

AGENT ORANGE USE - OUTSIDE VIETNAM - 01/28/2003

| ID | Report Title  | Pg # | Box # | Location  | Dates   | Agents  | Project Description  | DoD Involvement |
|----|---|------|-------|---|---|---|--|-----------------|
| 1  | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant  | 10   | 1     | Apalachicola National Forest near Sophoppy, FL        | 5/3/1967-5/8/1967   | basic desiccants and Orange/Blue  | 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 U of HI | Yes             |
| 2  | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant  | 10   | 1     | Fort Gordon, GA                                       | 7/15/1967-7/17/1967   | in-house desiccants mixtures and formulations, Orange and Blue                | 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 U of HI | Yes             |
| 3  | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant  | 10   | 1     | Fort Chaffee, AK                                      | 5/16/1967-5/18/1967, 7/22/1967-7/23/1967, 8/23/1967 - 8/24/1967 | basic, in-house, improved desiccants and Orange, Blue                         | 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 U of HI | Yes             |
| 4  | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant  | 10   | 1     | Base Gagetown near Fredericton, New Brunswick, Canada | 6/20/1967-6/24/1967   | basic desiccants and Orange, Blue, various                                    | 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 U of HI | Yes             |
| 5  | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant  | 12   | 1     | Las Marias, Puerto Rico                               | 2/1967-12/1967  | various, including Orange   | 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 U of HI | Yes             |
| 6  | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant  | 13   | 1     | Kauai Branch Station near Kapaa, Kawai, HI            | 6/1967, 10/1967, 2/1968, 12/1967                                | Blue, diquat, paraquat, Orange, PCP, Picloram, White, HCA, 2,4,5-T, Endothall | 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 U of HI | Yes             |
| 7  | Report of Standing Subpanel E-2.5 on Plant Sciences   | 11   |       | Drawe Thailand r 1                                    | 1964-1965   | Purple, Orange, Others  | Sponsored by ARPA; ARPA Order 423, Between the mentioned dates, there was a large-scale test program to determine effectiveness of mentioned agents in defoliation of upland forest or jungle vegetation representative of SEA.                                | Yes             |
| 8  | Special Report No. 184, Anticrop Aerial Spray Trials, Phase III   | 1    | 17    | Englin Air Force Base, FL                             | 11/1952-12/1952   | 2,4-D, 2,4,5-T: 143 and 974, respectively                                     | 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, Whir  | Yes             |
| 9  | 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 | 4    | 17    | Beaumont, TX  | 6/1944  | LN *phenoxy   | Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, they were testing on rice crops.  | No              |
| 10 | Special Report No. 79, Destruction by Chemical Agents   | 4    | 17    | Bushnell Army Air Field, FL                           | 2/1945  | LN *phenoxy   | Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was aerial spray experiments on potted plants                                | Yes             |

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| 11 | Special Report No. 79, Destruction by 5 Chemical Agents also see Special Report No. 25, Vigo Plant CWS, Terre Haute, Indiana, and Beaumont TX, Box 12                   | 17        | Vigo Plant CWS, Terre Haute, IN               | 5/1945-9/1945       | LN (see attached)<br>*phenoxy  | Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was aerial trials spraying field grown plants.                                | Yes                  |
| 12 | Special Report No. 79, Destruction by 5 Chemical Agents   | 17        | Jefferson Proving Grounds, Madison, IN        | Summer 1945         | LN *phenoxy  | Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was dropping trials.  | Yes                  |
| 13 | Special Report No. 79, Destruction by 5 Chemical Agents   | 17        | Granite Peak, UT                              | Summer 1945         | LN *phenoxy  | Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was dropping trials.  | Yes                  |
| 14 | Special Report No. 149, Low Volume Anticrop Aerial Spray Trials   | 17 and 12 | Avon Air Force Base, FL                       | 2/1951-4/1951       | butyl 2,4 D  | 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 anticrop agents from at low volume from aircraft. C-47 and Navy XBT2D-1 aircraft with var | Yes                  |
| 15 | Special Report No. 201, Field Development of Chemical Anticrop Agents, Response of Field Grown Crops to Chemical Anticrop Agents Released from Experimental Spray tower | 4         | 17 area B, Camp Detrick, MD                   | Spring/Summer 1953  | 3:1 mixture 2,4-D and 2,4,5-T  | Personnel at Camp Detrick tested the feasibility of using an experimental spray tower for applying a mixture of chemical anticrop agents to broad-leaf crops.   | Yes                  |
| 16 | Crop Destruction by Aerial Sprays, Preliminary Trials also see Special Report No. 14, The Effect of VKA and VKS on Natural Vegetation, Box 12                           | 5         | 17 Bushnell Army Air Field, Bushnell, FL      | 2/1945-4/1945       | 2,4-D and its ammonium salt  | 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.   | Yes                  |
| 17 | Technical Report USAF OEHL -78-92, II-1 the Toxicology, Environmental Fate and Human Risk of Herbicide Orange and its Associated Dioxin                                 | 17        | Sea   | Summer 1977         | Orange   | 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   | Yes, Gulfport No, JI |
| 18 | Memo for Record, Summary 1968 Vegetation Control Tests  | 2         | Drawe Korea, third Brigade, 2nd Division area | 7/23/1968-7/24/1968 | Hyvar XWS, tandex, Urox B, Urox Oil concentrate (liquids) bromacil, tandex, Urox 22 (solids) | In 1968, chemicals were sent from the Plant Sciences Lab, Ft Detrick, MD, to the Republic of Korea for the purpose of testing their effectiveness in the control of vegetation.   | Yes                  |
| 19 | Development of Arsenic Based Defoliant  | 3         | 8 Marinette, WI, Weslaco, TX                  | 5/1967-1/1969       | arsenic compounds, Orange, cacodylic acid, sodium cacodylate                                 | 71 new arsenic compounds were tested in primary screening against 6 plant species in greenhouse tests. Then, 5 of the most active compounds were tested in field trials against Red Maple and compared to formulations of cacodylic acid and a 50:50 blend of   | Yes                  |
| 20 | Spread Factor Study of Drops of Orange and Stull Bifluid Defoliant on Kromekote Cards and Plant Leaves  | ii        | 8 Eglin AFB, FL                               | 6/11/1968-9/12/1968 | orange, Bifluid #1, Bifluid#2, Stull Bifluid   | A spread factor study was performed by the Army to correlate the spherical drop sizes of both Orange and Stull Bifluid defoliant. It involved development of new techniques to determine spread factors over an extended range of drop sizes. A spinning cup d  | Yes                  |
| 21 | Miscellaneous Publication 8, Proceedings of the Second Defoliation Conference 5-6 August 1964   | 155       | 11 Fort Ritchie, MD                           | 1963                | Tordon, 2,4-D, Orange, diquat, endothal, and combinations of each with Tordon                | 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.  | Yes                  |

