Congressional Research Service
Informing the legislative debate since 1914

U.S. Agent Orange/Dioxin Assistance to Vietnam

Updated February 21, 2019

Congressional Research Service
https://crsreports.congress.gov
R44268

CRS REPORT
Prepared for Members and
Committees of Congress

Summary

U.S. assistance to Vietnam for the environmental and health damage attributed to a dioxin contained in Agent Orange and other herbicides sprayed over much of the southern portion of the country during the Vietnam War remains a major bilateral issue. Between fiscal years (FY) 2007 and 2019, Congress appropriated nearly $255 million to address these two issues. In addition, the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (P.L. 115-232) authorized the transfer of up to $15 million to the U.S. Agency for International Development (USAID) for the dioxin cleanup of the Bien Hoa Airbase.

Most of the appropriated funds have been used by USAID for the environmental cleanup of Danang airport, one of the major airbases used for storing and spraying the herbicides between 1961 and 1971. A lesser amount of the appropriated funds have been used by USAID for assistance to Vietnam's persons with disabilities, generally, but not always in the vicinity of Danang or other dioxin-contaminated areas.

Congressional interest in Agent Orange/dioxin in Vietnam has largely been focused on two issues. The first issue is determining the appropriate amount and type of assistance to provide to address the environmental damage and the health effects of dioxin contamination in Vietnam. The second issue is oversight of how such assistance has been utilized by the State Department and USAID.

In November 2017, the United States and Vietnam completed the environmental remediation of approximately 90,000 cubic meters (118,000 cubic yards) of contaminated soil and 60,000 cubic meters (78,000 cubic yards) of lower risk materials at Danang airport by a process known as in-pile thermal desorption (IPTD). Restoration and project closure operations were completed in November 2018. The project took six years, with an estimated overall cost of $116 million.

Field studies have identified a number of other areas in Vietnam contaminated with the dioxin associated with Agent Orange, including the airports near Bien Hoa and Phu Cat, as well as sections of the A Luoi Valley. In January 2018, U.S. and Vietnamese governments signed a memorandum of intent (MOI) to begin the cleanup of the Bien Hoa airport. According to a USAID study, the environmental cleanup of Bien Hoa airport could cost an estimated $137 million to $794 million, depending on what form of remediation is used.

The provision of health-related assistance to areas contaminated with Agent Orange/dioxin has raised questions about how USAID has utilized appropriated funds. By May 2017, USAID had obligated less than two-thirds of the appropriated funds for FY2011-FY2017. The funds have generally been used for disability assistance programs regardless of the cause of the disability, rather than for both health and disability programs targeting populations residing near Agent Orange/dioxin "hot spots."

While the obligations for environmental remediation activities generally have not been a matter of congressional concern, how USAID has obligated appropriations for health and disability activities has drawn some attention.

The Consolidated Appropriations Act, 2019 (P.L. 116-6) appropriated "not less than $20 million" for environmental remediation and "not less than $12.5 million … for health and disability programs in areas sprayed with Agent Orange and otherwise contaminated with dioxin." The Victims of Agent Orange Relief Act of 2019 (H.R. 326) would require the Secretary of State to provide assistance to individuals in Vietnam with health issues related to exposure to Agent Orange, as well as "to institutions in Vietnam that provide health care for covered individuals." The act would also require the Secretary of State to provide assistance "to remediate those geographic areas of Vietnam that the Secretary determines contain high levels of Agent Orange."

Contents

Overview 1
Congressional Appropriations Since 2007 4
USAID Obligations 8
Danang Airport Environmental Remediation Project 12
Disability Programs 15
Bien Hoa Airbase 16
Issues Before Congress 18
Funding Assistance 18
Oversight of Assistance 19

Figures

Figure 1. Map of Vietnam Showing Agent Orange "Hot Spots" 2

Tables

Table 1. Congressional Appropriations for Agent Orange/Dioxin Remediation and Health-Related Activities in Vietnam 5
Table 2. Obligation of Appropriated Funds for Agent Orange/Dioxin-Related Activities in Vietnam 9
Table 3. Contracts Awarded for Danang Environmental Remediation and Bien Hoa Assessment 13

Table A-1. Public Law and Relevant Text of Appropriations for Agent Orange/Dioxin-Related Activities in Vietnam 21

Appendixes

Appendix. Text of Public Laws Appropriating Funds for Environmental Remediation and Health and Disability Services in Vietnam 21

Contacts

Author Information 26

Overview

During the Vietnam War,[1] the U.S. military conducted Operation Ranch Hand, a program that sprayed an estimated 18-20 million gallons of herbicides—including approximately 11-12 million gallons of Agent Orange[2]—over about 12,000 square miles of southern Vietnam between 1961 and 1971.[3] A contaminant of the manufacture of Agent Orange (as well as two other herbicides used, Agent Pink and Agent Purple) was 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), a developmental toxicant and a probable human carcinogen according to the U.S. Environmental Protection Agency.

Environmental surveys conducted in Vietnam have identified a number of dioxin "hot spots," including the airbases at Bien Hoa, Danang,[4] and Phu Cat, that are contaminated with TCDD well above internationally acceptable levels (see **Figure 1**).[5] In addition, the A Luoi (or A Shau) Valley, south of Quang Tri and west of Danang, was considered an important segment of the Ho Chi Minh Trail, a key supply route used by North Vietnamese forces and their allies, and was therefore heavily sprayed. The former U.S. military base in the A Luoi Valley has been identified as another "hot spot."

In recent years, U.S. response to the environmental damage and health problems caused by Agent Orange and its associated dioxin in Vietnam has been viewed as helping to advance bilateral relations between the two nations. After a meeting with President Tran Dai Quang in May 2016, President Obama stated the following:

> With regard to security, the United States will continue to do our part to address the painful legacy of war.... We'll continue to help remove unexploded landmines and bombs. And now that our joint effort to remove dioxin—Agent Orange—from Danang Airport is nearly complete, the United States will help in the cleanup at Bien Hoa Air Base.[6]

[1] Between 1950 and 1975, the United States was actively involved in a civil war in Vietnam between the Democratic Republic of Vietnam (North Vietnam) and the Republic of Vietnam (South Vietnam), providing initially military assistance and later active combat troops to support the Republic of Vietnam in the conflict. By the time the civil war ended with the victory of North Vietnam on April 30, 1975, over 50,000 U.S. soldiers had died, and an estimated 1 million Vietnamese soldiers and civilians had been killed.

