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*"Victim Lessons Learned No 74: Accidental Herbicide DAMAGE"*

(2) WHITE is similar to ORANGE but is slower acting and takes from 10 to 14 days for discoloration and six to eight weeks for effective defoliation.

(3) BLUE is used against narrow leaf vegetation, such as rice, bamboo, banana, or grass. Discoloration occurs within 24 hours and leaves wilt in two to four days.

c. Toxicity and Persistence. All these herbicides present low risks to humans and animals. They have been widely used in the US for more than 20 years on food and other crops, rangeland, and forests. No special precautions are needed by air or ground crews and friendly troops are often sprayed without ill effects. None of the herbicides is persistent in soil, and areas must be resprayed periodically to kill regrowth, if the tactical situation requires it.

d. Methods of Application. By far, most herbicides are sprayed by 1000-gallon spray apparatus mounted in U.S. Air Force aircraft. Herbicides are also applied using a variety of other devices on helicopters and ground equipment.

4. (U-FOUO) ACCIDENTAL DAMAGE. The following recent examples are cited as being typical accidental herbicide damage. Their effects, causes, and remedies will be presented.

a. In early 1969 large numbers of shade trees in Da Nang appeared to be dead or dying. Garden plots in the city were also damaged. There were strong indications that the damage was caused by herbicides either by drift or leakage from spraying aircraft, or from herbicide drums brought into the city. Investigation ruled out the aircraft leakage or drifting spray. In every case of damage however, drums which were considered empty were either present or had been moved through the area. Herbicides are pumped from 55-gallon drums into the spray aircraft. The method of pumping leaves a residue of two to three gallons in each drum. In the case at hand, the bungs were generally not replaced (or at best loosely replaced) and the drums were loaded onto trucks, hauled into Da Nang (often dripping herbicide along the route), and sold to commercial concerns. The herbicide that remained in the drums after sale was usually drained onto the ground at numerous points throughout the city. Even if completely

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drained at the air base, the vapors from the drums can cause serious plant damage. Cleaning the drums is difficult, if not impossible, as some herbicides have an oily base and the small bung hole limits access to the inside of the drum. These drums should be kept under control and not released or reused indiscriminately.

- (2) Similar herbicide supply operations were carried out at Nha Trang, Bien Hoa, Phu Cat, and Saigon. Damage to crops was also noticed at these locations.

b. Xuan Loc District of Long Khanh Province.

- (1) In June 1969 the Long Khanh Province Chief and his senior advisor became concerned about what appeared to be herbicide damage to crops along route QL 20 north of Xuan Loc. They suspected spray drift from a UC-123 target to the west. Investigation along the highway as far north as Tuc Trung revealed that very few crops, other than beans which are highly sensitive, were affected. It was noted that the intensity of damage was greatest in and near the towns and gradually decreased with distance away from the towns. This is not characteristic of herbicide drift.
- (2) Further investigation of the towns' perimeter defenses, outposts and gun emplacements revealed the presence of large stocks of WHITE and some ORANGE for ground spray operations. These installations, located on high ground overlooking the towns, contained leaking drums and many undrained "empty" drums. Leaking and "empty" drums were being moved along route QL 20. The usual wind speeds in this area at this time of the year are too high for safe herbicide operations.
- (3) In Xuan Loc itself, one of the major compounds contained a large stock of WHITE in which there were several leaking drums and many empty drums. Extensive damage to trees and other vegetation was noticed. Many empty drums were seen around many private houses in each of the towns.
- (4) It was therefore concluded that the herbicide damage in Xuan Loc and north from it along route QL 20 was probably caused by improper hand spraying techniques and improper handling and storage of herbicide drums.

5. (U-FOUO) LESSONS LEARNED.

- a. Extreme care must be exercised when handling herbicides. Unless properly controlled, herbicides can cause extensive damage to crops, trees, and other vegetation.