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| 22 | Miscellaneous Publication 8, Proceedings of the Second Defoliation Conference 5-6 August 1964 | 156 | 11 | Fort Meade, MD  | 1963                 | cacodylic acid, Dowco 173, butyediol  | 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.   | Yes |
| 23 | Special Report No. 64, Destruction of Tropical Crops with Growth-inhibiting Agents            | 4   | 12 | Kumbla, South India                                   | 1945-1946            | LN compounds *phenoxy   | The main objective of the experiments was to determine the feasibility of accomplishing severe injury or destruction of tropical food crops by the application of growth-inhibiting (LN*) compounds in static trials. Field plantings were treated with variou | Yes |
| 24 | Special Report No. 92, Field Plot Experiments with Plant Inhibitors 1946 and 1947 Seasons     | 1   | 12 | Camp Detrick, MD-Fields A,B, and C                    | 1946-1947            | 2,4,5-T, 2,4,5-T triethanolamine, tributylphosphat e, ethyl 2,4-D, butyl 2,4,5-Triet 2,4-D, | 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.   | Yes |
| 25 | Special Report No. 105, Field Plot Experiments with Plant Inhibitors 1948 Season              | 2   | 12 | Camp Detrick, MD- Fields C,D, and E                   | 1948                 | 2,4,5-T, isopropyl phenol carbamate, LN- 2426, 2,4-D  | 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.   | Yes |
| 26 | Special Report No. 130, Field Plot Experiments with Plant Inhibitors 1949 Season              | 2   | 12 | Camp Detrick, MD-Fields C,D,E                         | 1949                 | triethelyne. 2,4,5-T, carbamates  | 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. Experiments were done by Ennis, DeRose, Newman, Williamson, DeRigo, and Thomas.             | Yes |
| 27 | Special Report No. 130, Field Plot Experiments with Plant Inhibitors 1949 Season              | 28  | 12 | Kingston, RI  | 7/26/1949, 1950-51   | trieth.2,4,5-T, butyl 2,4,5-T,974   | 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. Experiments were carried out under supervision of T.E. Odland if RI State College. H.T. D   | Yes |
| 28 | Special Report No. 153, Field Plot Experiments with Plant Inhibitors, 1950 Season             | 2   | 12 | Camp Detrick, MD-Fields A,B,D,E                       | 1950                 | 2464, butyl 2,4-D, 974, butyl 2,4,5-T, q:q 143 and 974                                      | 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. Experiments were done by Ennis, DeRose, Acker, Newman, Williamson, and Zimmerly.            | Yes |
| 29 | Special Report No. 156, Field Plot Experiments with Plant Inhibitors, 1950-51 Season          | 2   | 12 | Camp Detrick, MD-Field F                              | 1950-51              | 2464, carbamate, butyl 2,4-D, 143 and 974 (orange?),2,4,5-T, 2,4-D, Orange                  | 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. Experiments were done by Acker, DeRose, McLane, Newman, Williamson, Baker, Dean, Johnson, T | Yes |
| 30 | Special Report No. 13, Marking and Defoliation of Forest Vegetation                           | 1   | 12 | Orlando, FL at Army Grove Air Force's Tactical Center | 3/14/1944, 4/12/1944 | ammonium thiocyanate, zinc chloride, sodium nitrate, sodium arsenate, sodium fluoride       | The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent.  | Yes |
| 31 | Special Report No. 13, Marking and Defoliation of Forest Vegetation                           | 8   | 12 | Marathon, FL  | 3/21/1944- 3/23/1944 | zinc chloride, ammonium sulphamate, ammonium thiocyanate                                    | The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Spraying was done here.  | Yes |
| 32 | Special Report No. 13, Marking and Defoliation of Forest Vegetation                           | 9   | 12 | near Lake George, FL                                  | Spring 1944          | zinc chloride   | The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Spraving here.   | Yes |

