Louis, showed depressed liver function and deficiencies in their immune systems. The dirt roads in the mobile home park had been sprayed in 1971 with dioxin laced oil to keep down the dust. While the CDC seemed concerned about Missouri residents exposed to dioxin laced chemicals, it did not demonstrate the same concern for Vietnam veterans exposed to dioxin contaminated herbicides. In fact, information began to surface in 1986 that the CDC not only was dragging its feet on Agent Orange studies, it was deliberately ignoring information to which it had access in order to come up with results that would be favorable to the government. In the summer of 1986, the House Veterans Affairs Subcommittee on Hospitals and Health Care held hearings to assess the progress of the CDC study of Agent Orange, mandated seven years earlier. Testimony from witnesses from the Office of Technology Assessment (OTA) shocked and angered members of the committee, according to Sen. Tom Daschle. "OTA reported that the Centers for Disease Control had changed the protocol for the study without authorization," said Daschle. "OTA also reported at that particular hearing that petty arguments at CDC were interfering with the study's progress and that progress had virtually come to a standstill." After seven years of study, the CDC had made no progress on one of the most important and highly publicized issues of the war in Vietnam.

In charge of the CDC study was Dr. Vernon Houk, director of the agency's Center for Environmental Health and Injury Control. The White House's Agent Orange Working Group was supposed to supervise the CDC study while the Pentagon's Environmental Support Group was charged with providing the CDC with records of Agent Orange spraying and troop deployment. Houk's CDC team complained throughout the study that those records were too spotty to make a scientific study of the effects of Agent Orange on soldiers. Not so, said the Pentagon. Richard Christian, head of the Pentagon's Environmental Support Group, testified before Congress in mid 1986 that the records of troop movements and spraying were more than adequate for a scientific study. Christian's testimony was bolstered by two other sources. Retired Army Maj. Gen. John Murray had been asked by Defense Secretary Casper Weinberger in early 1986 to undertake a study to determine if Pentagon records were adequate for purposes of the study. After four months, Murray also determined that the records for a comprehensive study of Agent Orange were more than adequate. In addition, the Institute of Medicine, an arm of the National Academy of Sciences, had used outside consultants to study reports of troop deployment and Agent Orange spraying to determine if they were sufficient for CDC purposes. Its conclusion: the Pentagon had the necessary records. The Institute of Medicine also was highly critical of the CDC research methods, charging that it excluded from its study the veterans most likely to have been exposed to Agent Orange.

## **WHITE HOUSE COVER-UP**

Despite information from three sources that there were adequate records available for a comprehensive CDC study on Agent Orange, the White House and CDC sought to cover it up. First, the Institute of Medicine's study was never turned over to the White House. Then, Murray decided that as a non-scientist, he was in no position to challenge the objections of CDC's Houk and deferred to his judgement on the matter of records. Then, according to Daschle, the Pentagon came down hard on Christian for criticizing the CDC. "DOD officials altered his follow-up testimony before it was sent to the Hill, deleting his information challenging CDC's claims," said Daschle. By mid 1986, the White House had set the wheels in motion to cancel the CDC's Agent Orange study. There were other indications that the Reagan administration had no real interest in studies of Agent Orange or dioxin. In late 1986, the House Energy and Commerce Committee learned that the White House's Office of Management and Budget (OMB) was trying to stop all dioxin research, claiming that enough research had been done. Despite efforts to shut down research and cover up results of studies not favorable to the government or chemical companies, evidence continued to flow in showing a definite statistical link between cancers and exposure to Agent Orange and dioxin: - A 1986 study by the National Cancer Institute of Kansas revealed that farmers exposed to 2,4-D, an ingredient of Agent Orange, had six times more non-Hodgkin's lymphomas than farmers not exposed. - A VA study released in 1987 showed that Marines who served in areas of Vietnam that had been heavily sprayed with Agent Orange had a 110 percent higher rate of non-Hodgkin's lymphomas. The study also showed these Marines had a 58 percent higher rate of lung cancers. - A 1987 study in the state of Washington showed veterans who had been exposed to Agent Orange had significant increases in soft tissue sarcomas and non-Hodgkin's lymphomas. - A 1987 VA study showed veterans who were most likely exposed to Agent Orange had eight times more soft tissue sarcoma than other veterans. Meanwhile, the CDC had been taking blood samples of 646 Vietnam veterans, selected on the basis of probable exposure to Agent Orange, to test the level of dioxin in their blood. Other scientists were highly critical of this method of testing, but the CDC moved on. Then, in September 1987, the CDC exonerated Agent Orange, claiming once again there were not sufficient records available to make the necessary tests. "We cannot find a sufficiently large number of people who have been exposed to do a scientifically valid study of exposure to Agent Orange," said Houk. "We looked at three different kinds of exposure: short-term, long-term and exposure from being in an area of Vietnam where the herbicide was used. In none of these groups was there any difference in the level of Agent Orange in the blood." Houk recommended that the Agent Orange study be canceled. The White House agreed, and shortly after that the CDC's \$43 million Agent Orange study came to an end with a not guilty verdict for Agent Orange.