[2] An approximately 50-50 mix of two chemicals—2,4,-D (2,4, dichlorophenoxyacetic acid) and 2,4,5-T (2,4,5 trichlorophenoxyacetic acid)—Agent Orange derived its name from the orange band painted on the side of the 55-gallon drums in which the herbicide was delivered.

[3] For more about the history of Operation Ranch Hand and the use of Agent Orange in Vietnam, see CRS Report RL34761, *Vietnamese Victims of Agent Orange and U.S.-Vietnam Relations*, by Michael F. Martin.

[4] Also sometimes written as "Da Nang."

[5] These studies include Jeanne Mager Stellman, Steven D. Stellman, Richard Christian, Tracey Weber, and Carrie Tomasallo, "The Extent and Patterns of Usage of Agent Orange and Other Herbicides in Vietnam," *Nature*, Vol. 422, April 2003; Michael G. Palmer, "The Legacy of Agent Orange: Empirical Evidence from Central Vietnam," *Social Science and Medicine*, vol. 60 (2005), pp. 1061-1070; and T.G. Boivin, K.S. Le, L.W. Dwernychuk, M.H. Tran, G.S. Bruce, N.H. Minh, N.T. Tran, K.S. Trinh, T.D. Phung, D. Moats, J.A. Allen, L. Borton, and M. Davies, "Agent Orange Dioxin Contamination in the Environment and Human Population in the Vicinity of Da Nang Airbase, Viet Nam," Hatfield Consultants, Ltd.

[6] White House, "Remarks by President Obama and President Quang of Vietnam at Joint Press Conference," press release, May 23, 2016.

Figure 1. Map of Vietnam Showing Agent Orange "Hot Spots"

Source: CRS.

The joint statement issued after that meeting included the following statements:

> Vietnam welcomed cooperation leading to the successful conclusion of the first phase of dioxin remediation at Danang International Airport, with the final phase underway. The United States committed to partnering with Vietnam to make a significant contribution to the clean-up of dioxin contamination at Bien Hoa Air Base.[7]

The Trump Administration has continued the past commitment to provide assistance to Vietnam to address the Agent Orange/dioxin issue. Following their meeting in May 2017 in Washington, DC, President Trump and Prime Minister Nguyen Xuan Phuc released a joint statement, which stated:

> The two sides committed to work together to address war legacy issues, including through such joint efforts as dioxin remediation, taking note of the progress that has been made at Da Nang Airport and intent to discuss continued collaboration at Bien Hoa Airport, and the removal of unexploded ordnances.[8]

On November 10, 2017, Under Secretary of State Thomas Shannon and Senior Lieutenant General Nguyen Phuong Nam held a ceremony to celebrate the completion of the environmental remediation of Danang Airport.[9] On January 23, 2018, the two governments signed a Memorandum of Intent (MOI) to begin the process of dioxin decontamination of Bien Hoa.[10]

From 2007 to the present, Congress has appropriated a total of $254.8 million for the environmental remediation of Agent Orange/dioxin and health and disability programs in areas of Vietnam sprayed with Agent Orange or otherwise contaminated by dioxin. Starting with the 112th Congress, the legislation has appropriated separate amounts for these two purposes, generally with more funds appropriated for environmental remediation than for health and disability programs.[11] All of the amounts appropriated by Congress are subject to the provisions of Section 653(a) (22 U.S.C. §2413(a)) of the Foreign Assistance Act of 1961, as amended (P.L. 87-195; 22 U.S.C. §2151 et seq.). As a consequence, the actual amount available for such assistance may be less than the amount specified in the various laws and their accompanying reports.[12]

In addition, the 115th Congress, under Section 1052 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (P.L. 115-232), authorized the Secretary of Defense to transfer "not more than $15,000,000" in FY2019 to the Secretary of State, for use by USAID, "to be used for the Bien Hoa dioxin cleanup in Vietnam." Any funds transferred are to be taken from the Department of Defense's "Operation and Maintenance, Defense-wide" account.

---

[7] White House, "Joint Statement: Between the United States of America and the Socialist Republic of Vietnam," press release, May 23, 2016.

[8] The White House, "Joint Statement for Enhancing the Comprehensive Partnership between the United States of America and the Socialist Republic of Vietnam," press release, May 31, 2017.

[9] "US, Vietnam Complete Agent Orange Decontamination Campaign at Da Nang Airport," *VN Express*, November 10, 2017.

[10] USAID, "United States and Vietnam Sign Memorandum of Intent to Begin Dioxin Remediation at Bien Hoa," press release, January 23, 2018.

[11] The **Appendix** contains the relevant text from the public laws and related reports and explanatory statements that appropriated funds for Agent Orange/dioxin environmental remediation and health and disability programs in Vietnam. Laws that were superseded by subsequent legislation are not included in the appendix.

[12] Section 653(a) requires the President, within 30 days of enactment of any law appropriating funds to carry out foreign assistance, to "notify the Congress of each foreign country and international organization to which the United States Government intends to provide any portion of the funds under such law and of the amount of funds under that law, by category of assistance." For more about the provisions of Section 653(a) and its implementation, see CRS General Distribution Memorandum CD099, "Reporting Under Section 653(a) of the Foreign Assistance Act of 1961," by Matthew Weed, February 24, 2009.

The appropriated funds for environmental remediation generally have been allocated under the State Department's Economic Support Fund account (ESF), while the funds for health and disability programs have been allocated under the Development Assistance account (DA). In general, the funds appropriated under both accounts have been made available for two fiscal years. The State Department has delegated responsibility for the administration and obligation of the appropriated funds to the U.S. Agency for International Development (USAID).

To date, most of the environmental remediation effort has been focused on the cleanup of the Danang airport, while the funds appropriated for health and disability programs have been used primarily for disability support programs in Danang and other parts of Vietnam. The cleanup of Danang airport has been completed, and U.S. and Vietnamese officials have made arrangements for joint dioxin removal operations at the airbase in Bien Hoa. In addition, the two governments are discussing the appropriate manner to address health and disability problems among Vietnamese nationals that may be attributable to dioxin exposure.

The programs and projects funded by the appropriated funds have been administered by the State Department and USAID, in cooperation with various ministries and agencies within the Vietnamese government. In 1999, Vietnam's central government created the Office of the National Steering Committee on Overcoming Consequences of Agent Orange/Dioxin in Vietnam (Office 33, or Committee 33), an interministerial body, to oversee and coordinate its government's policy on Agent Orange and dioxin. Office 33 includes representatives from Vietnam's Ministry of Natural Resources and Environment (MONRE, where Office 33 is administratively located); Ministry of Finance (MOF); Ministry of Foreign Affairs (MOFA); Ministry of Health (MOH); Ministry of Labour, Invalids, and Social Affairs (MOLISA); Ministry of National Defence (MND); Ministry of Planning and Investment (MOPI); and Vietnam Academy of Science and Technology (VAST).