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| 33 | Formulation and Testing of Broad Spectrum of Herbicide Pellets, First Six Month's Report on Contract No. DAAA13-67-C-0218  | 14 | 8 | near Wayside, Miss., Wilcox Road, Greenville, Miss.  | 9/19/1967                       | picloram, bromacil, pyriclor, and terbacil, Orange, cacodylic acid  | 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.                   | Und |
| 34 | Formulation and Testing of Broad Spectrum of Herbicide Pellets, Second Six Month's Report on Contract No. DAAA13-67-C-0218   | 15 | 8 | Las Mesas Cerros, Mayaguez, PR   | 5/24/1968, 5/26/1968, 5/27/1968 | picloram, bromacil, pyriclor  | 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.                   | Und |
| 35 | Formulation and Testing of Broad Spectrum of Herbicide Pellets, Second Six Month's Report on Contract No. DAAA13-67-C-0218   | 28 | 8 | Fulcher Ranch, Greenville, Mississippi   | 4/15/1968                       | picloram and bromicil   | 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.                   | Und |
| 36 | Appendix D, Aerial Herbicide Applications Evaluated for Maximum Effect and Minimum Drift   | 6  | 8 | Replacement Center of the Royal Thai Army near Pranburi, Thailand                                | 1964 and 1965                   | Orange, Purple  | 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 As | Yes |
| 37 | 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  | 1  | 8 | Las Mesas and La Jagua experimental areas at Mayaguez, PR  | 2/1956-6/1956                   | 2,4,5-T, 2,4-D, pentachlorophenol, ammate, weedazol, endothal Harvestaid, Butyne -1,4-diol                                      | 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.   | Yes |
| 38 | 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 | 1  | 8 | Guanica and Joyuda, PR   | 6/1956-9/1956                   | 2,4,5-T, potassium cyanate, amiendo, F-2, 6-Ca-4, Y-F Tree and Brush Kiler, ACP M-118, Shed-A-Leaf                              | 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.  | Yes |
| 39 | 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  | 1  | 8 | Las Mesas and La Jagua, Mayaguez, Joyuda at Cabo Rojo, and Guanica Insular Forest at Guanica, PR | 9/1956-12/1956                  | 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, esterone 2,4-D, F3, F4, F5, F6 | 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  | Yes |
| 40 | 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 | 3  | 8 | Las Mesas and La Jagua, Mayaguez, Guanica Beach, PR  | 1/1957-3/1957                   | V-C 3-105, V-C 1-21, V-C 1-443, F-7, TBP, Phillips 713, V-C 3-173   | 7 compounds were evaluated on 29 different woody plants to determine their effectiveness as defoliant, desiccants, and as killing agents. They were applied with a microsprayer to the upper leaf surfaces of duplicate small branches.                        | Yes |
| 41 | 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        | 2  | 8 | Las Mesas and La Jagua, Mayaguez, Guanica Beach, PR  | 4/1957-6/1957                   | B-1676, B-1638, NP 1098, SD 1369, Ammate, Shed-a-leaf   | 7 compounds were sprayed on 25 different plants in order to evaluate their effectiveness as defoliant, desiccants, and killing agents. The compounds were applied with a microsprayer to the upper and lower leaf surfaces of duplicate small branches.        | Yes |
| 42 | 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                  | 2  | 8 | Las Mesas and La Jagua, Mayaguez, PR   | 7/1957-12/1957                  | MgClO3, Golden Harvest Defoliant, Dow-M562, F-8, F-9, F-10, F-11, F-12  | 8 different spray formulations were applied to 16 different tropical trees and shrubs in order to evaluate their effectiveness as defoliant, desiccants, and killing agents.   | Yes |

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| 43 Record 1305-01, Report of Cambodian Rubber Damage  | 1  | 8 | southeastern part of Kompong Cham Province and Dar and Prek Clong plantations, Cambodia           | 6/1969                          | Orange  | In 6/1969, the US government received notice of charge by Cambodian government that major defoliation damage to the Cambodian rubber plantation near the RVN border had occurred as a result of US defoliation activity. This was confirmed by a team of exper | Yes |
| 44 Dow Sponsored Test of TORDON Ester and Orange in Hawaii  | 1  | 8 | State Forest area, 3500 ft.elevation on slope of Mauna Loa, near Hilo, HI                         | 12/2/1966, 12/4/1966, 1/12/1967 | Orange, M-3140, TORDON ester, 2,4-D ester, 2,4,5-T ester                            | 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.  | Und |
| 45 Soil Applied Herbicides in the Control of Temperate Zone Grasses, Broadleaf Weeds and Woody Plants   | 1  | 8 | Stone Valley Experimental Forest in Huntington County and near State College in Centre Countv. PA | 3/1969-10/1970                  | bromacil, diuron, tandex, fenuron, picloram   | 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 sprea | Und |
| 46 Technical Report BWL 16, Defoliation and Desiccation   | 9  | 1 | Fort Detrick, MD; Fort Ritchie, MD  | 1956-1957                       | various, 577 compounds  | In 1956 And 1957, defoliation and desiccation were carried out at Fort Detrick and Fort Ritchie, Maryland by the Chemical Corps and Biological Warfare Research. These were bench tests.   | Yes |
| 47 Report of Standing Subpanel E-2.5 on Plant Sciences  | 10 | 4 | GA and TN   | 1964                            | diquat and Tordon 101, various  | In 1964, helicopter spray tests were conducted on transmission line rights-of-way by the Georgia Power Company and Tennessee Valley Authority in collaboration with Fort Detrick to evaluate effectiveness of several commercially available herbicides.       | Yes |
| 48 Report of Standing Subpanel E-2.5 on Plant Sciences  | 11 | 4 | 2 areas in FL, 2 areas in GA, and 1 in TN   | 1968                            | bromacil, Tandex, monuron, diuron, and fenuron                                      | In 1968, emphasis was given to soil applied herbicides for grass control. Applications were made by a jeep-mounted sprayer on small plots or by helicopter on larger plots.  | Und |
| 49 Development of Army Defoliation Systems, TIR 21-2-1A1  | 1  | 4 | Orlando, FL, Cocoa, FL  | 1944                            | ammonium thiocyanate and zinc chloride  | Tests were conducted in 1944 by the Army in Orlando and Cocoa areas of Florida to determine the value of ammonium thiocyanate and chloride as marking and defoliation agents.. They were conducted initially at ground level and later from aircraft.          | Yes |
| 50 Development of Army Defoliation Systems, TIR 21-2-1A1  | 2  | 4 | Fort Knox, KY   | 1945                            | various   | In 1945, a special project known as Sphinx was conducted jointly by CWS and the ARML to investigate the use of chemical agents for increasing the flammability of vegetation prior to flame attack.  | Yes |
| 51 Special Report No. 225, Chemical Anticrop Aerial Spray Trials Using Jet Aircraft also in Special Report 232, Some Effects of Altitude and Airspeed on the Behavior of Chemical Anticrop Sprays, Box 18 | ii | 7 | Avon Park Air Force Base, FL  | Spring 1954                     | butyl 2,4-D, butyl 2,4,5-T, Isopropyl 2,4-D   | Series of tests were conducted at Avon Park AFB during the spring of 1954 to study the behavior of chemical anticrop aerial sprays when released from high-speed jet aircraft. The Navy F3D jet fighter was used with Aero 14A Airborne Spray Tanks to dispers | Yes |
| 52 Special Report No. 200, Field Development of Chemical Anticrop Agents  | 3  | 7 | Galatin Valley near Bozeman, Montana  | 7/3/1953, 7/6/1953, 7/14/1953   | 4- fluorophenoxy acetic acid and 2 of its esters, 3:1 butyl 2,4-D and butyl 2,4,5-T | A preliminary series of field evaluations of chemical agents for attacking wheat using a miniature spraying system mounted on light aircraft were performed by USDA.   | No  |
| 53 Herbicide Operations in Southeast Asia, July 1961-June 1967  | 22 | 7 | Laos  | 12/1965- 1967                   | Orange  | 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 LOCs that crossed into SVN. This network leads from NVN, through the eas  | Yes |