## **STUDY CALLED A FRAUD**

But again, there was more information available that was never presented. The Institute of Medicine in the weeks before the CDC released its results of blood tests wrote a stinging rebuke of the CDC's tests methods. It said that none of the CDC's conclusions was supported by scientific data. The CDC refused to turn this report over to the White House. "Either it was a politically rigged operation or it was a monumentally bungled operation," said Rep. Ted Weiss (D-NY), chairman of the Government Operations Human Resources and Intergovernmental Relations Subcommittee. Other information began turning up that there were concerted efforts by various agencies of the government to conceal records and information about the effects of Agent Orange. Daschle learned that there were major discrepancies between a January 1984 draft of the Air Force's Operation Ranch Hand study and the February 1984 report. According to Daschle, the draft showed there were twice as many birth defects among the children of Ranch Hand participants. "The draft also reported that the Ranch Handers were less well than the controls by a ratio of 5 to 1," said Daschle. But these results were deleted from the final Ranch Hand report, which said there had been no adverse effects from exposure to Agent Orange. "The Air Force deleted these findings from the final report at the suggestion of a Ranch Hand Advisory Committee set up by the White House Agent Orange Working Group," said Daschle. Air Force

scientists involved in the study said they were pressured by non-scientists within the Air Force and the White House to change the results and delete critical information for the final report. Daschle says he has even obtained two versions of the minutes of the meeting in which that pressure was applied. One confirms what the scientists told him. Another set deletes that information. "What happened there was a fraud perpetrated by people whose names we still do not know," said Daschle. Part of the fraud appears to have been perpetrated by the Monsanto Corp., which produces a number of chemicals containing dioxin. Monsanto knowingly rigged test results of employees who had been exposed to dioxin to make the effects of it appear far less than it actually was, according to a February 23, 1990 Environmental Protection Agency memorandum. The memorandum was written by Dr. Cate Jenkins, a chemist in the Waste Characterization Branch, Characterization and Assessment Division of the EPA to Dr. Raymond C. Loehr, chairman of EPA's Science Advisory Board Executive Committee. Jenkins writes that a key epidemiological study leading to the conclusion that there was no definitive data on human health effects of dioxins was based on examination of medical records of Monsanto employees from a 1949 explosion. That study "found no statistically significant excess cancer deaths," according to Jenkins. "This study by Monsanto apparently has now been shown to be a fraud," Jenkins wrote.

"This study on behalf of Monsanto is described, where it is alleged that the record demonstrated a deliberate course of conduct by Monsanto through 'altered' research to prove to the world that the only health consequences of dioxins was the relatively harmless, reversible condition of chloracne." Since this study was altered, Jenkins surmises, "It could be that other studies on exposed populations are similarly flawed and subject to fraud." The study in question was done of employees at a Nitro, West Virginia Monsanto plant following an explosion in 1949 in which a number of them were exposed to dioxins. The study, performed by two Monsanto employees, concluded that the death rate of exposed workers was the same as the death rate of unexposed workers. However, later investigation revealed that the authors of the study omitted five deaths from the exposed group and took four workers who had been exposed and put them in the unexposed group. This decreased the death rate in the exposed group and increased the death rate in the unexposed group. The exposed group actually had 18 cancer deaths as a result of the exposure, not the nine deaths reported in the study. And there were a total of 28 cancers in the exposed group, compared to only two cancers in the unexposed group. This type fraud appears to have been perpetrated regularly in connection with Agent Orange research, yet Congress continues to rely on this flawed research when it considers legislation that would benefit the victims of Agent Orange and the other rainbow herbicides.

