

**Notes on Herbicides used during the Vietnam War**  
**by Gary D. Moore, Chairman (1992-1997)**  
**Michigan Agent Orange Commission**

Contrary to the rumor that herbicides were only used on broad leaf vegetation (Agents, Orange and White), the purpose of Agent Blue was narrow-leaf plants and trees (grass, rice, bamboo, banana, etc.) as stated in a declassified MACV memo, MACJ3-09, dated 20 Nov 69. Another statement in this same report, though highly questionable, said, "**They [the herbicides, Agents] are not harmful to animals or humans in small quantities or at normal rates of application.**" (Note: There was NO scientific data referenced in the report to support this claim whatsoever.)

In 1969, a MACV report recommended **extreme** caution for handling of herbicides by ARVN and U.S. military personnel. Hand spraying of herbicides was to be performed from dawn to 1000 hours, and only in calm or low wind conditions (when the inversion was intact). This procedure was designed to prevent fumes (vapors) from drifting. MACV instructions said that use of undiluted herbicide was not recommended since its effect had a much longer and devastating result. Dilution of Agent Blue (herbicide) was to be one to twenty (1:20) parts clear water prior to application on narrow leaf vegetation. Agent White mixture was one to fifty (1:50) parts of clear water prior to application. Muddy (occluded) water was not to be used because it made (Agents) Blue and White herbicides ineffective. Agent Orange mixture was ten to twenty (1:10-20) parts of JP\_4 or diesel fuel (contaminated fuel was acceptable) before using. All the **agents** were to be applied directly to the plants, and not the soil. Drums were to be rinsed at the site, sealed, and returned to the supply site. The drums were not to be transported through South Vietnamese habitations unsealed or unrinsed.

Empty herbicide (55-gal) drums were often used (and sold) without proper cleansing. In the same report (20 Nov 69) from MACV, it stated **that gasoline stored in a herbicide (55-gal) drum was later used in a power generator. The vapors caused a gradual defoliation of several fruit and ornamental shade trees in the immediate area of the generator.** The report also indicated that an **open drum** of (Agent White) herbicide caused similar damage because of the evaporating vapors. Further evidence of volatility of vapors to surrounding vegetation from empty, improperly rinsed herbicide was cited in another section of the declassified (MACV) report. This section also indicated that the rinse water (or fuel) affected vegetation, and must be **carefully controlled.** A point of interest is the statement made by the reporting officer that **contaminated** JP\_4 or diesel fuel was also an effective herbicide though **less safe**, and had **longer lasting effect on vegetation.** The MACV report did not elaborate about what tainted the fuel. (Q: Has anyone studied the effects of petroleum products combined with herbicides? And, does the combination of herbicides and petroleum cause a more deadly reaction to living organisms?)

Another declassified MACV report written by Lt. Col. Jim Corey on 25 MAR 69, stated that damage to trees in the Da Nang area **had not** been caused by leakage from spray aircraft (Ranch Hand) as was previously presumed. The report indicated that defoliant (herbicide) barrels used in Ranch Hand were sold by ARVNs (for 300 piasters each) in the city of Da Nang. These herbicide barrels contained as much as three (3) gallons of (undiluted) defoliant. The report ascertained that this was **not cost effective** because five to ten dollars of herbicide remained in each

barrel. (Approximately 6,000 gallons of dioxin were used in South Vietnam each day, or 100+ (55 gal) barrels.) The report specifically stated that residual herbicide in the barrel also constituted a [health] hazard aside from causing damage to trees, and other foliage (in the Da Nang area). This MACV report noted that empty (herbicide) barrels at Nha Trang were not sold, but were buried at a remote beach. The result of herbicide barrel burial at Nha Trang was destruction of all foliage in the [beach] area. Other South Vietnam [ARVN] storage sites for herbicides included: Saigon, Phu Cat, and Bien Hoa (by far the largest). Nothing was mentioned about these sites.

The 25 MAR 69 report to U.S. and ARVN Commands resulted in the following (13 APR 69) implementation:

- Herbicide barrels were to be [completely] drained.
- Barrels made unserviceable [holes punched near the bottom].
- Empty barrels could be used in construction of revetments.
- ARVN personnel were prohibited to sell empty barrels.

From these declassified MACV reports, it is easy to deduce that years of herbicide use (and abuse) had occurred before basic precautions were implemented. The damage to the South Vietnam environment cited by these reports clearly indicates that many military (and ARVN) personnel were not briefed about the risk, or effects of these herbicides.

It would be several years (after the U.S. military left South Vietnam) before adverse health effects appeared in U.S. military personnel, and no doubt, in the South Vietnamese (as a result of exposure to herbicides). Many questions remain. But, it is **not** - who to blame? Nor, how much compensation do we get? Rather, how can we prevent a repeat of

destructive chemical usage by the U.S. (or foreign) government? Many of us would like to know why the cover-up, and non-disclosure of the hazards associated with these herbicides. And, of course, who profited? We know who paid.

**Note:** There are several incidences (cited by in-country Vietnam veterans) of areas sprayed with herbicides (mixed with petroleum products) then burnt. This means that much of the toxic chemical components in the herbicides became airborne when incinerated. The heat generated by fire (normal combustion) does not alter the chemical composition of 2,4-D, 2,4,5-T, or TCDD (dioxin), nor does burning reduce the volatility of these toxic compounds. Combustion temperatures must be extremely high to transform, and thus, make them inert. Nothing was mentioned in the MACV reports regarding this practice.

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