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| 54 Investigation of Spray Project near Globe, AZ   | 1   | 8  | Pinal Mountains near Globe, AZ                         | 1965, 1966, 1968, and 1969                   | 2,4-D isooctyl-ester, 2,4,5-t isooctyl-ester, silvex, propyleneglycol butylether ester, 2,4,5-T 2-e- | In 1965, the USFS 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.  | No  |
| 55 Formulation and Testing of Broad Spectrum of Herbicide Pellets, First Six Month's Report on Contract No. DAAA13-67-C-0218 | 9   | 8  | near Rio Grande, on the northeast coast of Puerto Rico | 8/23/1967, 10/18/1967, 12/21/1967-12/26/1967 | picloram, bromacil, pyriclor, and terbacil   | 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.                | Und |
| 56 Summary Report, Herbicide Operations Conducted from Riverine Watercraft   | 3-1 | 13 | Poole's Island, Aberdeen Proving Ground, MD            | 7/14/1969-                                   | Orange, Orange plus foam, Orange plus foam Orange, Foam  | 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.   | Yes |
| 57 Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia                                 | 9   | 13 | Fort Drum, NY  | 1959   | Orange   | The Commanding General, 1st US Army, requested that Ft Detrick assist with defoliation efforts at Ft Drum. Thirteen drums were sprayed there on 4 square miles from a helicopter spray device.  | Yes |
| 58 Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia                                 | 40  | 13 | Loquillo, PR   | 4/1966, 10/1966                              | Orange   | Field tests of defoliant 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.                                 | Yes |
| 59 Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia                                 | 40  | 13 | Hilo, HI   | 12/1966                                      | Orange   | Field tests of defoliant 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. There were Fort Detrick persone | Yes |

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| 60 | Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia   | 40   | 13        | Kauai, HI                                      | 1967                | Orange   | 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.         | Yes  |
| 61 | Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia   | 40   | 13        | Thailand                                       | 1964-65             | Orange, Blue   | 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.         | Yes  |
| 62 | Spray Test Calibration of the HIDAL (HUS-1 or H-34)   | 1    | 15        | Jacksonville, FL                               | 7/18/1962-7/21/1962 | Purple, Fuel Oil, Mix  | 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.                   | Yes  |
| 63 | Abstracts of Technical Publications April 1965-June 1965, July 1965, Technical Report 50, Defoliation Studies: Screening of Defoliants, Herbicides, and Desiccants  | 10   | 22        | Fort Detrick, MD                               | 8/1961-6/1963       | 1410 compounds   | From 8/1961 to 6/1963, compounds were spray-tested in the greenhouse to evaluate them as effective defoliants, desiccants, and herbicides.   | Yes  |
| 64 | Minutes of the Quarterly Meetings for Calendar Year 1970 of the Subcommittee on Defoliants/Anticrop Systems, Joint Technical Coordinating Group/Chemical Biological | 9,26 | 1         | Gulfport, Miss.                                | 1968-1970           | Orange   | While discussing the mandatory disposal of Orange, it was mentioned that 15,161 drums were being stored at Gulfport, Mississippi.  | Yes  |
| 65 | Memo for Record, Summary 1968 Vegetation Control Tests  | 2    | Drawe r 1 | Korea, 2nd and 4th Brigades, 2nd Division area | 8/1968              | Hyvar XWS, tandex, Urox B, Urox Oil concentrate (liquids) bromacil, tandex, Urox 22 (solids) | In 1968, chemicals were sent from the Plant Sciences Lab, Ft Detrick, MD, to the Republic of Korea for the purpose of testing their effectiveness in the control of vegetation.  | Yes  |
| 66 | Memo for Record, Summary 1968 Vegetation Control Tests  | 2    | Drawe r 1 | Korea, third Brigade, 2nd Division area        | 10/3/1968           | Hyvar XWS, tandex, Urox B, Urox Oil concentrate (liquids) bromacil, tandex, Urox 22 (solids) | In 1968, chemicals were sent from the Plant Sciences Lab, Ft Detrick, MD, to the Republic of Korea for the purpose of testing their effectiveness in the control of vegetation.  | Yes  |
| 67 | Technical report 40, Stem Rust in Analog Areas, 1960  | 3    | Drawe r 3 | Hays, KS, Langdon, ND                          | 1960                | stem rust of wheat   | Two studies on the stem rust of wheat were conducted during 1960 to obtain data on the establishment, development, and destructiveness of artificially induced stem rust epiphytotics.   | Und. |
| 68 | Minutes-Meeting of Vegetation Control Subcommittee of the JTCG/CB, 2-3 March 1971   | 7    | Drawe r 4 | Eglin AFB, FL, C-52A test area                 | 1962-70             | Orange (1962-68), Purple (1962-68), White (1967-70), Blue (1968-70)                          | 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.   | Yes  |
| 69 | Special Report No. 13, Marking and Defoliation of Forest Vegetation   | v    | 12        | Beaumont, TX                                   | 1950-51             | 2,4-D  | 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. Coghill, Hasse, and Yeatner woorked here. | Und. |
| 70 | Special Report No. 13, Marking and Defoliation of Forest Vegetation   | v    | 12        | Prosser, WA                                    | 1950-51             | 2,4-D  | 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. V.F. Burns worked here.                   | Und. |

AGENT ORANGE USE - OUTSIDE VIETNAM - 01/28/2003

71 Special Report No. 13, Marking and  
Defoliation of Forest Vegetation v

12

Brawley, CA

1950-51

2,4-D

The purpose was to determine means Und.  
of accomplishing defoliation of  
tropical forest vegetation by  
application of a chemical agent. Here,  
irrigation water studies were done with  
the agent. H.F. Arle worked here

| ID | Report Title  | Pg # | Box # | Location        | Dates       | Agents |
|----|---|------|-------|-----------------|-------------|--------|
| 1  | Technical Report USAF OEHL -78-92, the Toxicology, Environmental Fate and Human Risk of Herbicide Orange and its Associated Dioxin                                  | II-1 | 17    | Sea             | Summer 1977 | Orange |
| 2  | Minutes of the Quarterly Meetings for Calendar Year 1970 of the Subcommittee on Defoliants/Anticrop Systems, Joint Technical Coordinating Group/Chemical Biological | 9,26 | 1     | Gulfport, Miss. | 1968-1970   | Orange |

**Project Description**

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).

