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OFFICE OF THE UNDER SECRETARY OF DEFENSE

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WASHINGTON, DC 20301-3000

ACQUISITION,
TECHNOLOGY
AND LOGISTICS

The Honorable Lane Evans
Ranking Member
Committee on Veterans' Affairs
335 Cannon House Office Building
Washington, DC 20515

SEP 23 2003

Dear Congressman Evans:

This is in response to your letter to the Secretary of Defense concerning the use and storage of Vietnam-era herbicides, including the contaminant dioxin on Guam. I am responding on his behalf.

The Department has found no record of the use, storage, or testing of Herbicides Orange, Blue, or White on Guam. In 1952, roughly 5,000 drums of Herbicide Purple were transported to Guam and stored there in anticipation of use on the Korean Peninsula. The herbicide was never used and was returned to the United States. Although other herbicides may have passed through Guam during the Vietnam Conflict, we have no record of long-term storage or use of these herbicides on Guam.

The presence of dioxin contamination at a site does not necessarily indicate that Herbicide Orange was used or stored at that site. According to Air Force studies, the dioxins at sites references in the Public Health Assessment were associated with burned material. Access to sites on Guam with elevated dioxin levels is highly restricted and public exposure is not expected.

A summary of information obtained from a search of the records at the U.S. Army's Center for Unit Records Research on the use Vietnam-era herbicides in the other locations you requested is attached and has already been supplied to the Department of Veterans Affairs.

Sincerely,

Philip W. Grone

Philip W. Grone
Principal Assistant Deputy Under Secretary of Defense
(Installations and Environment)

Attachment:
As stated

# Attachment
# Summary of Available Information
# On Use, Testing and Storage of
# Dioxin Containing Herbicides

**Aberdeen Proving Ground, Aberdeen MD**

**Report Title:** Summary Report, Herbicide Operations Conducted from Riverine Watercraft
**Location:** Poole's Island, Aberdeen Proving Ground, MD
**Date(s):** 7/14/1969
**Herbicides:** Orange, Orange plus foam, Orange plus foam Orange, Foam
**Summary:** During the week of 7/14/1969, personnel from Naval Applied Science Laboratory in conjunction with personnel from Limited War Laboratory conducted a defoliation test along the shoreline.

**Apalachicola National Forest (Sohoppy, Florida)**

**Report Title:** Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliants
**Location:** Apalachicola National Forest near Sophoppy, FL
**Date(s):** 5/3/1967-5/8/1967
**Herbicides:** basic desiccants and Orange/Blue
**Summary:** During the period of 12/1966 - 10/1967, a comprehensive short-term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contract research on formulations by chemical industry and field tests by USDA and University of Hawaii sites.

**Avon Air Force Base, Florida**

**Report Title:** Special Report No. 149, Low Volume Anti-crop Aerial Spray Trials
**Location:** Avon Air Force Base, FL
**Date(s):** 2/1951- 4/1951
**Herbicides:** butyl 2,4 D
**Summary:** Trials were conducted at Avon Air Force Base, FL by Chemical Corps with personnel of the Air Force and Navy to determine the practical effectiveness of spraying pure anti-crop herbicides at low volume from aircraft. C-47 and Navy XBT2D-1 aircraft with various nozzles were used.

**Report Title:** Special Report No. 225, Chemical Anti-crop Aerial Spray Trials Using Jet Aircraft also in Special Report 232, Some Effects of Altitude and Airspeed on the Behavior of Chemical Anti-crop Sprays
**Location:** Avon Park Air Force Base, FL
**Date(s):** Spring 1954
**Herbicides:** butyl 2,4-D, butyl 2,4,5-T, Isopropyl 2,4-D
**Summary:** Series of tests were conducted at Avon Park AFB during the spring of 1954 to study the behavior of chemical anti-crop aerial sprays when released from high-speed jet aircraft. The Navy F3D jet fighter was used with Aero 14A Airborne Spray Tanks to disperse the anti-crop herbicides.

**Beaumont Texas**

**Report Title:** Special Report No. 13, Marking and Defoliation of Forest Vegetation

**Location:** Beaumont, TX
**Date(s):** 1950-51
**Herbicides:** 2,4-D
**Summary:** The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Here, irrigation water studies were done with the agent

**Report Title:** Special Report No. 79, Destruction by Chemical Agents also see Special Report No. 25, Vigo Plant CWS, Terre Haute, Indiana, and Beaumont TX, Box 12
**Location:** Beaumont, TX
**Date(s):** 6/1944
**Herbicides:** LN *phenoxy
**Summary:** Small plot experiments were commenced to test the effectiveness of LN herbicides. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, they were testing on rice crops.

