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Agent Orange: Herbicide Tests and Storage Outside the U.S.

Agent Orange and other herbicides used in Vietnam were tested or stored elsewhere, including in countries outside of the U.S. Below is information from the Department of Defense (DoD) on projects to test, dispose of, or store herbicides outside the U.S.

Outside the U.S.: [Cambodia](#) | [Canada](#) | [India](#) | [Korea](#) | [Laos](#) | [Puerto Rico](#) | [At Sea](#) | [Thailand](#)

[Herbicide Tests and Storage in the U.S.](#)

[View as PDF – Herbicides Tests and Storage outside of Vietnam](#) (224 KB, PDF)

CAMBODIA

Location: Southeastern part of Kompong Cham Province and Dar and Prek Clong plantations, Cambodia

Dates: 6/1969

Project Description: 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.

Agents: Orange

DoD Involvement: Yes

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CANADA

Location: Base Gagetown near Fredericton, New Brunswick, Canada

Dates: 6/20/1967 - 6/24/1967

Project Description: 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.

Agents: Basic desiccants and Orange, Blue, various

DoD Involvement: Yes

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INDIA

Location: Kumbha, South India

Dates: 1945-1946

Project Description: 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.

Agents: LN compounds *phenoxy

DoD Involvement: Yes

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KOREA

Location: Korea, third Brigade, 2nd Division area

Dates: 7/23/1968 - 7/24/1968

Project Description: 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.

Agents: Hyvar XWS, tandex, Urox B, Urox Oil concentrate (liquids) bromacil, tandex, Urox 22 (solids)

DoD Involvement: Yes

Location: Korea, 2nd and 4th Brigades, 2nd Division area

Dates: 8/1968

Project Description: 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.

Agents: Hyvar XWS, tandex, Urox B, Urox Oil concentrate (liquids) bromacil, tandex, Urox 22 (solids)

DoD Involvement: Yes

Location: Korea, third Brigade, 2nd Division area

Dates: 10/3/1968

Project Description: 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.

Agents: Hyvar XWS, tandex, Urox B, Urox Oil concentrate (liquids) bromacil, tandex, Urox 22 (solids)

DoD Involvement: Yes

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LAOS

Location: Laos

Dates: 12/1965 - 1967

Project Description: 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.

Agents: Orange

DoD Involvement: Yes

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PUERTO RICO

Location: Las Mesas and La Jagua experimental areas at Mayaguez, Puerto Rico

Dates: 2/1956 - 6/1956

Project Description: 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.

Agents: 2,4,5-T, 2,4-D, pentachlorophenol, ammate, weedazol, endothal Harvestaid, Butyne -1,4-diol

DoD Involvement: Yes

Location: Guanica and Joyuda, Puerto Rico

Dates: 6/1956 - 9/1956

Project Description: 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.

Agents: 2,4,5-T, potassium cyanate, amiendo, F-2, 6-Ca-4, Y-F Tree and Brush Kiler, ACP M-118, ShedA-Leaf

DoD Involvement: Yes

Location: Las Mesas and La Jagua, Mayaguez, Joyuda at Cabo Rojo, and Guanica Insular Forest at Guanica, Puerto Rico

Dates: 9/1956-12/1956

Project Description: 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.

Agents: 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

DoD Involvement: Yes

Location: Las Mesas and La Jagua, Mayaguez, Guanica Beach, Puerto Rico

Dates: 1/1957 - 3/1957

Project Description: 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.

Agents: V-C 3-105, V-C 1-21, V-C 1-443, F-7, TBP, Phillips 713, V-C 3-173

DoD Involvement: Yes

Location: Las Mesas and La Jagua, Mayaguez, Guanica Beach, Puerto Rico

Dates: 4/1957 - 6/1957

Project Description: 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.

Agents: B-1676, B-1638, NP 1098, SD 1369, Ammate, Shed-a-leaf

DoD Involvement: Yes

Location: Las Mesas and La Jagua, Mayaguez, Puerto Rico

Dates: 7/1957 - 12/1957

Project Description: 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.

Agents: MgClO₃, Golden Harvest Defoliant, Dow-M562, F-8, F9, F-10, F-11, F-12

DoD Involvement: Yes

Location: Loquillo, Puerto Rico

Dates: 4/1966, 10/1966

Project Description: 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.

Agents: Orange

DoD Involvement: Yes

Location: Las Marias, Puerto Rico

Dates: 2/1967 - 12/1967

Project Description: 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.

Agents: Various, including Orange

DoD Involvement: Yes

Location: Near Rio Grande, on the northeast coast of Puerto Rico

Dates: 8/23/1967, 10/18/1967, 12/21/1967-12/26/1967

Project Description: 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.

Agents: Picloram, bromacil, pyriclor, and terbacil

DoD Involvement: Undetermined

Location: Las Mesas Cerros, Mayaguez, Puerto Rico

Dates: 5/24/1968, 5/26/1968, 5/27/1968

Project Description: 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.

Agents: Picloram, bromacil, pyriclor

DoD Involvement: Undetermined

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AT SEA

Location: At Sea

Dates: Summer 1977

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).

Agents: Orange

DoD Involvement: Yes (Gulfport, MS); No (Johnston Island)

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THAILAND

Location: Replacement Training Center of the Royal Thai Army near Pranburi, Thailand

Dates: 1964 and 1965

Project Description: 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.

Agents: Orange, Purple

DoD Involvement: Yes

Location: Thailand

Dates: 1964-65

Project Description: 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.

Agents: Purple, Orange, Others

DoD Involvement: Yes

Location: Thailand

Dates: 1964-65

Project Description: 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.

Agents: Orange, Blue

DoD Involvement: Yes

SOURCE: http://www.publichealth.va.gov/exposures/agentorange/outside_vietnam.asp