Congressional interest has generally focused on two issues. The first issue is determining the amount to allocate for the environmental remediation of dioxin "hot spots" in Vietnam and health and disability programs in areas of Vietnam sprayed with Agent Orange or otherwise contaminated by dioxin. The second issue is oversight to ascertain if the State Department and USAID are effectively and appropriately obligating and expending the available funds. In particular, Congress has paid attention to the rate at which USAID has obligated the funds Congress appropriated for use on health and disability activities.

Congressional Appropriations Since 2007

The appropriation of funds explicitly to address the Agent Orange/dioxin issue in Vietnam started in May 2007, when the 110th Congress passed the U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (P.L. 110-28). That act appropriated $3 million "for the remediation of dioxin contaminated sites in Vietnam, and to support health programs in communities near those sites."[13] After more than a year of internal consultation, the State Department decided that the administration and obligation of the $3 million would be handled by USAID, setting a precedent for the handling of future appropriations for Agent Orange/dioxin assistance to Vietnam.

[13] U.S. Congress, Senate Committee on Appropriations, *Making Emergency Supplemental Appropriations for the Fiscal Year Ending September 30, 2007, and for Other Purposes*, 110th Cong., 1st sess., March 22, 2007, S.Rept. 110-37 (Washington: GPO, 2007).

Table 1. Congressional Appropriations for Agent Orange/Dioxin Remediation and Health-Related Activities in Vietnam

(in millions of dollars)

Congress	Public Law	Date Enacted	Fiscal Year	Total Amount	Environmental Remediation	Health-Related Activities
110th	P.L. 110-28	May 2007	2007	3.0	n.a.	n.a.
111th	P.L. 111-8	March 2009	2009	3.0	n.a.	n.a.
	P.L. 111-117	December 2009	2010	3.0	n.a.	n.a.
	P.L. 111-212	July 2010	2010	12.0	n.a.	n.a.
112th	P.L. 112-10	April 2011	2011	18.5	15.5	3.0
	P.L. 112-74	December 2011	2012	20.0	15.0	5.0
	P.L. 112-175[a]	September 2012	2013			
113th	P.L. 113-6	March 2013	2013	19.3	14.5	4.8[b]
	P.L. 113-46[c]	October 2013	2014			
	P.L. 113-73[d]	January 2014	2014			
	P.L. 113-76	January 2014	2014	29.0	22.0	7.0
	P.L. 113-235	December 2014	2015	22.5	15.0	7.5
114th	P.L. 114-53	September 2015	2016			
	P.L. 114-96[e]	December 2015	2016			
	P.L. 114-100[f]	December 2015	2016			
	P.L. 114-113	December 2015	2016	32.0	25.0	7.0
	P.L. 114-223[g]	September 2016	2017			
	P.L. 114-254[h]	December 2016	2017			
115th	P.L. 115-30[i]	April 2017	2017			
	P.L. 115-31	May 2017	2017	30.0	20.0	10.0
	P.L. 115-141	March 2018	2018	30.0	20.0	10.0
116th	P.L. 116-6	February 2019	2019	32.5	20.0	12.5
TOTAL				**254.8**	**167.0**	**66.8**

Source: CRS research, with the assistance of U.S. Agency for International Development (USAID).

Notes: Table does not include $3.9 million allocated for these purposes by the State Department out of funds appropriated for more general uses, such as the Economic Support Fund (ESF). Appropriations made in the 110th and 111th Congress did not allocate amounts between environmental remediation and health-related activities.

a. Superseded by P.L. 113-6.

b. Amount based on sequestration rate of 3.3%; USAID reported a preliminary figure of $3.0 million.
c. Allowed for the continuation of funding at levels approved by P.L. 113-6 through January 15, 2014.
d. Allowed for the continuation of funding at levels approved by P.L. 113-6 through January 18, 2014.
e. Allowed for the continuation of funding levels approved by P.L. 113-235 through December 11, 2015.
f. Allowed for the continuation of funding levels approved by P.L. 113-235 through December 22, 2015.
g. Allowed for the continuation of funding levels approved by P.L. 114-113 through December 9, 2016.
h. Allowed for the continuation of funding levels approved by P.L. 114-113 through April 28, 2017.
i. Allowed for the continuation of funding levels approved by P.L. 114-113 through May 5, 2017.

The 111th Congress in three separate pieces of legislation appropriated a total of $18 million for dioxin cleanup in Vietnam and related health services (see **Table 1**). In March 2009, the 111th Congress appropriated $3 million for Agent Orange/dioxin remediation and health care assistance in the vicinity of the Danang "hot spot" in the Omnibus Appropriations Act, 2009 (P.L. 111-8). In December 2009, Congress passed the Consolidated Appropriations Act, 2010 (P.L. 111-117), which included $3 million for dioxin cleanup and related health services in Vietnam. In July 2010, Congress included $12 million "to support the remediation of dioxin contamination at the Danang Airport, which poses extreme risks to human health and welfare, and related health activities" in the Supplemental Appropriations Act, 2010 (P.L. 111-212). In addition, the State Department and USAID allocated $1.9 million in Development Assistance funds for FY2010 for environmental remediation at Danang airport.

The conference report accompanying P.L. 112-74 also endorsed language in a Senate report associated with an earlier reported to Senate version of the Department of State, Foreign Operations, and Related Programs Appropriations Act, 2012 (S. 1601) directing USAID, in consultation with the Senate Appropriations Committee, the Department of State, the Government of Vietnam, and "other interested parties," to develop a "comprehensive, multiyear plan" for Agent Orange-related activities in Vietnam within 180 days after the enactment of the law.[14]

The 113th Congress continued to appropriate funds for the environmental remediation of Agent Orange/dioxin in Vietnam and related health services. The Consolidated and Further Continuing Appropriations Act, 2013 (P.L. 113-6), which superseded P.L. 112-175, renewed the appropriation levels contained in P.L. 112-74 for FY2013, subject to sequestration requirements. Similarly, P.L. 113-46 and P.L. 113-73 renewed appropriations for FY2014 until being superseded by the Consolidated Appropriations Act, 2014 (P.L. 113-76), which appropriated $22.0 million for environmental remediation and $7.0 million for "health and disability programs in areas sprayed with Agent Orange or otherwise contaminated by dioxin."[15] Section 7043(h) of the Consolidated and Further Continuing Appropriations Act, 2015 (P.L. 113-235) states the following:

> Funds appropriated by this Act under the heading "Economic Support Fund" shall be made available for remediation of dioxin contaminated sites in Vietnam and may be made available for assistance for the Government of Vietnam, including the military, for such purposes, and funds appropriated under the heading "Development Assistance" shall be made available for health/disability activities in areas sprayed with Agent Orange or otherwise contaminated with dioxin.