## **MONTGOMERY HOLDS UP AGENT ORANGE LEGISLATION**

Efforts to get comprehensive Agent Orange legislation through Congress to right the wrongs of the cover-ups have been unsuccessful largely through the efforts of one man: Rep. Sonny Montgomery of Mississippi, chairman of the House Veterans Affairs Committee, who claimed to be the friend and champion of veterans in Congress - in fact had virtually single-handedly bottled up Agent Orange legislation. The CDC, meanwhile, continues to perpetrate the scientifically flawed myth that Agent Orange and dioxin posed no health threats to Vietnam veterans. In a study released March 29, 1990, the CDC admitted that Vietnam veterans face a higher risk of non-Hodgkin's lymphoma, but denied that it was a result of exposure to Agent Orange. It said the studies showed that Vietnam veterans do not have higher rates of soft tissue sarcomas, Hodgkin's disease, nasal cancer, nasopharyngeal cancer and liver cancer.

## **BIZARRE FINDING**

One of the more bizarre aspects of this report from the CDC was the claim that those veterans who suffered most from non-Hodgkin's lymphoma had served on Navy ships off the coast of Vietnam. It said that those who had served in III Corps, which had some of the heaviest Agent Orange spraying of the war, seemed to be at

lower risk. "There is no risk in this study associated with (dioxin) exposure," said Dr. Daniel Hoffman of the CDC. Veterans groups were appalled by the findings. "The conclusion seems to fly in the face of other scientific studies, which indicates there is a connection between Agent Orange and cancer, birth defects and other disorders. It makes it sound like Agent Orange is like orange juice, healthy for you instead of harmful," said John Hanson, a spokesman for the American Legion.

### **HOUSE COMMITTEE SAYS STUDY FLAWED**

The House Committee in its August 1990 report also found that the 1987 Agent Orange study canceled by CDC was done so at the behest of the White House. Its report was a stinging rebuke to the White House and the CDC. The report offered these conclusions: "A. The CDC Agent Orange exposure study should not have been canceled because it did not document that exposure of veterans to the herbicide could not be assessed, nor did CDC explore alternative methods of determining the exposure. "B. The original protocol for the CDC Agent Orange study was changed to the point that it was unlikely for the heaviest exposed soldiers to be identified. "C. The blood serum analysis, which was used as proof by CDC that an Agent Orange exposure study could not be conducted, was based on erroneous assumptions and a flawed analysis. "D. The White House compromised the independence of the CDC and undermined the study by controlling crucial decisions and guiding the course of research at the same time it had secretly taken a legal position to resist demands to compensate victims of Agent Orange exposure and industrial accidents. "E. The Federal Government has suppressed or minimized findings of ill health effects among Vietnam veterans that could be linked to Agent Orange exposure." An indepth reading of the report reveals even more sordid details of how the CDC and the White House stacked the deck on Agent Orange. According to the report, "The CDC study was changed from its original format so that it would have been unlikely for the soldiers who received the heaviest exposure to the herbicide to be identified. CDC accomplished this by unjustifiably discrediting the military records provided to it by the Department of Defense's Environmental Study Group (ESG)."

### **POLITICS AND MONEY MORE IMPORTANT THAN HUMAN LIVES**

The rebuke of the White House and its Agent Orange Working Group (AOWG) was even more revealing of the manner in which Agent Orange studies have been manipulated by political and economic concerns, not concerns about human lives. "The original mandate to focus the White House panel on the effects of all herbicides was abruptly altered by the Reagan White House," according to the report. "By focusing the work of AOWG on Agent Orange only, the administration laid the groundwork for manipulating the study to the point of uselessness. "A possible reason that the White House chose this path is revealed in confidential documents prepared by attorneys in OMB. The White House was deeply concerned that the Federal Government would be placed in the position of paying compensation to veterans suffering diseases related to Agent Orange and, moreover, feared that providing help to Vietnam veterans would set the precedent of having the U.S. compensate civilian victims of toxic contaminant exposure, too."