**Brawley, California**

**Report Title:** Special Report No. 13, Marking and Defoliation of Forest Vegetation
**Location:** Brawley, CA
**Date(s):** 1950-51
**Herbicides:** 2,4-D
**Summary:** The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Here, irrigation water studies were done with the agent.

**Bushnell Army Air Field, Florida**

**Report Title:** Special Report No. 79, Destruction by Chemical Agents
**Location:** Bushnell Army Air Field, FL
**Date(s):** 2/1945
**Herbicides:** LN *phenoxy
**Summary:** Small plot experiments were commenced to test the effectiveness of LN herbicides. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was aerial spray experiments on potted plants.

**Report Title:** Crop Destruction by Aerial Sprays, Preliminary Trials
**Location:** Bushnell Army Air Field, Bushnell, FL
**Date(s):** 2/1945-4/1945

**Herbicides:** 2,4-D and its ammonium salt
**Summary:** Trials, performed by C.W.S. personnel from Camp Detrick, MD, tested the practicability of severely injuring or destroying crop plants sprayed from smoke tanks mounted on tactical aircraft.

**Camp Detrick, Maryland**

**Report Title:** Special Report No. 92, Field Plot Experiments with Plant Inhibitors 1946 and 1947 Seasons
**Location:** Camp Detrick, MD-Fields A,B, and C
**Date(s):** 1946-1947
**Herbicides:** 2,4,5-T, 2,4,5-T triethanolamine, tributylphosphate, ethyl 2,4-D, butyl 2,4,5-Ttriet 2,4-D,
**Summary:** The experiments were directed mainly towards the investigation of plant inhibitors applied as sprays or to the soil in the solid form to be taken up by the roots.

**Report Title:** Special Report No. 130, Field Plot Experiments with Plant Inhibitors 1949 Season
**Location:** Camp Detrick, MD-Fields C,D,E
**Date(s):** 1949
**Herbicides:** triethelyne. 2,4,5-T, carbamates
**Summary:** The experiments were directed mainly towards the investigation of plant inhibitors applied as sprays or to the soil in the solid form to be taken up by the roots.

**Report Title:** Special Report No. 105, Field Plot Experiments with Plant Inhibitors 1948 Season
**Location:** Camp Detrick, MD- Fields C,D, and E
**Date(s):** 1948
**Herbicides:** 2,4,5-T, isopropyl phenol carbamate, LN-2426, 2,4-D
**Summary:** The experiments were directed mainly towards the investigation of plant inhibitors applied as sprays or to the soil in the solid form to be taken up by the roots.

**Report Title:** Special Report No. 153, Field Plot Experiments with Plant Inhibitors, 1950 Season
**Location:** Camp Detrick, MD-Fields A,B,D,E
**Date(s):** 1950
**Herbicides:** 2464, butyl 2,4-D, 974, butyl 2,4,5-T, q:q 143 and 974
**Summary:** The experiments were directed mainly towards the investigation of plant inhibitors applied as sprays or to the soil in the solid form to be taken up by the roots.

**Report Title:** Special Report No. 156, Field Plot Experiments with Plant Inhibitors, 1950-51 Season
**Location:** Camp Detrick, MD-Field F
**Date(s):** 1950-51
**Herbicides:** 2464, carbamate, butyl 2,4-D, 143 and 974 (orange?),2,4,5-T, 2,4-D, Orange
**Summary:** The experiments were directed mainly towards the investigation of plant inhibitors applied as sprays or to the soil in the solid form to be taken up by the roots.

**Report Title:** Abstracts of Technical Publications April 1965-June 1965, July 1965, Technical Report 50, Defoliation Studies: Screening of Defoliants, Herbicides, and Desiccants
**Location:** Fort Detrick, MD
**Date(s):** 8/1961-6/1963
**Herbicides:** 1410 compounds
**Summary:** From 8/1961 to 6/1963, compounds were spray-tested in the greenhouse to evaluate them as effective defoliants, desiccants, and herbicides.

**Report Title:** Special Report No. 201, Field Development of Chemical Anticrop Agents, Response of Field Grown Crops to Chemical Anticrop Agents Released from Experimental Spray tower
**Location:** Area B, Camp Detrick, MD
**Date(s):** Spring/Summer 1953
**Herbicides:** 3:1 mixture 2,4-D and 2,4,5-T
**Summary:** Personnel at Camp Detrick tested the feasibility of using an experimental spray tower for applying a mixture of chemical anti-crop Herbicides to broad-leaf crops.