While discussing the mandatory disposal of Orange, it was mentioned that 15,161 drums were being stored at Gulfport, Mississippi.

**DoD****Involvement**

Yes, Gulfport  
No, JI

Yes

| <b>ID</b> | <b>Report Title</b>   | <b>Pg #</b> | <b>Box #</b> | <b>Location</b>   | <b>Dates</b>               | <b>Agents</b>   |
|-----------|---|-------------|--------------|---|----------------------------|---|
| 1         | Herbicide Operations in Southeast Asia, July 1961-June 1967                               | 22          | 7            | Laos  | 12/1965- 1967              | Orange  |
| 2         | Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia | 9           | 13           | Fort Drum, NY   | 1959                       | Orange  |
| 3         | Record 1305-01, Report of Cambodian Rubber Damage   | 1           | 8            | southeastern part of Kompong Cham Province and Dar and Prek Clong plantations, Cambodia | 6/1969                     | Orange  |
| 4         | Investigation of Spray Project near Globe, AZ   | 1           | 8            | Pinal Mountains near Globe, AZ  | 1965, 1966, 1968, and 1969 | 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 |

**Project Description****DoD  
Involvement**

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 LOCs that crossed into SVN. This network leads from NVN, through the eastern panhandle, to Cambodian border.

Yes

The Commanding General, 1st US Army, requested that Ft Detrick assist with defoliation efforts at Ft Drum. Thirteen drums were sprayed there on 4 square miles from a helicopter spray device.

Yes

In 6/1969, the US government received notice of charge by Cambodian government that major defoliation damage to the Cambodian rubber plantation near the RVN border had occurred as a result of US defoliation activity. This was confirmed by a team of experts.

Yes

In 1965, the USFS 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.

No

| <b>ID</b> | <b>Report Title</b>  | <b>Pg #</b> | <b>Box #</b> | <b>Location</b>                                       | <b>Dates</b>  | <b>Agents</b>   |
|-----------|--|-------------|--------------|---|---|---|
| 1         | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant | 10          | 1            | Apalachicola National Forest near Sophoppy, FL        | 5/3/1967-5/8/1967   | basic desiccants and Orange/Blue  |
| 2         | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant | 10          | 1            | Fort Gordon, GA                                       | 7/15/1967-7/17/1967   | in-house desiccants mixtures and formulations, Orange and Blue                |
| 3         | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant | 10          | 1            | Fort Chaffee, AK                                      | 5/16/1967-5/18/1967, 7/22/1967-7/23/1967, 8/23/1967 - 8/24/1967 | basic, in-house, improved desiccants and Orange, Blue                         |
| 4         | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant | 10          | 1            | Base Gagetown near Fredericton, New Brunswick, Canada | 6/20/1967-6/24/1967   | basic desiccants and Orange, Blue, various                                    |
| 5         | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant | 12          | 1            | Las Marias, Puerto Rico                               | 2/1967-12/1967  | various, including Orange   |
| 6         | Technical Report 114, Field Evaluation of Desiccants and Herbicide Mixtures as Rapid Defoliant | 13          | 1            | Kauai Branch Station near Kapaa, Kawai, HI            | 6/1967, 10/1967, 2/1968, 12/1967                                | Blue, diquat, paraquat, Orange, PCP, Picloram, White, HCA, 2,4,5-T, Endothall |
| 7         | Report of Standing Subpanel E-2.5 on Plant Sciences  | 11          | Drawer 1     | Thailand  | 1964-1965   | Purple, Orange, Others  |

|    |   |   |           |  |                 |   |
|----|---|---|-----------|--|-----------------|---|
| 8  | Special Report No. 184, Anticrop Aerial Spray Trials, Phase III   | 1 | 17        | Englin Air Force Base, FL              | 11/1952-12/1952 | 2,4-D, 2,4,5-T: 143 and 974, respectively |
| 9  | 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 | 4 | 17        | Beaumont, TX                           | 6/1944          | LN *phenoxy                               |
| 10 | Special Report No. 79, Destruction by Chemical Agents   | 4 | 17        | Bushnell Army Air Field, FL            | 2/1945          | LN *phenoxy                               |
| 11 | 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 | 5 | 17        | Vigo Plant CWS, Terre Haute, IN        | 5/1945-9/1945   | LN (see attached) *phenoxy                |
| 12 | Special Report No. 79, Destruction by Chemical Agents   | 5 | 17        | Jefferson Proving Grounds, Madison, IN | Summer 1945     | LN *phenoxy                               |
| 13 | Special Report No. 79, Destruction by Chemical Agents   | 5 | 17        | Granite Peak, UT                       | Summer 1945     | LN *phenoxy                               |
| 14 | Special Report No. 149, Low Volume Anticrop Aerial Spray Trials   | 1 | 17 and 12 | Avon Air Force Base, FL                | 2/1951-4/1951   | butyl 2,4 D                               |