### **SOME DEFY CDC STUDY**

Despite the CDC's continuing recalcitrance on the issue of Agent Orange exposure, there have been other, more enlightened voices heard. Secretary of Veterans Affairs Edward Derwinski is one of them. After hearing of the CDC's latest study, he ordered the VA to pay compensation to all veterans suffering from non-Hodgkin's lymphoma, a ruling which could mean as much as \$23 million to the 1,600 non-Hodgkin's lymphoma sufferers or their widows and children. Derwinski also decided not to challenge a California court's finding that the VA was applying too strict a standard to determine whether Agent Orange harmed Vietnam veterans. Derwinski ordered the VA to abide by legislation passed in 1984 to give veterans the benefit of the doubt on health claims. "Overall, we're doing things a lot different here now," said Derwinski. "We're making decisions without



sweeping things under the rug. We're not procrastinating. We're also shaking up a few people and sweeping away a few cobwebs." Another of the more enlightened voices is that of retired Adm. Elmo Zumwalt Jr. Another of the more enlightened voices is that of retired Adm. Elmo Zumwalt Jr., who ordered certain areas of Vietnam to be sprayed with Agent Orange. Zumwalt's son, Elmo Zumwalt III, served in the Navy in Vietnam and was exposed to the herbicide. Elmo Zumwalt III died in 1988 at the age of 42 from Hodgkin's diseases and lymphoma. Father and son believed that exposure to Agent Orange caused the cancers. "I definitely believe my son would have had an additional 20 years of life had we not used it," said the elder Zumwalt. Adm. Zumwalt has become a crusader on the issue of Agent Orange, charging that the government "intentionally manipulated or withheld compelling information on the adverse health effects" associated with exposure to Agent Orange. "The flawed scientific studies and manipulated conclusions are not only unduly denying justice to Vietnam veterans suffering from exposure to Agent Orange," said Zumwalt, "they are now standing in the way of a full disclosure to the American people of the likely health effects of exposure to toxic dioxins." Daschle is another of the enlightened voices, calling not only for true, scientific studies of Agent Orange free from political interference, but investigations of the cover-ups by the White House and the CDC that enabled them to perpetrate the myth that Agent Orange is not harmful to human health. "Can you blame veterans for wondering what is going on?" asked Daschle. "Can you blame their families who continue to watch all of this unfold, and not share their sense of frustration, their sense of indignation at the conflicting comments, the duplicity, the obfuscation that occurs time and time again when government officials at the highest level are being called upon to inform the public, but they cover up information instead?"

**GOVERNMENT PLAYS WAITING GAME** But as the government continues to drag its feet, more veterans and their children continue to suffer the effects of Agent Orange. Time is on the side of the government. The longer it waits, the longer it procrastinates, the more the problems of Agent Orange exposure is diminished by the deaths of those who suffered from exposure to it. Their names could be added to the black granite wall of the Vietnam memorial, casualties of the rainbow herbicides that followed them home from the war.

#### **RAINBOW HERBICIDES AND THEIR COMPONENTS:**

- Agent Orange: 2,4-D and 2,4,5-T; used between January 1965 and April 1970.
- Agent Orange II (Super Orange): 2,4-D and 2,4,5-T; used in 1968 and 1969.
- Agent Purple: 2,4-D and 2,4,5-T; used between January 1962 and 1964.
- Agent Pink: 2,4,5-T; used between 1962 and 1964.
- Agent Green: 2,4,5-T; used between 1962 and 1964.
- Agent White: Picloram and 2,4-D.
- Agent Blue: contained cacodylic acid (arsenic).
- Dinoxol: 2,4-D and 2,4,5-T; used between 1962 and 1964.
- Trinoxol: 2,4,5-T; used between 1962 and 1964.
- Diquat: Used between 1962 and 1964.
- Bromacil: Used between 1962 and 1964.
- Tandex: Used between 1962 and 1964.
- Monuron: Used between 1962 and 1964.
- Diuron: Used between 1962 and 1964.
- Dalapon: Used between 1962 and 1964.

