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## The Spectre Of U.S. Military Defoliants/Herbicides Buried In Okinawa 米軍による沖縄埋葬の枯れ葉剤・除草剤の幻影

A Japanese translation of this article is available [here](#).

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As accusations and denials swirl regarding the burial of herbicides employed by the U.S. military in Vietnam during that war, there are irrefutable facts that seem not to have been considered in their true context. Denials of such burials by the U.S. military on land that was then part of Kadena Air Base on Okinawa by Dr. Alvin Young, a hired consultant and purported expert on military herbicides, and the U.S. Department of Defense are disingenuous at the very least, and at worst a blatant cover-up of historical realities.

For over 15 years I served as the lead scientist for Hatfield Consultants investigating the impact of Agent Orange on the environment and human population of southern Vietnam. Our studies formed the foundation for understanding the movement of dioxin, originating from Agent Orange, through the ecological landscape and into humans. Implementation of remedial measures in Vietnam has stemmed directly from our Agent Orange research, including work now underway at the site of one of the former U.S. air bases in Vietnam, Da Nang.

Ehime University analyzed liquid residues in 22 30-gallon drums uncovered on former Kadena Air Base land. All but two samples contained the toxicant TCDD (a dioxin), a specific byproduct of the manufacturing process of 2,4,5-T, one of the two constituents of Agent Orange. This constituent, 2,4,5-T, was present in the majority of the drums, but at low levels probably indicative of gradual decomposition over the years inside these drums.

Interestingly, 2,4-D, the other constituent of Agent Orange, was not found in any of the 22 drums, suggesting the liquid residue was not Agent Orange. The Okinawa Defense Bureau concluded that given these data, and specifically the lack of 2,4-D, the chance this liquid residue was, in fact, a defoliant was "slim." This contention is blatantly false and totally disregards objective analytical data that clearly shows the presence of 2,4,5-T, a herbicide, in these drums. My contention is that the term "slim" should be altered to "certain."

The use of such terms as "herbicide" and "defoliant" should not confuse the reader — the two are interchangeable and should not be used in attempts to skew the interpretation of data and the issue of the presence or otherwise of specific "wartime chemicals." These chemicals, used for removal of vegetation to deprive opposing forces of forest cover and rice crops during the Vietnam conflict, consisted of a variety of chemical mixtures. To enable identification of a specific chemical spray, drums of these herbicides/defoliants were painted with colored bands — orange, green, pink, white, etc. As the conflict progressed, the term "agent" was prefixed to a given color by the international media to provide a more "mysterious" aura to these chemicals. In time they became known as the "rainbow herbicides."

In an article in The Japan Times ("*Okinawa dump site may be proof of Agent Orange: experts*," Aug. 7), Jon Mitchell wrote: "*Still, the Pentagon denies that it ever stored military defoliants — including Agent Orange — in Okinawa. In February, it released a 29-page report denying that such substances were ever on the island.*"

I place emphasis on their last few words. How can such a denial be factual when 2,4,5-T was discovered in these drums? In support of the Pentagon's claims, a Dow Chemical representative stated that given the drum volume and their markings, it was inconsistent with the way they shipped herbicides.

I am in possession of a U.S. Department of the Air Force document that clearly shows Dow Chemical in August 1966 shipped 1,866 30-gallon drums of herbicide destined for Saigon. Consequently, the Pentagon and Dow are either confused or clearly in error regarding their claims.

2,4,5-T was the only chemical in Agents Pink and Green. Therefore, given the presence of 2,4,5-T and TCDD in the 30-gallon drums, and going on the assumption that there was no 2,4-D in these drums at the point of manufacture, there is a possibility, remote as it may be, that these drums may have contained Agents Pink and/or Green.

In her landmark paper in Nature, Dr. Jeanne Stellman notes that U.S. military procurement records show at least 464,164 liters of Agent Pink and 31,026 liters of Agent Green were purchased. However, Stellman and her colleagues were only able to document little more than 50,000 liters having been sprayed in southern Vietnam, and approximately 15,000 liters used in tests. Were these unearthed drums on Kadena Air Base part of the undocumented quantities of Agents Pink and/or Green sent to Okinawa for disposal?

In a recent article in Stars and Stripes ("*Expert: Chemicals found on Okinawa likely not Agent Orange*," Aug. 18), Dr. Alvin Young is quoted as saying: "*The 30-gallon drums likely contained degreasing solvents, and are what we referred to as 'Stoddard solvents.'*" Young attempts to explain away the presence of 2,4,5-T discovered in these drums by Japan's Ministry of Defense and the Okinawa City government as being "laboratory mistakes" — how convenient, simplistic and without merit.

I would ask if Dr. Young's condescending opinion resulted from a detailed review of the analytical reports for these residues, encompassing replication, controls, sample detection limits, surrogates, quality assurance, quality control and other laboratory protocols that any responsible and respected analytical facility must abide by in order to operate? I think not. Dr. Young also states in the article that "*herbicides were tightly monitored and always shipped to Vietnam as expedited cargo, making any storage or side trip to Okinawa an unnecessary delay.*" That may very well have been the case during the active spray program in Vietnam. However, if these drums, containing 2,4,5-T with TCDD, were shipped to Okinawa specifically for disposal, subsequent to termination of Operation Ranch Hand [the 1962-71 spraying program over South Vietnam], this casts an entirely different light on the presence of these chemicals at Kadena Air Base. This could also account for variations in Dow Chemical labeling and drum size (30 gallon vs. 55 gallon), given that the oversupply and unusable quantities of herbicide produced for the U.S. Air Force would not be destined for application in Vietnam and, therefore, would not necessarily require the usual military specifications of labeling and drum volume. Unfortunately, this theory will undoubtedly remain just that — a theory.

I find it highly suspicious that following the release of the dioxin data from the laboratory analyses of the contents of the drums, the Okinawa Defense Bureau had the drums smelted, thus rendering them unavailable for further analyses. The barrels were originally found buried beneath a soccer pitch that has been used by children for more than a decade. What's more, the pitch is immediately adjacent to two on-base schools (Bob Hope Primary School and Amelia

Earhart Intermediate School).

Realistically, at this historical juncture, the contents of the Kadena drums, whether Agent Orange, Pink, Green or whatever, is almost irrelevant. The inescapable fact is that the U.S. military, while occupying the Kadena Air Base on Okinawa, disposed of "unknown" materials in drums containing 2,4,5-T, a wartime herbicide/defoliant, and in the mixture the most toxic component of the dioxin family, TCDD, known to be associated with the manufacture of such herbicides. There have been other allegations of the disposal of U.S. military herbicides on Okinawa, these being in 2011 at Chatan and in 2012 at Futenma, as reported in The Japan Times and The Asia-Pacific Journal: Japan Focus.

The general public inhabiting areas in close proximity to the former Kadena Air Base, and frequenting the area for recreational purposes, should demand from local authorities a geographical and chemical breakdown of the burial field, and rapid implementation of remedial measures where applicable. In addition, locals should be properly informed about potential health concerns resulting from possible contaminant exposure.

**Dr. Wayne Dwernychuk** is an environmental scientist specializing in Agent Orange. He retired from Hatfield Consultants, Ltd. a consulting firm with many years experience of investigating and researching Agent Orange in Vietnam.

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