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*Q's submitted by the
Aus Emb to the VA*

in relation

SUGGESTED QUESTIONS TO BE ASKED OF THE U.S. VETERANS' ADMINISTRATION
IN RELATION TO VIETNAM VETERANS AND THE USE OF PESTICIDES DURING THE
VIETNAM WAR

*Submitted 10/7/82
Responded*

Spraying

- (1) What liaison arrangements existed between U.S. and Australian forces in respect of RANCH HAND operations in the Australian (First Australian Task Force) area of operations?
- (2) Is there any evidence to suggest that Australian forces could have procured herbicides or insecticides from U.S. sources?
- (3) The National Academy of Sciences Committee (1974) concluded that the HERBS tape data accounted for approximately 86% of all U.S. herbicide operations. Is this figure still believed to be a reasonable estimate of the reliability of the HERBS tape? If not, what is the current estimate of the percentage of operations, and quantity of herbicides, accounted for by the HERBS tape?
- (4) What percentage of helicopter and ground spraying operations, respectively, are accounted for in the HERBS tape?
- (5) What quantities of Agents Orange, Blue and White are estimated to have been sprayed by U.S. forces in South Vietnam by (a) helicopters and (b) ground operations?
- (6) Several authors (e.g., Craig, NAS, Westing, Young) have compiled estimates on the quantities of each of the defoliation agents used in South Vietnam. Can you provide the most up-to-date estimates by volume (U.S. gallons will suffice) of the following agents; Orange, White, Blue, Green, Pink and Purple; and by weight the following chemicals; 2,4,5-T, 2,4-D, TCDD, picloram and cacodylic acid?

- yes*
- (7) The National Academy of Sciences Committee (1974) estimated that about 3 600 000 acres were sprayed in South Vietnam: about 2 370 000 acres or 66% of this area was sprayed once; 800 000 acres or 22% twice; 280 000 or 8% three times; and 130 000 or 4% four or more times. Are these figures the most correct estimates available?
- See (Australia) Testimony*
- (8) What estimates are available on the quantities of the various herbicides that were 'dumped' by U.S. aircraft? Of those 'dumps', what quantities would have been in the vicinity of Australian forces?
- Comment*
- (9) The NAS Committee Report (1974) estimated that swath width of herbicide spraying was 80m for fixed-wing aircraft. Is this the currently accepted figure?

- Eglin DATA*
- (10) What evidence is available on the amount of drift that would have been generated by (a) herbicides, and (b) insecticides sprayed by U.S. fixed wing aircraft and helicopters, respectively. Over what distance would spray have been expected to drift?
- AMD Short*
- (11) Is there any evidence available to suggest that insecticides other than malathion and DDT were used by U.S. forces (e.g., chlordane, dieldrin, diazinon or pyrethrins)?

Dioxin (TCDD)

- See Boney's
You 3
E. Products*
- (12) It has sometimes been claimed that the TCDD level in the 2,4,5-T used in the Vietnam war was increased specifically for war use. Rather, is it correct to say that 'no new herbicidal compounds of enhanced toxicity were especially developed for the war' and that the 'active ingredients were identical to those used for agriculture at that time'?
- DELR - 70 - 78 - 92*
- (13) Young et al (1978) estimated that 167 kg of TCDD had been dispersed with a weighted mean concentration of 1.98 ppm. Westing (1982) has noted that an average TCDD content of 1.9 ppm suggests a total of 110 kg of TCDD. He then points out that a subsequent estimate from Young (1980) of a total of 170 kg of TCDD has been made, suggesting that perhaps the average content of TCDD could be greater than 1.98 ppm. Can you comment on this?

3 Oct 58
47 kg

ORANGE: 303
4.5 ppm ~
2,4,5-T

What is the most widely accepted figure for the total amount of TCDD dispersed over South Vietnam and what is the best estimate of the average concentration of TCDD?

$$10.7 \times 10,646 \times 10^3 = 11,390,100.0 = 1.78 \text{ ppm}$$

Stellard
Lampark

- (14) What evidence is available to substantiate or repudiate claims that the burning of vegetation sprayed with 2,4,5-T will increase the TCDD content of that herbicide?