|  |     |           |   |                     |  |
|--|-----|-----------|---|---------------------|--|
| 15 Special Report No. 201, Field Development of Chemical Anticrop Agents, Response of Field Grown Crops to Chemical Anticrop Agents Released from Experimental Spray tower | 4   | 17        | area B, Camp Detrick, MD                | Spring/Summer 1953  | 3:1 mixture 2,4-D and 2,4,5-T  |
| 16 Crop Destruction by Aerial Sprays, Preliminary Trials also see Special Report No. 14, The Effect of VKA and VKS on Natural Vegetation, Box 12                           | 5   | 17        | Bushnell Army Air Field, Bushnell, FL   | 2/1945-4/1945       | 2,4-D and its ammonium salt  |
| 17 Memo for Record, Summary 1968 Vegetation Control Tests  | 2   | Drawers 1 | Korea, third Brigade, 2nd Division area | 7/23/1968-7/24/1968 | Hyvar XWS, tandex, Urox B, Urox Oil concentrate (liquids) bromacil, tandex, Urox 22 (solids) |
| 18 Development of Arsenic Based Defoliant  | 3   | 8         | Marinette, WI, Weslaco, TX              | 5/1967-1/1969       | arsenic compounds, Orange, cacodylic acid, sodium cacodylate                                 |
| 19 Spread Factor Study of Drops of Orange and Stull Bifluid Defoliant on Kromekote Cards and Plant Leaves  | ii  | 8         | Eglin AFB, FL                           | 6/11/1968-9/12/1968 | orange, Bifluid #1, Bifluid#2, Stull Bifluid   |
| 20 Miscellaneous Publication 8, Proceedings of the Second Defoliation Conference 5-6 August 1964   | 155 | 11        | Fort Ritchie, MD                        | 1963                | Tordon, 2,4-D, Orange, diquat, endotal, and combinations of each with Tordon                 |
| 21 Miscellaneous Publication 8, Proceedings of the Second Defoliation Conference 5-6 August 1964   | 156 | 11        | Fort Meade, MD                          | 1963                | cacodylic acid, Dowco 173, butyediol   |

|    |   |    |    |                                     |                    |  |
|----|---|----|----|-------------------------------------|--------------------|--|
| 22 | Special Report No. 64, Destruction of Tropical Crops with Growth-inhibiting Agents        | 4  | 12 | Kumbla, South India                 | 1945-1946          | LN compounds<br>*phenoxy   |
| 23 | Special Report No. 92, Field Plot Experiments with Plant Inhibitors 1946 and 1947 Seasons | 1  | 12 | Camp Detrick, MD-Fields A,B, and C  | 1946-1947          | 2,4,5-T, 2,4,5-T triethanolamine, tributylphosphate, ethyl 2,4-D, butyl 2,4,5-Triet 2,4-D, |
| 24 | Special Report No. 105, Field Plot Experiments with Plant Inhibitors 1948 Season          | 2  | 12 | Camp Detrick, MD- Fields C,D, and E | 1948               | 2,4,5-T, isopropyl phenol carbamate, LN-2426, 2,4-D  |
| 25 | Special Report No. 130, Field Plot Experiments with Plant Inhibitors 1949 Season          | 2  | 12 | Camp Detrick, MD-Fields C,D,E       | 1949               | triethelyne. 2,4,5-T, carbamates   |
| 26 | Special Report No. 130, Field Plot Experiments with Plant Inhibitors 1949 Season          | 28 | 12 | Kingston, RI                        | 7/26/1949, 1950-51 | trieth.2,4,5-T, butyl 2,4,5-T,974  |
| 27 | Special Report No. 153, Field Plot Experiments with Plant Inhibitors, 1950 Season         | 2  | 12 | Camp Detrick, MD-Fields A,B,D,E     | 1950               | 2464, butyl 2,4-D, 974, butyl 2,4,5-T, q:q 143 and 974                                     |
| 28 | Special Report No. 156, Field Plot Experiments with Plant Inhibitors, 1950-51 Season      | 2  | 12 | Camp Detrick, MD-Field F            | 1950-51            | 2464, carbamate, butyl 2,4-D, 143 and 974 (orange?),2,4,5-T, 2,4-D, Orange                 |

|    |   |    |    |   |                                 |   |
|----|---|----|----|---|---------------------------------|---|
| 29 | Special Report No. 13, Marking and Defoliation of Forest Vegetation   | 1  | 12 | Orlando, FL at Army Grove Air Force's Tactical Center                     | 3/14/1944, 4/12/1944            | ammonium thiocyanate, zinc chloride, sodium nitrate, sodium arsenate, sodium fluoride       |
| 30 | Special Report No. 13, Marking and Defoliation of Forest Vegetation   | 8  | 12 | Marathon, FL  | 3/21/1944-3/23/1944             | zinc chloride, ammonium sulphamate, ammonium thiocyanate                                    |
| 31 | Special Report No. 13, Marking and Defoliation of Forest Vegetation   | 9  | 12 | near Lake George, FL  | Spring 1944                     | zinc chloride   |
| 32 | Formulation and Testing of Broad Spectrum of Herbicide Pellets, First Six Month's Report on Contract No. DAAA13-67-C-0218   | 14 | 8  | near Wayside, Miss., Wilcox Road, Greenville, Miss.                       | 9/19/1967                       | picloram, bromacil, pyriclor, and terbacil, Orange, cacodylic acid                          |
| 33 | Formulation and Testing of Broad Spectrum of Herbicide Pellets, Second Six Month's Report on Contract No. DAAA13-67-C-0218  | 15 | 8  | Las Mesas Cerros, Mayaguez, PR  | 5/24/1968, 5/26/1968, 5/27/1968 | picloram, bromacil, pyriclor  |
| 34 | Formulation and Testing of Broad Spectrum of Herbicide Pellets, Second Six Month's Report on Contract No. DAAA13-67-C-0218  | 28 | 8  | Fulcher Ranch, Greenville, Mississippi                                    | 4/15/1968                       | picloram and bromicil   |
| 35 | Appendix D, Aerial Herbicide Applications Evaluated for Maximum Effect and Minimum Drift  | 6  | 8  | Replacement raining Center of the Royal Thai Army near Pranburi, Thailand | 1964 and 1965                   | Orange, Purple  |
| 36 | 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 | 1  | 8  | Las Mesas and La Jagua experimental areas at Mayaguez, PR                 | 2/1956-6/1956                   | 2,4,5-T, 2,4-D, pentachloropheno l, ammate, weedazol, endothal Harvestaid, Butyne -1,4-diol |