AGENT ORANGE BIRTHDEFECTS BLOG SPOT This is a new site called Agent Orange & Birth Defects where we will post abstracts of important studies on reproductive problems associated with Agent Orange and news briefs. National Birth Defect Registry Baby Green Gene's Marketplace Excellent-Syber Sarge's Agent Orange Website Agent Orange Quilt of Tears Vietnam Veterans Wives Agent Orange Review by the VA updated The Legacy Continues  
By Betty Mekdeci

Updated January 18, 2008

The soldiers are dying. But, even more tragically, the children they have left behind are suffering. Sometimes at Birth Defect Research for Children we hear from veterans, but usually it is wives and children who send us poignant messages: "I lost my husband from a cancerous brain tumor 13 months ago. My son has many disabilities, including Tourette's syndrome, mental retardation, mild cerebral palsy, hydrocephalus, and he is profoundly deaf. He will never be able to live on his own." "My father passed away in 1998. He had many health problems, including type II diabetes. He was only 50 years old. Agent Orange has been a part of my life from the moment I was born. I was born without my right leg, several of my fingers, and my big toe on my left foot. My mother had three miscarriages. My younger brother (age 29) has to wear bifocals and suffers from chronic joint pain." "I served four tours in Vietnam. We have three children: one daughter with a heart defect, another with scoliosis and digestive problems, and a son born with a defective optic nerve that has left him blind in the right eye. There is no history of birth defects on either side of our family." Since 1991, we have recorded thousands of such cases in our National Birth Defect Registry. Some 2.8 million Americans served in the Vietnam theater of operations. Three-to-six percent of Vietnam veterans' children are born with some kind of birth defect (Emory University School of Medicine reports a 3-4 percent birth-defect rate among the general population). An impressive body of scientific evidence points to increases in birth defects and developmental problems in the children of Vietnam veterans and others exposed to dioxin-like chemicals. Agent Orange was a combination of two defoliants, 2,4,5-T and 2,4-D contaminated by dioxin (TCDD), a toxic byproduct of the chemical production process. More than 19 million gallons of herbicides were sprayed in Vietnam between 1962-71. More than 11.2 million gallons sprayed after 1965 were dioxin-contaminated Agent Orange. Agents Purple, Pink, and Green used before 1965 were even more highly contaminated with dioxin. According to Barry Commoner and Thomas Webster in their 2003 book *Dioxins and Health*, "the current scientific evidence argues not only that dioxin is a potent carcinogen, but that the non-cancer health and environmental hazards of dioxin may be more serious than believed previously." They report that dioxin appears to act like a persistent synthetic hormone that interferes with important physiological signaling systems that can lead to altered cell development, differentiation, and regulation. The most troubling consequence is the possibility of reproductive, developmental, and immunological effects at the levels of dioxin-like compounds present in the bodies of the average person. Since studies of Vietnam veterans exposed to herbicides in Vietnam have found much higher levels of dioxin in their bodies than the average person, these effects also should be detectable in their children. In 1996, the National Academy of Sciences found "limited/suggestive" evidence of an association between Agent Orange exposure and spina bifida, a neural tube defect, in the children of Vietnam veterans. In 2000, Dr. H.K. Kang of the Environmental Epidemiology Service of the Veterans Health Administration published a study that found that the risk of moderate-to-severe birth defects was significantly associated with the mother's military service in Vietnam. As a result of these findings, the VA now funds assistance programs for spina bifida in the children of male or female Vietnam veterans and for all birth defects without other known causes in the children of female veterans. The Australian Department of Veterans Affairs (without acknowledging a link to Agent Orange exposure) provides treatment to the children of Vietnam veterans with spina bifida, cleft lip or palate, acute myeloid leukemia, and adrenal gland cancer. Other studies offer evidence that many more birth defects may be associated with dioxin-contaminated herbicide exposure in Vietnam. In 1990, an independent scientific

review of the literature was sponsored by Vietnam Veterans of America, the American Legion, and the National Veterans Legal Services Project. Seven prominent, independent scientists and physicians on this Agent Orange Scientific Task Force concluded that elevated incidences of birth defects in the children of Vietnam veterans were found in several studies. These included spina bifida, oral clefts, cardiovascular defects, hip dislocations, and malformations of the urinary tract. In addition, defects of the digestive tract and other neoplasms such as neuroblastoma also were higher in Vietnam veterans' children.