**Dar and Prek Clong, Cambodia**

**Report Title:** Record 1305-01, Report of Cambodian Rubber Damage
**Location:** southeastern part of Kompong Cham Province and Dar and Prek Clong plantations, Cambodia
**Date(s):** 6/1969
**Herbicides:** Orange
**Summary:** In 6/1969, the US government received notice of charge by Cambodian government that major defoliation damage to the Cambodian rubber plantation near the Republic of Viet Nam border had occurred as a result of US defoliation activity. This was confirmed by a team of experts.

**Eglin Air Force Base, Florida**

**Report Title:** Minutes-Meeting of Vegetation Control Subcommittee of the JTCG/CB, 2-3 March 1971
**Location:** Eglin AFB, FL, C-52A test area
**Date(s):** 1962-70
**Herbicides:** Orange (1962-68), Purple (1962-68), White (1967-70), Blue (1968-70)
**Summary:** CPT John Hunter discussed vegetation changes and ecological studies of the 2 square mile test area which had been sprayed with herbicides over the period 1962-70.

**Report Title:** Spread Factor Study of Drops of Orange and Stull Bifluid Defoliants on Kromekote Cards and Plant Leaves
**Location:** Eglin AFB, FL
**Date(s):** 6/11/1968-9/12/1968
**Herbicides:** orange, Bifluid #1, Bifluid#2, Stull Bifluid
**Summary:** A spread factor study was performed by the Army to correlate the spherical drop sizes of both Orange and Stull Bifluid defoliants. It involved development of new techniques to determine spread factors over an extended range of drop sizes. A spinning cup drop generator was used.

**Report Title:** Special Report No. 184, Anticrop Aerial Spray Trials, Phase III
**Location:** Eglin Air Force Base, FL
**Date(s):** 11/1952-12/1952
**Herbicides:** 2,4-D, 2,4,5-T: 143 and 974, respectively
**Summary:** Two trials: Chemical Corps concerned with basic fundamental work, using 2,4-D; Air Force concerned with evaluating prototype large capacity spray system for aircraft installation using 2,4,5-T, primarily. Used 3 atomizing nozzles: Bete Fog Nozzles, Whirljet Spray Nozzles, and Fogjet 1.5F50.

**Fort Gordon Georgia**

**Report Title:** Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliants
**Location:** Fort Gordon, GA
**Date(s):** 7/15/1967- 7/17/1967
**Herbicides:** in-house desiccants mixtures and formulations, Orange and Blue
**Summary:** During the period of 12/1966 - 10/1967, a comprehensive short-term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contract research on formulations by chemical industry and field tests by USDA and University of Hawaii sites.

**Fort Richie, Maryland**

**Report Title:** Miscellaneous Publication 8, Proceedings of the Second Defoliation Conference 5-6 August 1964
**Location:** Fort Ritchie, MD
**Date(s):** 1963
**Herbicides:** Tordon, 2,4-D, Orange, diquat, endothal, and combinations of each with Tordon
**Summary:** Various studies were done to explore the effectiveness of different herbicides. They were all field trials. These studies were done by personnel from the US Army Biological Laboratories.

**Report Title:** Technical Report BWL 16, Defoliation and Desiccation
**Location:** Fort Detrick, MD; Fort Ritchie, MD
**Date(s):** 1956-1957
**Herbicides:** various, 577 compounds
**Summary:** In 1956 And 1957, defoliation and desiccation were carried out at Fort Detrick and Fort Ritchie, Md, by the Chemical Corps and Biological Warfare Research. These were bench tests.

**Fredericton, New Brunswick, Canada**

**Report Title:** Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliants
**Location:** Base Gagetown near Fredericton, New Brunswick, Canada
**Date(s):** 6/20/1967- 6/24/1967
**Herbicides:** basic desiccants and Orange, Blue, various
**Summary:** During the period of 12/1966 - 10/1967, a comprehensive short-term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contract research on formulations by chemical industry and field tests by USDA and University of Hawaiisites.