Health Problems

- (15) Has there been any suggestion that there is any difference in the morbidity and mortality rates amongst members of the various U.S. services who served in Vietnam, e.g., Air Force, Navy, Army, Marines?

- (16) Have any studies been conducted comparing the stress levels between personnel who served in World War I, World War II, Korea and Vietnam? If so, what were the outcomes of these studies?

- (17) Were there any indications during the Vietnam war that insecticide spraying had caused any health problems among U.S. troops? If so, which insecticides were responsible and what were the short and long term symptoms?

- (18) Are there any figures available on the mortality rates and causes among U.S. Vietnam veterans?

- (19) What information is available on the progress and any results from the following studies:

- . RANCH HAND II - U.S. Air Force;
- . Birth Defects and Military Service in Vietnam - Centre for Disease Control;

- . Epidemiological Studies of Agent Orange - Veterans Administration;
- . Proportional Mortality of Vietnam Veterans, Other Veterans and Matched Controls in New York State - State of New York; and
- . Epidemiological Study of Soft-Tissue Sarcoma - State of New York.

(20) Is there any information available on the number of Vietnam veterans who are serving, or have served, prison sentences since returning from Vietnam? What percentage of all prisoners do Vietnam veterans comprise?

(21) Young (1981, p. 39) says that 'there is currently no valid evidence linking exposure to 2,4,5-T and TCDD with instances of cancer'. Does this viewpoint express the current thinking in the U.S.?

(22) It has been suggested that an estimated 750 000 to 1 000 000 Vietnam veterans are experiencing psycho-social adjustment problems which significantly interfere with their personal functioning (Figley, 1978; Wilson, 1978). Can you comment on this statement?

(23) The United Vietnam Veterans Organization has presented some statistics reportedly compiled by the Veterans' Administration. Can you comment on the reliability of these figures:

- . 181 000 Vietnam veterans have died since their return from South Vietnam (September, 1981); and
- . of the 81 000 veterans who received Agent Orange examinations (as of 9 April 1982)

30% no complaints

40% skin rashes

18% nervousness

- 14% headaches
- 12% abdominal complaints
- 9% personality disorders
- 9% numbness
- 7% muscle ache
- 5% sexual disfunction?

What quantities of each of the insecticides used by U.S. Forces are estimated to have been spread by fixed wing aircraft, helicopter and ground operations respectively?

What percentage of the above would have been spread in the vicinity of Australian Forces?

1. The role of Australian Forces in herbicide operations was not discussed in W. A. Buckingham's 1982 book "Operation RanchHAND, The Air Force and Herbicides in Southeast Asia 1961-1971". References to Australian use of herbicides were also not found in the CHECO (Contemporary Historical Evaluation of Combat Operations) Reports on ~~Herbicide~~ Operations in Southeast Asia.

2. There ~~is~~ ^{is} no readily documented evidence to suggest that Australian Forces could have procured herbicides or insecticides from U.S. sources. However, only through an extensive examination of ^{logistic} records for the Vietnam ^{period of the} conflict could a final answer to this question be provided.

3. The Army Agent Orange Task Force
(Mr Richard Christian, HQ DA/DAG - AMR-R
Rm 1128, Hoffman 1, Alexandria VA 22331)
is now preparing a Military Service
HERBS TAPE that will document
many missions (especially RANCH HAND
missions prior to ^{mid 1965} Abort Mission, and
base-parameter applications) ~~is~~ not recorded
in the 1974 National Academy of
Science Report.