[14] U.S. Congress, Senate Committee on Appropriations, *Department of State, Foreign Operations, and Related Programs Appropriations Act, 2012*, Report to Accompany S. 1601, 112th Cong., 1st sess., September 22, 2011, S.Rept. 112-85 (Washington: GPO, 2011).

[15] Joint Explanatory Statement: Division K – Department of State, Foreign Operations, and Related Programs Appropriations Act, 2014, p. 27, http://docs.house.gov/billsthisweek/20140113/113-HR3547-JSOM-J-L.pdf.

The act's accompanying "Explanatory Statement" specifies that $7.5 million is to be provided under "Development Assistance" for "Vietnam health/disability programs" and $15.0 million is to be provided under "Economic Support Fund" for "Vietnam (Environmental remediation of dioxin)."[16]

In Section 7043(g) of P.L. 114-113, the 114th Congress appropriated funds under the Economic Support Fund for "remediation of dioxin contaminated sites in Vietnam" and under Development Assistance for "health and disability programs in areas sprayed with Agent Orange and otherwise contaminated with dioxin, to assist individuals with severe upper or lower body mobility impairment and/or cognitive or developmental disabilities." S.Rept. 114-79, which accompanied P.L. 114-113, provided "not less than $25 million" for environmental remediation and $7 million for "health/disability programs in areas sprayed with Agent Orange or otherwise contaminated by dioxin, to address the mobility, psycho-social, vocational, and other needs of persons with severe upper and lower body mobility impairment and/or cognitive or developmental disabilities." The report continued with the statement, "In order to minimize administrative costs and maximize impact in the field, the Committee intends that, to the maximum extent practicable, health/disability funds shall be implemented by Vietnamese organizations and entities."[17]

Funding for FY2017 was included in the Consolidated Appropriations Act, 2017 (P.L. 115-31). Section 7043(h) states:

> (1) DIOXIN REMEDIATION—Notwithstanding any other provision of law, of the funds appropriated by this Act under the heading `Economic Support Fund', not less than $20,000,000 shall be made available for activities related to the remediation of dioxin contaminated sites in Vietnam and may be made available for assistance for the Government of Vietnam, including the military, for such purposes.
>
> (2) HEALTH AND DISABILITY PROGRAMS—Of the funds appropriated by this Act under the heading 'Development Assistance', not less than $10,000,000 shall be made available for health and disability programs in areas sprayed with Agent Orange and otherwise contaminated with dioxin, to assist individuals with severe upper or lower body mobility impairment and/or cognitive or developmental disabilities.

The act permits, for the first time since the United States has funded dioxin environmental remediation in Vietnam, the provision of assistance to the Government of Vietnam. It also reiterates that health and disability programs are to be in areas sprayed with Agent Orange or otherwise contaminated with dioxin.

In March 2018, the 115th Congress appropriated in the Consolidated Appropriations Act, 2018 (P.L. 115-141) "not less than $20 million" for "activities related to the remediation of dioxin contaminated sites in Vietnam." The act also provided that the funds "may be made available for assistance for the Government of Vietnam, including the military, for such purposes." In addition, the act appropriated "not less than $10 million" for "health and disability programs in areas sprayed with Agent Orange and otherwise contaminated with dioxin, to assist individuals with severe upper or lower body mobility impairment or cognitive or developmental disabilities."

In February 2019, 116th Congress appropriated in the Consolidated Appropriations Act, 2019 (P.L. 116-6) "not less than $20,000,000" for "activities related to the remediation of dioxin contaminated sites in Vietnam and may be made available for assistance for the Government of

[16] U.S. Congress, House Committee on Appropriations, Explanatory Statement Submitted by Mr. Rogers of Kentucky, Chairman of the House Committee on Appropriations Regarding the House Amendment to the Senate Amendment on H.R. 83, 113th Cong., 2nd sess., December 11, 2014.

[17] U.S. Congress, Senate Committee on Appropriations, *Department of State, Foreign Operations, and Related Programs Appropriations Bill, 2016*, 114th Cong., 1st sess., July 9, 2015, S.Rept. 114-79.

Vietnam, including the military, for such purposes." The Act also appropriated "not less than $12,500,000 … for health and disability programs in areas sprayed with Agent Orange and otherwise contaminated with dioxin, to assist individuals with severe upper or lower body mobility impairment or cognitive or developmental disabilities."

USAID Obligations

The State Department has designated USAID as the responsible agency for the obligation of the appropriated funds for Agent Orange/dioxin-related activities in Vietnam. **Table 2** lists the amounts USAID has obligated of funds appropriated over FY2007 to FY2017 by type of activity, implementing partner, and fiscal year. As of May 2018, USAID has obligated 81% of the $127 million appropriated for FY2011-FY2017 for environmental remediation projects, and 63.5% of the $44.3 million appropriated for FY2011-FY2017 for health- and disability-related services. Of the $21 million appropriated for FY2007-FY2011 for either environmental remediation or health- and disability-related services, USAID has obligated $20.3 million, or 96.9%.

The manner in which USAID has obligated the appropriated funds has, at times, been an issue with Congress. While the rate of obligations for environmental remediation activities generally has not been a matter of concern, how USAID has obligated appropriations for health and disability activities has drawn some congressional attention. The two main concerns about the health and disability obligations are the seemingly slower pace of utilization (when compared to the environmental remediation funds), and the types of programs being funded.

Since Congress began appropriating funds specifically for Agent Orange/dioxin-related activities in Vietnam in FY2007, it generally has designated that the health and disability services are to be provided in locations near Agent Orange/dioxin-contaminated areas. The $3 million appropriated in FY2007 in P.L. 110-28 was "to support health programs in communities near those sites," according to the accompanying Senate report.[18] The joint committee print accompanying P.L. 111-8 stipulated that "$3,000,000 is provided to continue environmental remediation of dioxin contamination at the Danang Airport and related health activities in nearby communities in Vietnam."[19] H.Rept. 112-331, which accompanied P.L. 112-74, stated, "The conferees recommend not less than $5,000,000 under this heading be made available for health/disability activities in areas in Vietnam that were targeted with Agent Orange or remain contaminated with dioxin."[20] It is unclear if the State Department and USAID have in all cases obligated these funds in accordance with this locational guidance.