**Guanica, and Joyuda, Puerto Rico**

**Report Title:** Second Quarterly Progress Report of Research carried out by the Federal Experiment Station in Puerto Rico for The Chemical Corps Biological Laboratories, Fort Detrick on contract #CD6-404-3654
**Location:** Guanica and Joyuda, PR
**Date(s):** 6/1956-9/1956
**Herbicides:** 2,4,5-T, potassium cyanate, amiendo, F-2, 6-Ca-4, Y-F Tree and Brush Kiler, ACP M-118, Shed-A-Leaf
**Summary:** 9 chemicals were evaluated on 16 genera of tropical woody between June and September. The chemicals were sprayed to duplicate small branches, using a microsprayer.

**Report Title:** Third Quarterly Progress Report of Research carried out by the Federal Experiment Station in Puerto Rico for The Chemical Corps Biological Laboratories, Fort Detrick on contract #CD6-404-3654
**Location:** Las Mesas and La Jagua, Mayaguez, Joyuda at Cabo Rojo, and Guanica Insular Forest at Guanica, PR
**Date(s):** 9/1956-12/1956
**Herbicides:** 6-Ca-4,Liojn Oil,2,4,5-T, B-1613, B-1638, Ammate, V-C1-186, endothal, shed-a-leaf, M-118, Y-F,esteron 2,4-D,F3,F4,F5,F6
**Summary:** 16 compounds with defoliating properties were evaluated using 28 different tropical woody plants, each representing a separate genus. The chemicals were applied to duplicate small branches with a microsprayer and to single larger branches or whole trees with a 2-gallon knapsack sprayer.

**Guanica, and Joyuda, Puerto Rico (continued)**

**Report Title:** Fourth Quarterly Progress Report of Research carried out by the Federal Experiment Station in Puerto Rico for The Chemical Corps Biological Laboratories, Fort Detrick on contract #CD6-404-3654
**Location:** Las Mesas and La Jagua, Mayaguez, Guanica Beach, PR
**Date(s):** 1/1957-3/1957
**Herbicides:** V-C 3-105, V-C 1-21, V-C 1-443, F-7, TBP, Phillips 713, V-C 3-173
**Summary:** 7 compounds were evaluated on 29 different woody plants to determine their effectiveness as defoliants, desiccants, and as killing Herbicides. They were applied with a microsprayer to the upper leaf surfaces of duplicate small branches.

**Report Title:** Quarterly Progress Report of Research carried out by the Federal Experiment Station in Puerto Rico for The Chemical Corps Biological Laboratories, Fort Detrick on contract #CD6-404-3654
**Location:** Las Mesas and La Jagua, Mayaguez, Guanica Beach, PR
**Date(s):** 4/1957-6/1957

**Herbicides:** B-1676, B-1638, NP 1098, SD 1369, Ammate, Shed-a-leaf
**Summary:** 7 compounds were sprayed on 25 different plants in order to evaluate their effectiveness as defoliants, desiccants, and killing agents. The compounds were applied with a microsprayer to the upper and lower leaf surfaces of duplicate small branches.

**Gulfport, Mississippi**

**Report Title:** Minutes of the Quarterly Meetings for Calendar Year 1970 of the Subcommittee on Defoliants/Anti-crop Systems, Joint Technical Coordinating Group/Chemical Biological
**Location:** Gulfport, Miss.
**Date(s):** 1968-1970
**Herbicides:** Orange
**Summary:** While discussing the mandatory disposal of Orange, it was mentioned that 15,161 drums were being stored at Gulfport, Mississippi.

**Huntington County, State College, Pennsylvania**

**Report Title:** Soil Applied Herbicides in the Control of Temperate Zone Grasses, Broadleaf Weeds and Woody Plants
**Location:** Stone Valley Experimental Forest in Huntington County and near State College in Centre County, PA
**Date(s):** 3/1969-10/1970
**Herbicides:** bromacil, diuron, tandex, fenuron, picloram
**Summary:** Soil- applied herbicides were studied by the U of Pa with Ft Detrick for 18 months for their effectiveness, rapidity of action, and duration of response in native stands of central PA grasses, broadleaf weeds and woody plants. These herbicides were spread or sprayed.

**Jacksonville, Florida**

**Report Title:** Spray Test Calibration of the HIDAL (HUS-1 or H-34)
**Location:** Jacksonville, FL
**Date(s):** 7/18/1962-7/21/1962
**Herbicides:** Purple, Fuel Oil, Mix
**Summary:** The HIDAL was used successfully on an H-34 helicopter to spray herbicidal materials. Therefore, it had not been calibrated previously. Spray tests were performed to do so. This was done under order by OSD/ARPA.