4. Contact the Army Agent Orange Task
FORCE (SEE ~~Text~~ Answer to
Question 3).

5. Contact the Army Agent Orange Task
Force. (See ~~Text~~ Answer to Question 3)

1978

6. The data in Technical Report by Young et al. (~~OEHL-TR-78-92~~ OEHL-TR-78-92) The Toxicology, Environmental Fate, and Human Risk of Herbicide Orange and Its Associated Dioxin) using the procurement data compiled by D.A. Craig in 1975 are the best available estimates of Herbicides Orange, White and Blue ~~and~~ disseminated in Southeast Asia. The 1961 Memorandum on Herbicide Procurement (cited in OEHL-TR-78-92) is the best available information on quantities of ^{Herbicides} Green, Pink, and Purple used in Southeast Asia. The appropriate tables from the Technical Report are attached (Atch 1)

7. YES

8. See the statement provided by Richard S. Christian to the Committee on Veterans' Affairs, United States Senate, 18 November 1981, (Atch 2)

9. Klein and Harrigan (Comparison Tests of Defoliants. Air Force Technical Report ADTC-TR-69-30, Volume 3, 1969, 356 p.) found that in five standard Orange missions using the C-123/A/A 45Y-1 Spray System the statistical mean value for maximum swath having a deposition rate that would result in acceptable defoliation was 79 ± 6 meters.

10A. (Calibration Test of the C-123K/A/A 45Y-1 Spray System. Air Force Technical Report ADTC-TR-70-36, 1970, 160 p.)

Harrigan ~~()~~ reported that in a test program evaluating the dissemination characteristics of the A/A 45 Y-1 Spray System, the mean recovery of Herbicide Orange by ground sampling methods from six missions flown under operational parameters typically used in South Vietnam was 87 percent. The remaining 13 percent may have been undetected due to sampling technique or may have failed to impact the sampling array due to drift or volatility. The mean particle size for the six missions flown was 367 micron. ~~()~~ Harrigan ~~()~~ in the above test program with Herbicide Orange, found the following droplet size distribution in the mean percent mass recovered:

Particles less than 100 micron micron	1.9 percent
Particles 100 to 500 micron micron	76.2 percent
Particles greater than 500 micron micron	21.9 percent

In general, test studies at Eglin AFB, Fla. ^{under the operational conditions recommended for use in Southeast Asia.} suggested that herbicides would have minimally drifted. The best estimates (Young) would place 75 percent of the herbicide ^{including a drift} and volatile mortars, within the spray swath and the remaining 25 percent within 1 km. It is also likely that 95 percent of the insecticide would have been deposited within ~~the~~ 1 km.

Intercepted

10B. In a recent court case in Australia the court ruled that a herbicide had spread by volatilising i.e., carried on warm air currents in the absence of wind. ↪

11A. A review of some of the available records from Chemical Corps Units ^{that served} in South Vietnam, revealed that in addition to malathion and DDT insecticides, the medicinals chlordane (72 percent formulation), Lindane Dust (1 percent), Baytex Granules (2 percent), Baygon (0.5 percent) and Dieldrin (15 percent) were used on a "limited" basis.

11B. What quantities of each of the insecticides used by U.S. Forces are estimated to have been spread by fixed wing aircraft, helicopter and ground operations respectively?

()
What percentage of the above would have been spread in the vicinity of Australian Forces?

The Army Agent Orange Task Force continues to collect mission data on the insecticides used in Southeast Asia. In addition, the Armed Forces Pest Management Board is also assembling data on the insecticide program employed in South Vietnam, when these two efforts are completed, it may be possible to "crudely plot" the relationship of troop movement to insecticide missions, ^{however,} there is no time table ^{established} for the completion of this task.

Dioxin (TCDD)

12. ~~Herbicide~~ Herbicide Orange was produced from eight (8) different chemical companies during the course of its use in Southeast Asia. Many of these companies produced purely herbicide for commercial distribution.

The military specifications for Herbicide Orange only described the percentage of 2,4-D and 2,4,5-T used in product. No mention was made of TCDD contamination.

There is no evidence to even suggest that TCDD levels were different from herbicide products used in the United States during the same time period.

13. Young et al (1978) noted that partners do not use contaminated products used in Southeast Asia (1962-1970). Thus the Orange may have contained 92 kg TCDD and the total inventory of Herbicide Pink, Purple, and Green, may have contained 75 kg TCDD. ^{Inventory} Wastung (1972) discovered only Herbicide Orange.

14. A thorough review of the scientific literature on the environmental production of REDD from burning vegetation sprayed with herbicide is found in Young et al. 1985, all is attached.