Aschengrau and Monson of the Harvard School of Public Health conducted a study published in 1990 in the American Journal of Public Health on paternal military service and

endocrine problems including thyroid disorders and childhood diabetes. More and more studies of prenatal exposures to dioxins and similar chemicals are adding support for these associations. According to Linda Birnbaum of the U.S. Environmental Protection Agency, dioxin can modulate growth and development. In the embryo and fetus, dioxin-altered programming can result in malformations, anomalies, fetal toxicity, and functional and structural deficits that often are not detectable until later in life. In a paper published in Environmental Health Perspectives, Birnbaum discusses research that demonstrates that prenatal exposures to endocrine disruptors (chemicals that can disrupt hormone activity) such as TCDD can alter hormones, reproductive tissue development, and increase susceptibility to potential carcinogen exposure in the adult. Increased susceptibility to chronic childhood infections and cancers later in life may be a result of dioxin's effects on the developing immune system. Researchers in 2000 investigated the immunological effects of everyday exposures to PCBs and dioxins in preschool-age Dutch children. The researchers found that prenatal exposure to these chemicals was associated with changes in the T-cell population. They concluded that the effects of prenatal background exposure to PCBs and dioxins persist into childhood and could be associated with a greater susceptibility to infectious disease. Another 2003 study by a team of researchers from Quebec reported their finding of a chemical imbalance that could be a marker for prenatal immune damage caused by organochlorines (which include dioxin-like compounds). The researchers found that the lymphocyte cells of newborns exposed to higher concentrations of these chemicals during prenatal development secreted fewer cytokines than those of a control group of newborns. These alterations of the immune system could lead to increased susceptibility to infection. A growing body of evidence is linking prenatal exposures to dioxin-like chemicals to learning and behavioral deficits. At a Children's Health Meeting in 2000 sponsored by the National Institute of Environmental Health Sciences, Jerry Heindel reported on several studies of pregnant women who had consumed several meals of PCB-contaminated fish per month during pregnancy and who gave birth to infants with small but detectable learning and behavioral deficits. The children with the highest exposure averaged six points lower in IQ compared to children with lower levels of exposure. A 2007 study from the Department of Preventive Medicine at Kyungpook University in South Korea reported associations between blood concentration of persistent organic pollutants (including dioxins) and increases in learning and attention disorders in children in the general population. Thomas Zoeller, an endocrinologist at the University of Massachusetts, has found that dioxin-like PCBs activate cellular machinery that can alter the structure of other, non-dioxin-like PCBs. Some of these dioxin-induced metabolites can act directly on the thyroid hormone receptor. In the fetal brain, this could alter the course of development leading to learning and developmental disabilities. The new research on dioxin and dioxin-like chemicals holds the promise of unraveling the intricate ways in which these chemicals can alter embryonic development. The research should continue, but it is now 35 years since Agent Orange was first sprayed in Vietnam. And the calls keep coming. In Dioxins and Health, Thomas Webster and Barry Commoner comment: "Much of the media coverage of the dioxin debate has consisted of trying to convince the public that their common sense is wrong and that experts know best. In this case, the public's view has been largely correct. Dioxin is a dangerous and unwanted chemical pollutant." Vietnam veterans who would like to add information about their children's birth defects or disabilities to the National Birth Defect Registry sponsored by Birth Defect

Research for Children can register online at [www.birthdefects.org](http://www.birthdefects.org) Betty Mekdeci is the executive director of Birth Defect Research for Children.