|    |  |   |   |  |                                 |  |
|----|--|---|---|--|---------------------------------|--|
| 37 | 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 | 1 | 8 | Guanica and Joyuda, PR   | 6/1956-9/1956                   | 2,4,5-T, potassium cyanate, amiendo, F-2, 6-Ca-4, Y-F Tree and Brush Kiler, ACP M-118, Shed A-Leaf                             |
| 38 | 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  | 1 | 8 | Las Mesas and La Jagua, Mayaguez, Joyuda at Cabo Rojo, and Guanica Insular Forest at Guanica, PR | 9/1956-12/1956                  | 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 |
| 39 | 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 | 3 | 8 | Las Mesas and La Jagua, Mayaguez, Guanica Beach, PR  | 1/1957-3/1957                   | V-C 3-105, V-C 1-21, V-C 1-443, F-7, TBP, Phillips 713, V-C 3-173  |
| 40 | 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        | 2 | 8 | Las Mesas and La Jagua, Mayaguez, Guanica Beach, PR  | 4/1957-6/1957                   | B-1676, B-1638, NP 1098, SD 1369, Ammate, Shed-a-leaf  |
| 41 | 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                  | 2 | 8 | Las Mesas and La Jagua, Mayaguez, PR   | 7/1957-12/1957                  | MgClO <sub>3</sub> , Golden Harvest Defoliant, Dow-M562, F-8, F-9, F-10, F-11, F-12  |
| 42 | Dow Sponsored Test of TORDON Ester and Orange in Hawaii  | 1 | 8 | State Forest area, 3500 ft. elevation on slope of Mauna Loa, near Hilo, HI                       | 12/2/1966, 12/4/1966, 1/12/1967 | Orange, M-3140, TORDON ester, 2,4-D ester, 2,4,5-T ester   |

|    |  |    |   |   |                |  |
|----|--|----|---|---|----------------|--|
| 43 | Soil Applied Herbicides in the Control of Temperate Zone Grasses, Broadleaf Weeds and Woody Plants   | 1  | 8 | Stone Valley Experimental Forest in Huntington County and near State College in Centre County, PA | 3/1969-10/1970 | bromacil, diuron, tandex, fenuron, picloram    |
| 44 | Technical Report BWL 16, Defoliation and Desiccation   | 9  | 1 | Fort Detrick, MD; Fort Ritchie, MD  | 1956-1957      | various, 577 compounds                         |
| 45 | Report of Standing Subpanel E-2.5 on Plant Sciences  | 10 | 4 | GA and TN   | 1964           | diquat and Tordon 101, various                 |
| 46 | Report of Standing Subpanel E-2.5 on Plant Sciences  | 11 | 4 | 2 areas in FL, 2 areas in GA, and 1 in TN   | 1968           | bromacil, Tandex, monuron, diuron, and fenuron |
| 47 | Development of Army Defoliation Systems, TIR 21-2-1A1  | 1  | 4 | Orlando, FL, Cocoa, FL  | 1944           | ammonium thiocyanate and zinc chloride         |
| 48 | Development of Army Defoliation Systems, TIR 21-2-1A1  | 2  | 4 | Fort Knox, KY   | 1945           | various  |
| 49 | Special Report No. 225, Chemical Anticrop Aerial Spray Trials Using Jet Aircraft also in Special Report 232, Some Effects of Altitude and Airspeed on the Behavior of Chemical Anticrop Sprays, Box 18 | ii | 7 | Avon Park Air Force Base, FL  | Spring 1954    | butyl 2,4-D, butyl 2,4,5-T, Isopropyl 2,4-D    |

|    |   |     |    |  |  |   |
|----|---|-----|----|--|--|---|
| 50 | Special Report No. 200, Field Development of Chemical Anticrop Agents   | 3   | 7  | Galatin Valley near Bozeman, Montana                   | 7/3/1953, 7/6/1953, 7/14/1953                | 4- fluorophenoxy-acetic acid and 2 of its esters, 3:1 butyl 2,4-D and butyl 2,4,5-T |
| 51 | Formulation and Testing of Broad Spectrum of Herbicide Pellets, First Six Month's Report on Contract No. DAAA13-67-C-0218 | 9   | 8  | near Rio Grande, on the northeast coast of Puerto Rico | 8/23/1967, 10/18/1967, 12/21/1967-12/26/1967 | picloram, bromacil, pyriclor, and terbacil  |
| 52 | Summary Report, Herbicide Operations Conducted from Riverine Watercraft   | 3-1 | 13 | Poole's Island, Aberdeen Proving Ground, MD            | 7/14/1969-                                   | Orange, Orange plus foam, Orange plus foam Orange, Foam                             |
| 53 | Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia                                 | 40  | 13 | Loquillo, PR   | 4/1966, 10/1966                              | Orange  |
| 54 | Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia                                 | 40  | 13 | Hilo, HI   | 12/1966                                      | Orange  |
| 55 | Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia                                 | 40  | 13 | Kauai, HI  | 1967   | Orange  |
| 56 | Miscellaneous Publication 33, Information Manual for Vegetation Control in Southeast Asia                                 | 40  | 13 | Thailand   | 1964-65                                      | Orange, Blue  |