Based on the information provided by USAID, funds for health- and disability-related services in FY2007-FY2009 were obligated to programs in Danang. However, for FY2010 to FY2013, the appropriated health and disability funds were largely obligated to Development Alternatives, Inc. (DAI) for a disability support program that was designed to "broadly address the needs and improve the lives of persons with disabilities," without explicit reference to Agent Orange/dioxin "hot spots."[21] According to USAID, this three-year program ended in January 2016.

---

[18] U.S. Congress, Senate Committee on Appropriations, *Making Emergency Supplemental Appropriations for the Fiscal Year Ending September 30, 2007, and for Other Purposes*, 110th Cong., 1st sess., S.Rept. 110-37.

[19] U.S. Congress, House Committee on Appropriations, *Division H—Department of State, Foreign Operations, and Related Programs Appropriations Act, 2009*, committee print, 111th Cong., 1st sess., January 1, 2010.

[20] U.S. Congress, House Committee on Appropriations, *Military Construction and Veterans Affairs and Related Agencies Appropriations Act, 2012 Conference Report*, 112th Cong., December 15, 2011.

[21] USAID, "Persons with Disabilities Support Program," press release, December 2013, http://www.usaid.gov/vietnam/persons-with-disabilities-support-program.

Table 2. Obligation of Appropriated Funds for Agent Orange/Dioxin-Related Activities in Vietnam

(by fiscal year and type of activity; in dollars)

Program Component	Implementing Partner	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	TOTAL
HEALTH AND DISABILITY													
Empowering People with Disabilities in Danang	Save the Children	400,000		799,980									1,199,980
Support of People with Disabilities in Danang	East Meets West Foundation	200,000		300,000									500,000
Rehabilitation Services and Support to People with Disabilities in Danang	Vietnam Assistance for the Handicapped	382,344		906,064									1,288,408
Inclusion of Disability Program	Vietnam Assistance for the Handicapped							750,000					750,000
Disability Rights Enforcement, Coordination & Therapy Program	Vietnam Assistance for the Handicapped								1,547,495	1,400,860	1,249,300		4,197,655
Advancing Medical Care Rehabilitation Education	Handicapped International								1,014,870	1,661,942	1,300,000		3,976,812
Protecting the Rights of People with Disabilities	Action to the Community Development Center								750,000	210,705	225,240		1,185,945

Program Component	Implementing Partner	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	TOTAL
Disability Integration of Services & Therapies Network	Sustainable Health Development (VietHealth)								345,630		1,542,485		1,888,115
Accessibility for Inclusion Program	Disability Research and Capacity Development								310,210		999,907		1,310,117
Moving Without Limit	International Center-Vietnam Veterans of American Foundation								512,795	551,493	597,305	770,000	2,431,593
Integrated Disability Support Program	Development Alternatives Inc.					5,192,582	2,477,342	1,326,954					8,996,878
Disability and Health Assessment	Chemonics Inc.				103,000								103,000
Disability and Health Support Inter-agency Agreement	Centers for Disease Control					53,169							53,169
Partner Capacity Development	Institute for International Education							683,046		300,000	300,000	350,000	1,633,046
Administrative Support & M&E	USAID	17,656	96,102	118,009	100,000	70,907	200,000	240,000	269,000	375,000	285,763	273,000	2,045,437
Subtotal—Health and Disability Obligations		1,000,000	96,102	2,124,053	203,000	5,316,658	2,677,342	3,000,000	4,750,000	4,500,000	6,500,000	1,393,000	31,560,155
Subtotal – Health and Disability Appropriations		*	*	*	*	3,000,000	5,000,000	4,800,000	7,000,000	7,500,000	7,000,000	10,000,000	44,300,000

Program Component	Implementing Partner	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	TOTAL
ENVIRONMENTAL ASSESSMENT AND REMEDIATION													
Assessments, Engineering Designs and Plans at Danang Airport	CDM International, Inc.		1,450,000	681,076	2,411,200								4,542,276
Excavation and Construction Services at Danang Airport	Tetra Tech, Inc.				5,429,408	11,566,804			4,971,021	5,205,803	3,728,385		30,901,421
In-Pile Thermal Desorption Design at Danang Airport	TerraTherm, Inc.					1,336,486							1,336,486
In-Pile Thermal Desorption at Danang Airport	Tetra Therm, Inc.						16,492,658	11,209,712	5,000,000	5,780,865	2,000,000	6,921,437	47,404,672
Construction Management Oversight at Danang Airport	CDM International Inc.				6,000,000	2,336,444		1,645,000	1,017,205	2,282,951	3,057,105	3,000,000	19,338,705
Bien Hoa Environment Assessment	CDM International, Inc.						5,200	500,000	2,795,774	410,381			3,711,355
Partner Capacity Development	Institute for International Education (IEE)							80,000	100,000		250,000		430,000
Administrative Support and M&E	USAID		453,898	194,871	300,000	463,000	824,800	1,027,000	1,116,000	1,320,000	964,510	702,441	5,699,569
Subtotal—Environmental Remediation Obligations			1,903,898	875,947	14,140,608	15,702,734	17,322,658	14,461,712	15,000,000	15,000,000	10,000,000	15,623,878	120,031,435
Subtotal-Environmental Remediation Appropriated		*	*	*	*	15,500,000	15,000,000	14,500,000	22,000,000	15,000,000	25,000,000	20,000,000	127,000,000

Source: USAID, as of May 24, 2018.

Note: *Appropriated funds were not separately allocated to health and disability and environmental remediation; see **Table 1**.

Following consultations with the Ministry of Labour, Invalids, and Social Affairs (MOLISA), Congress, and other interested parties, as of FY2014, USAID reportedly returned to directly obligating funds for health- and disability-related services in smaller amounts and increased its outreach to Vietnamese nongovernmental organizations. This shift to smaller direct program funding is reflected in **Table 1**. For more about USAID's disability programs in Vietnam, see "Disability Programs" below.

Danang Airport Environmental Remediation Project

One of the main activities financed by congressional appropriations related to Agent Orange/dioxin in Vietnam is the environmental remediation project at Danang Airport. Since its beginnings in 2008, when the U.S. and Vietnamese governments started plans for the environmental remediation of Danang airport, the project has experienced delays in implementation, unexpected increases in the amount of material requiring decontamination, and rising costs. While USAID's initial intent was to complete the project by October 2013, a November 2014 U.S. government audit indicated that the estimated completion date for the project was March 31, 2017.[22] The decontamination was completed in August 2017. During the life of the project, the amount of material to be decontaminated rose from an estimated 61,700 cubic meters (m^3) to approximately 90,000 m^3, plus an additional 60,000 m^3 of "lower risk material."[23] The estimated cost of the project increased from $33.7 million to over $110 million.