**Kauai, Hawaii**

**Report Title:** Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliants
**Location:** Kauai Branch Station near Kapaa, Kawai, HI
**Date(s):** 6/1967, 10/1967, 2/1968, 12/1967
**Herbicides:** Blue, diquat, paraquat, Orange, PCP, Picloram, White, HCA, 2,4,5-T, Endothall
**Summary:** During the period of 12/1966 - 10/1967, a comprehensive short-term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contract research on formulations by chemical industry and field tests by USDA and University of Hawaiisites.

**Report Title:** Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia
**Location:** Kauai, HI
**Date(s):** 1967
**Herbicides:** Orange
**Summary:** Field tests of defoliants were designed to evaluate such variables as rates, volume of application, season, and vegetation. Data from aerial application tests at several CONUS and OCONUS locations are provided in tables.

**Kingston, Rhode Island**

**Report Title:** Special Report No. 130, Field Plot Experiments with Plant Inhibitors 1949 Season
**Location:** Kingston, RI
**Date(s):** 7/26/1949, 1950-51
**Herbicides:** trieth.2,4,5-T, butyl 2,4,5-T,974
**Summary:** The experiments were directed mainly towards the investigation of plant inhibitors applied as sprays or to the soil in the solid form to be taken up by the roots.

**Kompong, Cham Province, Cambodia**

**Report Title:** Record 1305-01, Report of Cambodian Rubber Damage
**Location:** southeastern part of Kompong Cham Province and Dar and Prek Clong plantations, Cambodia
**Date(s):** 6/1969
**Herbicides:** Orange
**Summary:** In 6/1969, the US government received notice of charge by Cambodian government that major defoliation damage to the Cambodian rubber plantation near the Republic of Viet Nam border had occurred as a result of US defoliation activity. This was confirmed by a team of experts.

**Laos**

**Report Title:** Herbicide Operations in Southeast Asia, July 1961-June 1967

**Location:** Laos

**Date(s):** 12/1965- 1967

**Herbicides:** Orange

**Summary:** In December 1965, herbicide operations were begun in Laos, with sorties being flown from Tan Son Nhut and Da Nang. The purpose was the exposure of foot trails, dirt roads and other lines of communication that crossed into South Viet Nam. This network leads from North Viet Nam, through the eastern panhandle, to Cambodian border.

**Las Marias, Puerto Rico**

**Report Title:** Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliants
**Location:** Las Marias, Puerto Rico
**Date(s):** 2/1967- 12/1967
**Herbicides:** various, including Orange
**Summary:** During the period of 12/1966 - 10/1967, a comprehensive short-term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contract research on formulations by chemical industry and field tests by USDA and University of Hawaiisites.

**Las Mesas, Cerros and LaJugua, Mayaguez, Puerto Rico**

**Report Title:** Formulation and Testing of Broad Spectrum of Herbicide Pellets, Second Six Month's Report on Contract No. DAAA13-67-C-0218
**Location:** Las Mesas Cerros, Mayaguez, PR
**Date(s):** 5/24/1968, 5/26/1968, 5/27/1968
**Herbicides:** picloram, bromacil, pyriclor
**Summary:** In 1967, the Dow Chemical Company was awarded a DoD research contract. The objective was to prepare as pellets mixtures of various herbicides and to test them on varying vegetation situations for the control of a range of plant species.

**Report Title:** First Quarterly Progress Report of Research carried out by the Federal Experiment Station in Puerto Rico for The Chemical Corps Biological Laboratories, Fort Detrick on contract #CD6-404-3654
**Location:** Las Mesas and La Jagua experimental areas at Mayaguez, PR
**Date(s):** 2/1956-6/1956
**Herbicides:** 2,4,5-T, 2,4-D, pentachlorophenol, ammate, weedazol, endothal Harvestaid, Butyne - 1,4-diol
**Summary:** During February to June, 9 chemicals were evaluated in PR on 16 genera tropical woody plants. The chemicals were applied in highly concentrated solutions with a microsprayer to the leaves.

**Report Title:** Progress Report of Research carried out by the Federal Experiment Station in Puerto Rico for The Chemical Corps Biological Laboratories, Fort Detrick on contract #CD6-404-3654
**Location:** Las Mesas and La Jagua, Mayaguez, PR
**Date(s):** 7/1957-12/1957
**Herbicides:** MgClO3, Golden Harvest Defoliant, Dow-M562, F-8, F-9, F-10, F-11, F-12
**Summary:** 8 different spray formulations were applied to 16 different tropical trees and shrubs in order to evaluate their effectiveness as defoliants, desiccants, and killing agents.