|  |    |           |   |                     |  |
|--|----|-----------|---|---------------------|--|
| 57 Spray Test Calibration of the HIDAL (HUS-1 or H-34)   | 1  | 15        | Jacksonville,FL                               | 7/18/1962-7/21/1962 | Purple, Fuel Oil, Mix  |
| 58 Abstracts of Technical Publications April 1965-June 1965, July 1965, Technical Report 50, Defoliation Studies: Screening of Defoliant, Herbicides, and Desiccants | 10 | 22        | Fort Detrick, MD                              | 8/1961-6/1963       | 1410 compounds   |
| 59 Memo for Record, Summary 1968 Vegetation Control Tests  | 2  | Drawe r 1 | Korea,2nd and 4th Brigades, 2nd Division area | 8/1968              | Hyvar XWS, tandex, Urox B, Urox Oil concentrate (liquids) bromacil, tandex, Urox 22 (solids) |
| 60 Memo for Record, Summary 1968 Vegetation Control Tests  | 2  | Drawe r 1 | Korea, third Brigade, 2nd Division area       | 10/3/1968           | Hyvar XWS, tandex, Urox B, Urox Oil concentrate (liquids) bromacil, tandex, Urox 22 (solids) |
| 61 Technical report 40, Stem Rust in Analog Areas, 1960  | 3  | Drawe r 3 | Hays, KS, Langdon, ND                         | 1960                | stem rust of wheat   |
| 62 Minutes-Meeting of Vegetation Control Subcommittee of the JTCG/CB, 2-3 March 1971   | 7  | Drawe r 4 | Eglin AFB, FL, C-52A test area                | 1962-70             | Orange (1962-68), Purple (1962-68), White (1967-70), Blue (1968-70)                          |
| 63 Special Report No. 13, Marking and Defoliation of Forest Vegetation   | v  | 12        | Beaumont, TX                                  | 1950-51             | 2,4-D  |
| 64 Special Report No. 13, Marking and Defoliation of Forest Vegetation   | v  | 12        | Prosser,WA                                    | 1950-51             | 2,4-D  |

65 Special Report No. 13, Marking and  
Defoliation of Forest Vegetation

v

12

Brawley, CA

1950-51

2,4-D

**Project Description****DoD  
Involvement**

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 U of HI sites.

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 U of HI sites.

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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 U of HI sites.

Sponsored by ARPA; ARPA Order 423, Between the mentioned dates, there was a large-scale test program to determine effectiveness of mentioned agents in defoliation of upland forest or jungle vegetation representative of SEA.

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

Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, they were testing on rice crops.

Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was aerial spray experiments on potted plants

Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was aerial trials spraying field grown plants.

Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was dropping trials.

Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was dropping trials.

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 anticrop agents from at low volume from aircraft. C-47 and Navy XBT2D-1 aircraft with various nozzles were used.

Personnel at Camp Detrick tested the feasibility of using an experimental spray tower for applying a mixture of chemical anticrop agents to broad-leaf crops. Yes

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. Yes

In 1968, chemicals were sent from the Plant Sciences Lab, Ft Detrick, MD, to the Republic of Korea for the purpose of testing their effectiveness in the control of vegetation. Yes

71 new arsenic compounds were tested in primary screening against 6 plant species in greenhouse tests. Then, 5 of the most active compounds were tested in field trials against Red Maple and compared to formulations of cacodylic acid and a 50:50 blend of orange and sodium cacodylate. The Ansul Co. for DoD. Yes

A spread factor study was performed by the Army to correlate the spherical drop sizes of both Orange and Stull Bifluid defoliant. It involved development of new techniques to determine spread factors over an extended range of drop sizes. A spinning cup drop generator was used. Yes

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. Yes

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. Yes

The main objective of the experiments was to determine the feasibility of accomplishing severe injury or destruction of tropical food crops by the application of growth-inhibiting (LN\*) compounds in static trials. Field plantings were treated with various agents at different rates in different forms.

Yes

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.

Yes

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.

Yes

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. Experiments were done by Ennis, DeRose, Newman, Williamson, DeRigo, and Thomas.

Yes

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. Experiments were carried out under supervision of T.E. Odland if RI State College. H.T. DeRigo was also there.

Yes

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. Experiments were done by Ennis, DeRose, Acker, Newman, Williamson, and Zimmerly.

Yes

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. Experiments were done by Acker, DeRose, McLane, Newman, Williamson, Baker, Dean, Johnson, Taylor, Walker, and Zimmerly.

Yes

The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Yes

The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Spraying was done here. Yes

The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Spraying here. Yes

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. Und

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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. Yes

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. Yes

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. Yes

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. Yes

7 compounds were evaluated on 29 different woody plants to determine their effectiveness as defoliants, desiccants, and as killing agents. They were applied with a microsprayer to the upper leaf surfaces of duplicate small branches. Yes

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. Yes

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. Yes

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. Und

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. Und

In 1956 And 1957, defoliation and desiccation were carried out at Fort Detrick and Fort Ritchie, Maryland by the Chemical Corps and Biological Warfare Research. These were bench tests. Yes

In 1964, helicopter spray tests were conducted on transmission line rights-of-way by the Georgia Power Company and Tennessee Valley Authority in collaboration with Fort Detrick to evaluate effectiveness of several commercially available herbicides. Yes

In 1968, emphasis was given to soil applied herbicides for grass control. Applications were made by a jeep-mounted sprayer on small plots or by helicopter on larger plots. Und

Tests were conducted in 1944 by the Army in Orlando and Cocoa areas of Florida to determine the value of ammonium thiocyanate and chloride as marking and defoliation agents.. They were conducted initially at ground level and later from aircraft. Yes

In 1945, a special project known as Sphinx was conducted jointly by CWS and the ARML to investigate the use of chemical agents for increasing the flammability of vegetation prior to flame attack. Yes

Series of tests were conducted at Avon Park AFB during the spring of 1954 to study the behavior of chemical anticrop 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 anticrop agents. Yes

A preliminary series of field evaluations of No chemical agents for attacking wheat using a miniature spraying system mounted on light aircraft were performed by USDA.

In 1967, the Dow Chemical Company Und 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.

During the week of 7/14/1969, personnel Yes from Naval Applied Science Laboratory in conjunction with personnel from Limited War Laboratory conducted a defoliation test along the shoreline.

Field tests of defoliant were designed to Yes 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.

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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.

Yes

From 8/1961 to 6/1963, compounds were spray-tested in the greenhouse to evaluate them as effective defoliant, desiccants, and herbicides.

Yes

In 1968, chemicals were sent from the Plant Sciences Lab, Ft Detrick, MD, to the Republic of Korea for the purpose of testing their effectiveness in the control of vegetation.

Yes

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Yes

Two studies on the stem rust of wheat were conducted during 1960 to obtain data on the establishment, development, and destructiveness of artificially induced stem rust epiphytotic.

Und

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.

Yes

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. Coghill, Hase, and Yeatner worked here.

Und.

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. V.F. Burns worked here.

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Arle worked here