The joint military/civilian airport in Danang was a major operational hub for the U.S. military's Operation Ranch Hand. One study of Danang airbase found soil concentrations of "TCDD toxic equivalents" (TEQ) of up to 365 parts per billion (ppb)—365 times the international maximum level of 1.0 ppb.[24] Seventeen out of the 23 soil samples taken at Danang airbase exceeded the international maximum standard.[25]

In-Pile Thermal Desorption

In-pile thermal desorption is a relatively new technology for dioxin decontamination of soil that has been used in Japan and the United States. The contaminated soil and sediment is enclosed in an above-ground pile in which heating rods and evacuation tubes have been placed. The soil is then raised to a temperature of at least 335°C (635°F), which breaks the molecular bonds holding the dioxin together, causing the dioxin to decompose into other, harmless substances, primarily CO_2, H_2O, and Cl_2. The evacuation tubes capture any vaporized dioxin, and send it to a secondary treatment facility that decomposes the dioxin.

Work on the project began in December 2009, when the State Department and Vietnam's Ministry of Natural Resources and the Environment (MONRE) signed a memorandum of understanding (MOU) setting the framework for implementing environmental health and remediation programs in Danang.[26] The MOU designated USAID and Office 33 as the implementing agencies. According to a State Department

[22] Office of Inspector General, USAID, *Audit of USAID/Vietnam's Environmental Assessments and Remediation Project*, No, 5-440-15-001-P, Manila, Philippines, November 12, 2014.

[23] "US, Vietnam Complete Agent Orange Decontamination Campaign at Da Nang Airport," *VN Express*, November 10, 2017.

[24] T.G. Boivin, K.S. Le, L.W. Dwernychuk, M.H. Tran, G.S. Bruce, N.H. Minh, N.T. Tran, K.S. Trinh, T.D. Phung, D. Moats, J.A. Allen, L. Borton, and M. Davies, "Agent Orange Dioxin Contamination in the Environment and Human Population in the Vicinity of Danang Airbase, Viet Nam," Hatfield Consultants, Ltd.

[25] Ibid.

[26] U.S. Embassy in Hanoi, "US and Vietnam Sign Agreement on Dioxin Environmental Health and Remediation Programs," press release, December 16, 2009, http://vietnam.usembassy.gov/pr121609.html.

press release, the MOU covered $6.0 million in funds appropriated in FY2007 and FY2009.[27] Among the activities included in the MOU was a grant to CDM International, Inc., in association with Hatfield Associates, to design an environmentally sound engineering approach to dioxin containment at Danang airport.

In June 2010, USAID completed an Environmental Assessment (EA) of Danang airport that recommended the use of thermal desorption to decontaminate an estimated 61,700 m^3 of contaminated material in six separate "hotspots" at the airport.[28] The EA estimated that the decontamination would take two years to complete at a cost of $33.7 million, but noted that implementation would present "challenges" that could increase the cost by 50%.

USAID and Vietnam's Ministry of National Defence (MND) signed a Memorandum of Intent in Hanoi on December 30, 2010, with the goal of starting the remediation project in the summer of 2011 and completing the project by October 2013.[29] The Prime Minister approved the remediation of Danang airport by in-pile thermal desorption (IPTD) in February 2011, and MND approved the project in April 2011.

USAID posted a Request for Proposals (RFP #486-11-028) in May 2011 for bids on the project. In July 2012, USAID awarded two contracts for the environmental remediation of Danang airport by IPTD. CDM Smith, a U.S. firm headquartered in Massachusetts, was granted $8.37 million for project oversight and construction management. Tetra Tech, Inc., headquartered in California, was awarded $17 million for the excavation and construction components of the project.[30] A ceremony to launch the Danang airport environmental remediation project was held at Danang airport on August 9, 2012; onsite work began on August 20, 2012.

Table 3. Contracts Awarded for Danang Environmental Remediation and Bien Hoa Assessment

Contractor	Purpose of Award	Amount of Award	Date of Award
CDM International Inc.	Assessment, engineering, and planning design at Danang	$4.54 million	Sept. 29, 2009
Terra Therm Inc.	Design of IPTD at Danang	$1.34 million	Jan. 20, 2012
CDM International Inc.	Construction management and oversight of Danang project	$13.28 million	June 18, 2012
Tetra Tech Inc.	Environmental remediation (excavation and construction) at Danang	$16.99 million	June 28, 2012
Terra Therm Inc.	IPTD services at Danang	$36.78 million	Feb. 7, 2013
CDM International Inc.	Environmental and gender assessment at Bien Hoa	$2.10 million	Sept. 29, 2013

Source: Office of the Inspector General, USAID, *Audit of USAID/Vietnam's Environmental Assessments and Remediation Project*, Audit Report No. 5-440-15-001-P, Manila, Philippines, November 12, 2014.

[27] Ibid.

[28] The EA is available online at http://www.agentorangerecord.com/images/uploads/EA%20DNG.pdf.

[29] "Memorandum of Intent between the United States Agency for International Development and the Department of Science, Technology, and Environment, Ministry of National Defense of Vietnam on Environmental Remediation of Dioxin Contamination at Danang Airport Site, Vietnam," December 30, 2010.

[30] U.S. Consulate in Ho Chi Minh City, "U.S. Awards Contracts to Implement Agent Orange/Dioxin Remediation Project in Danang," press release, July 3, 2012, http://hochiminh.usconsulate.gov/pr07032012.html.

An internal USAID audit of the remediation project conducted in November 2014 indicated that six contracts have been awarded for the environmental assessment and remediation project at Danang airport, plus an assessment of Bien Hoa airbase (see **Table 3**). Three of the awarded contracts correspond to the amounts provided by USAID in **Table 2**, but three do not, probably reflecting work beyond FY2013.

The thermal desorption of the contaminated soil was done in two phases, due to the amount of material involved. The gradual heating of Phase 1, which involved the treatment of approximately 45,000 m^3 of soil contained in an area 70 meters wide and 100 meters long (about the size of a football field) and 8 meters (26 feet) high, began in April 2014. The cooling down of Phase 1 started in April 2015, after soil sampling revealed that more than 95% of the dioxin had been removed. Excavation for Phase 2, which involved the draining of three small lakes and the removal of the exposed lake beds, began in January 2015. The treatment of 45,000 m^3 of Phase 2 soil began in November 2016, and was completed in August 2017.