**Loquillo, Puerto Rico**

**Report Title:** Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia
**Location:** Loquillo, PR
**Date(s):** 4/1966, 10/1966
**Herbicides:** Orange
**Summary:** Field tests of defoliants were designed to evaluate such variables as rates, volume of application, season, and vegetation. Data from aerial application tests at several CONUS and OCONUS locations are provided in tables.

**Mauna Loa, Hilo, Hawaii**

**Report Title:** Dow Sponsored Test of TORDON Ester and Orange in Hawaii
**Location:** State Forest area, 3500 ft. elevation on slope of Mauna Loa, near Hilo, HI
**Date(s):** 12/2/1966, 12/4/1966, 1/12/1967
**Herbicides:** Orange, M-3140, TORDON ester, 2,4-D ester, 2,4,5-T ester
**Summary:** The purpose of this project was to evaluate iso-octyl ester of picloram (TORDON) in mixtures with ORANGE, as a candidate defoliant agent, using ORANGE as standard. There were personnel from Fort Detrick there.

**Operation PACER HO (Disposal at Sea)**

**Report Title:** Technical Report USAF OEHL TR 78-92, the Toxicology, Environmental Fate and Human Risk of Herbicide Orange and its Associated Dioxin
**Location:** Sea
**Date(s):** Summer 1977
**Herbicides:** Orange
**Summary:** In 1977, the USAF incinerated 2.22 million gallons of Herbicide Orange at sea in an operation entitled PACER HO. Extensive industrial hygiene sampling efforts supporting the transfer operations at Gulfport, MS and Johnston Island indicated all exposures were inconsequential (2-3 orders of magnitude below the TLVs for 2,4-D and 2,4,5-T)

**Pinal Mountains, Globe, Arizona**

**Report Title:** Investigation of Spray Project near Globe, AZ
**Location:** Pinal Mountains near Globe, AZ
**Date(s):** 1965, 1966, 1968, and 1969
**Herbicides:** 2,4-D isooctyl-ester, 2,4,5-t isooctyl-ester, silvex, propyleneglycolbutylether ester, 2,4,5-T butyl ester, 2,4,5-T 2-e-h e
**Summary:** In 1965, the US Forest Service began a land improvement program in the Pinal Mountains. The program called for spraying an area of chaparral with herbicides to accomplish the objectives of multiple land use.

**Pranburi and other locations in Thailand**

**Report Title:** Appendix D, Aerial Herbicide Applications Evaluated for Maximum Effect and Minimum Drift
**Location:** Replacement raining Center of the Royal Thai Army near Pranburi, Thailand
**Date(s):** 1964 and 1965
**Herbicides:** Orange, Purple
**Summary:** An extensive series of tests were conducted by Fort Detrick during 1964 and 1965 in collaboration with the Military Research and Development Center of Thailand. The objective was to perform onsite evaluation of phytotoxic chemicals on vegetation in SE Asia.

**Prosser, Washington**

**Report Title:** Special Report No. 13, Marking and Defoliation of Forest Vegetation
**Location:** Prosser, WA
**Date(s):** 1950-51
**Herbicides:** 2,4-D
**Summary:** The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Here, irrigation water studies were done with the agent.

**Rio Grande, Puerto Rico**

**Report Title:** Formulation and Testing of Broad Spectrum of Herbicide Pellets, First Six Month's Report on Contract No. DAAA13-67-C-0218
**Location:** near Rio Grande, on the northeast coast of Puerto Rico
**Date(s):** 8/23/1967, 10/18/1967, 12/21/1967-12/26/1967
**Herbicides:** picloram, bromacil, pyriclor, and terbacil
**Summary:** In 1967, the Dow Chemical Company was awarded a DoD research contract. The objective was to prepare as pellets mixtures of various herbicides and to test them on varying vegetation situations for the control of a range of plant species.

**Wayside and Wilcox, Mississippi**

**Report Title:** Formulation and Testing of Broad Spectrum of Herbicide Pellets, First Six Month's Report on Contract No. DAAA13-67-C-0218
**Location:** near Wayside, Miss., Wilcox Road, Greenville, Miss.
**Date(s):** 9/19/1967

**Herbicides:** picloram, bromacil, pyriclor, and terbacil, Orange, cacodylic acid
**Summary:** In 1967, the Dow Chemical Company was awarded a DoD research contract. The objective was to prepare as pellets mixtures of various herbicides and to test them on varying vegetation situations for the control of a range of plant species.