## **HELP FOR CHILDREN**

Starting October 1, 1997, the VA will pay compensation and offer free medical care and vocational rehabilitation to Vietnam vets children with Spina Bifida.

The VA also offers assistance to children of veterans if the veterans have been rated at least 30 percent service-connected disabled. Such veterans receive a dependents' allowance. In addition to monetary allowances, vocational training and rehabilitation, the Department of Veterans Affairs (VA) also provides VA-financed healthcare benefits to women Vietnam veterans' birth children diagnosed with certain birth defects. For specifics go to <http://www.va.gov/hac/cwvv/cwvv.htm>

Children with disabilities may be eligible for Supplemental Security Income benefits. One of the Agent Orange-funded programs offers a 16-page booklet discussing children's eligibility for SSI ("SSI: New Opportunities for Children with Disabilities"). Contact:

Mental Health Law Project  
1101 15th St., NW,  
Ste. 1212  
Washington, DC 20005

The Agent Orange Program provided funding for a program for families with children with birth defects or other special health needs. The Center for Developmental Disabilities at the University of South Carolina offers a National Information Service which consists of telephone access to trained counselors, to provide information and referral services for parents of children with disabilities, including information and referrals concerning genetic counseling. Contact:

1-800-922-9234, ext. 401  
1-800-922-1107, ext. 401 (in South Carolina)

## **The Legacy of Agent Orange**

You ask what we were doing over there all those years: what it was all about? I'll tell you pure and simple: it was a noble cause. -- Ronald Reagan

Occasionally I saw these [genetically deformed] children in contaminated villages in the Mekong Delta; and whenever I asked about them, people pointed to the sky; one man scratched in the dust a good likeness of a bulbous C-130 aircraft, spraying. -- John Pilger

The US has dumped [on South Vietnam] a quantity of toxic chemical amounting to six pounds per head of population, including women and children. -- US Senator Gaylord Nelson

Perhaps the most gruesome legacy of Agent Orange is to be found in a locked room in Tu Du Obstetrical and Gynaecological Hospital in Saigon. Here the walls are lined with jars containing aborted and full term fetuses. -- Hugh Warwick

Monsanto has in fact submitted false information to EPA which directly resulted in weakened regulations ... -- Cate Jenkins

Monsanto covered up the dioxin contamination of a wide range of its products. Monsanto either failed to report contamination, submitted false information purporting to show no contamination or submitted samples to the government for analysis which had been specially prepared so that dioxin contamination did not exist. -- Cate Jenkins

It will take a long time to clarify the exact consequences of Agent Orange. -- Douglas Peterson, US Ambassador to Vietnam

We need more facts ... There is need for more scientific research on this subject before factual statements can be made to the effect Agent Orange had in Vietnam. -- Madeline Albright

International research has proven that, during the war, 72 million litres of chemicals were poured onto Vietnam, over 40 million were dioxins - there is a link. -- Vu Trong Huong, director War Crimes Investigation

We have over 50,000 children that have been born with horrific deformities; the link is clear. -- Vu Trong Huong, director War Crimes Investigation

These Agent Orange births are normal for us ... Every now and then we have what we call a foetal catastrophe - when the number of miscarriages and deformed babies, I am afraid to say, overwhelms us. -- Dr Pham Viet Thanh, Tu Du hospital

We were wrong, terribly wrong. -- Robert McNamara, former US Secretary of Defence during Vietnam War

Never again must the US or any other country interfere in another country's affairs. -- Len Aldis, secretary Britain-Vietnam Friendship Society

It should never be forgotten that the people must have priority. -- Ho Chi Minh

Agent Orange was used in Vietnam by the Americans during the Vietnam War. Code named Operation Hades, Agent Orange was part of a defoliant programmed to deny cover for the Viet Cong. The Vietnam War was not the first time defoliants had been used. The British used defoliants in Malaya during counter-insurgency operations. ICI supplied the chemicals and according to a Colonial Office report saw it as 'a lucrative field for experiment'. To cut back forest to deny the opportunity for ambush is nothing new. In England, in the Middle Ages, either side of a highway was cut back to a set distance to deny the opportunity for highway robbers. What was new was the use of toxic chemicals.