Progress on the decontamination of Danang airport was delayed by several factors. Weather during Vietnam's rainy season (September to December) hampered progress on the excavation of soil and the construction of the thermal treatment area. Soil testing following the drainage of the small lakes determined more soil and sediment would require decontamination than previously estimated. The secondary treatment facility was shut down in July 2014 to change the filtering system. It also took more time than anticipated to raise the ambient temperature of the Phase 1 soil to the target 335°C.[31]

USAID's Office of Inspector General conducted an internal audit of the environmental remediation project in November 2014, and noted several potential risks that could delay the project and, by extension, raise its overall cost, including the problems associated with inclement weather and cooling the treated soil.[32] The audit particularly noted the lack of a formal risk management plan to address some of the project risks identified by USAID and the project's contractors, and recommended that a formal risk management plan be implemented. The audit also cited CDM for providing inaccurate performance data and not fulfilling its obligations to provide training to Vietnamese officials, and recommended that more training be provided and better data documentation procedures be adopted. USAID agreed with all of the audit's recommendations.

On November 7, 2018, the two governments held a ceremony to mark the completion of the Danang Airport environmental remediation project.[33] The completed project took more than twice as long and cost more than three times as much as initially projected by USAID. According to Pham Quang Vu, head of Vietnam's Air Force and Air Defense Military Science Division, the higher cost and greater time was due to underestimating the contamination at the airport, indicating that 162,500 cubic meters of soil—not 72,900 cubic meters—were contaminated.[34]

[31] Water infiltration during the rainy season is reportedly a contributing factor.

[32] Office of the Inspector General, *Audit of USAID/Vietnam's Environmental Assessments and Remediation Project*, U.S. Agency for International Development, Audit Report No. 5-440-15-001-P, Manila, Philippines, November 12, 2014.

[33] U.S. Agency for International Development, "United States and Vietnam Complete Environmental Remediation at Danang Airport," press release, November 7, 2018.

[34] Nguyen Dong, "Dioxin Contamination if Da Nang More Serious than Expected: Conference," *VN Express*, November 7, 2018.

Anthony Kolb, chief of USAID's environmental remediation unit, stated that the dioxin had percolated three meters deeper than expected.[35]

Disability Programs

USAID has, in general, utilized the funds Congress appropriated for health/disability activities in areas sprayed with Agent Orange or otherwise contaminated with dioxin as part of its overall program to provide support for persons with disabilities in Vietnam, regardless of the cause of the disability or proximity to Agent Orange "hot spots." According to USAID, starting in 1989 with a program financed by the Leahy War Victims Fund,[36] the U.S. government has provided over $60 million in assistance to disabled Vietnamese, regardless of the cause of the disability. This assistance includes funds specifically appropriated for health services in areas located near Agent Orange/dioxin-contaminated sites and other sources of developmental or health assistance.

Between FY2007 and FY2010, the State Department and USAID utilized the funds appropriated for health services for grants to various agencies to offer programs to improve the quality of life for persons with disabilities in Danang.[37] A December 2010 USAID assessment of these grants noted the "many accomplishments" of these programs, but also noted that the three-year time period was "very short for meeting program objectives."[38]

In 2012, USAID approved a three-year, nationwide Persons with Disability Support Program (PDSP) to be jointly implemented with Development Alternatives, Inc. (DAI) and Vietnam Assistance for the Handicapped (VNAH). The request for applications (RFA) for the project indicated that the program was intended to "build on the accomplishments of the previous USAID assistance to people with disabilities (PWD) living in communities in Danang, as well as include additional relevant public health activities."[39] The project's geographic focus was to be primarily in Danang, and "to some extent other areas, proposed by the Recipient, where there is a high disability burden, the need is the greatest, and in regions where dioxin hot spots are located." The RFA specifically calls for a needs assessment to be conducted in Bien Hoa and Phu Cat. Funding for PDSP was initially set at $9 million.

As part of PDSP's cooperative agreement, DAI was to award grants to local partners and organizations providing assistance to persons with disabilities, including health services, rehabilitation therapy, vocational training, and community awareness. In addition, USAID provided assistance to VNAH to work on disability policy and legal framework needs of the Government of Vietnam.

---

[35] Ibid.

[36] For more about the Leahy War Victims Fund, see http://www.usaid.gov/documents/1866/programs-vulnerable-populations-leahy-war-victims-fund.

[37] For example, the East Meets West Foundation was awarded grants for medical and social screening for people with disabilities, corrective surgery, physical therapy and rehabilitation services, scholarships for children with disabilities, and community-based rehabilitation. USAID provided funding to Save the Children in 2009 to expand employment and income-generating activities for people with disabilities and their families living in Danang. USAID also granted funds to the Vietnam Assistance for the Handicapped to help people with disabilities and their families living in Danang improve their social and economic status and integration, and help local authorities, health service providers, disabled organizations, and others develop and enforce programs that increase resources for disability. For more information, see CRS Report RL34761, *Vietnamese Victims of Agent Orange and U.S.-Vietnam Relations*, by Michael F. Martin.

[38] USAID, *USAID/Vietnam: Disabilities and Health Assessment*, Report No. 10-01-419-12, December 2010.

[39] U.S. Agency for International Development, *Program for Comprehensive and Integrated Support for People with Disabilities*, USAID-Vietnam-RFA-486-12-007, December 30, 2011.

The PDSP program was headquartered in Danang, and initially operated in the provinces of Binh Dinh, Danang, and Dong Nai—where the three dioxin "hot spots" of Phu Cat, Danang, and Bien Hoa (respectively) are located. According to a June 2015 USAID update, the PDSP program has been extended to the provinces of Quang Nam, Tay Ninh, and Thua Thien-Hue.[40] According to the Aspen Institute, all three provinces were heavily sprayed with Agent Orange during the Vietnam War, but have not been identified as "hot spots."[41] A USAID summary of the program after two years reported that "nearly US$900,000 in grants to 14 local partners and organizations" had been awarded.[42]

In June 2014, USAID adopted a new approach to the provision of assistance to persons with disabilities in Vietnam.[43] According to the USAID statement, one of the key objectives of USAID assistance to Vietnam is to foster expanded opportunities to vulnerable populations, such as persons with disabilities. To that end, USAID aims "to address key challenges for persons with disabilities through provision of direct assistance to improve health, independence, and participation in economic and social life."

In addition to continuing to support changes in Vietnam's disability policies, USAID will finance the provision of physical, occupational, and speech therapies to persons with disabilities, as well as provide training to Vietnamese practitioners and technicians in the delivery of such services. Target areas for these programs are to be locations "where disability prevalence and poverty rates are high." Among the identified locations are the provinces of Binh Dinh, Binh Phuoc, Dong Nai, Quang Nam, Tay Ninh, Thai Binh, and Thua Thien-Hue. All these provinces have been identified by the Aspen Institute as heavily sprayed areas, except Thai Binh.[44] USAID, in consultation with various Vietnamese agencies, will directly administer the new approach.

Bien Hoa Airbase

With the environmental cleanup of Danang airport completed, the two governments have begun jointly to explore undertaking a similar cleanup of the dioxin "hot spot" located at the Bien Hoa airbase. Bien Hoa airbase was the airport used for the most Agent Orange spraying missions during the war, and is where the most herbicide was stored and used by the U.S. military. One study of soil samples from the Bien Hoa airbase found a sample with a TEQ concentration at over 1,000 ppb—higher than typical samples at the Danang airbase, and 1,000 times higher than the international limit.[45]

The Vietnamese government has already conducted some mitigation measures to contain the dioxin contamination at Bien Hoa. A passive landfill (in which the contaminated soil is left untreated) containing 43,000 m^3 of contaminated soil excavated from the herbicide storage area

[40] U.S. Agency for International Development, "Persons with Disabilities Support Program," press release, June 2015.

[41] Aspen Institute, "Visit Maps of Heavily Sprayed Areas and Dioxin Hot Spots," http://www.aspeninstitute.org/policy-work/agent-orange/what-agent-orange/map-dioxin.

[42] U.S. Agency for International Development, "Persons with Disabilities Support Program (PDSP): Project Year Two Brief," press release, December 2014.

[43] U.S. Agency for International Development, "New Forward-Thinking Disabilities Assistance Approach," press release, June 4, 2014.

[44] Aspen Institute, "Visit Maps of Heavily Sprayed Areas and Dioxin Hot Spots," http://www.aspeninstitute.org/policy-work/agent-orange/what-agent-orange/map-dioxin.

[45] By comparison, the maximum concentration of TCDD found at Love Canal, NY, was 17,200 ppb; at Times Beach, MO, the maximum concentration was 1,750 ppb. Both U.S. communities were evacuated after evidence of dioxin contamination was found.

was completed in 2009. However, the airbase has several other distinct dioxin "hot spots" that have not been addressed, according to a study conducted by a private consulting firm, Hatfield Consultants, hired by Office 33.[46] The study also determined that contaminated soil had spread from the "hot spots" into nearby lakes, ponds, creeks, and drainage ditches, increasing the amount of soil and sediment that will require treatment.

The United Nations Development Programme (UNDP) has been working with Office 33 and MONRE for five years to map out the dioxin contamination at Bien Hoa airbase, and develop a master plan for dioxin remediation.[47] According to their joint investigation, released in 2014, approximately 250,000 m^3 of soil would require decontamination with an estimated cost of at least $250 million.

In September 2013, USAID contracted CDM International Inc. to conduct an environmental assessment of the Bien Hoa airbase to examine a number of dioxin remediation alternatives. CDM International Inc. partnered with Hatfield Consulting on the project. In May 2016, USAID released the final environmental assessment report.[48]

The report determined that an estimated 408,500 to 495,300 m^3 of contaminated soils and sediments are located on or nearby the airbase, or about four to five times as much as is being treated at Danang airport. Five different treatment methods were considered, ranging from containment to in-pile thermal desorption (as was used in Danang). The estimated costs of the five methods ranged from $137 million (for containment in a landfill) to $794 million (using incineration and ex situ thermal treatment). The report noted, however, that these estimated costs may vary from 40% less to 75% more than the stated amounts, expanding the possible range to between $82 million and $1.4 billion. According to USAID, over $3.7 million has been obligated so far to assess the possible environmental remediation of Bien Hoa Airbase.[49]

In September 2017, Vietnam's Ministry of National Defence announced work on infrastructure construction for the dioxin decontamination of Bien Hoa airport.[50] The construction, with a reported budget of $11.8 million, included demining operations, road construction, and removing facilities from contaminated areas.

On January 23, 2018, USAID and Vietnam's Ministry of National Defence signed a memorandum of intent (MOI) to begin the decontamination of Bien Hoa airport.[51] U.S. Ambassador to Vietnam Daniel J. Kritenbrink reportedly said at the MOI signing ceremony, "The United States looks forward to working with the Ministry of National Defence on this important initiative, deepening our partnership further, and building a prosperous future for both our countries."[52] The MOI commits the two nations to work together to design a remediation program for the Bien Hoa airport.

---

[46] The study was conducted in 2011 with funding provided by the Ford Foundation. Data on Bien Hoa airbase in this section largely come from Hatfield's report, *Environmental and Human Health Assessment of Dioxin Contamination at Bien Hoa Airbase, Viet Nam: Final Report*, August 2011.

[47] For more details, see http://www.vn.undp.org/content/vietnam/en/home/presscenter/pressreleases/2014/10/21/dioxin-contamination-in-bien-hoa-airbase-status-and-plan-for-future-work.html.

[48] USAID, *Environmental Assessment of Dioxin Contamination at Bien Hoa Airbase*, May 3, 2016.

[49] CRS correspondence with USAID, May 24, 2018.

[50] "Infrastructure Built to Tackle Dioxin Contamination at Bien Hoa Airport," *Vietnamnet*, September 17, 2017.

[51] USAID, "United States and Vietnam Sign Memorandum of Intent to Begin Dioxin Remediation at Bien Hoa," press release, January 23, 2018.

[52] "Vietnam, US Begin Agent Orange Cleanup at Former Wartime Air Base," *VN Express*, January 24, 2018.

USAID and the Ministry of National Defence signed a five-year, $183 million nonrefundable aid agreement on May 11, 2018, for the decontamination of Bien Hoa airport.[53] At the time of the signing of the agreement, the project was projected to take 10 years at an estimated cost of $390 million. Approximately 500,000 cubic meters of soil, or nearly 50 hectares (123 acres) of land, are to be decontaminated.

In September 2018, the Ministry of National Defence signed a memorandum of understanding with the Japanese general contractor, Shimizu Corporation, to construct a decontamination factory at Bien Hoa airport.[54] The factory reportedly will decontaminate the soil by a filtered sponge technique, and be capable of decontaminating 40 tons of soil per hour. The new technique is expected to cost about half as much as the in-pile thermal desorption used at Danang airport.

U.S. Secretary of Defense Jim Mattis visited Bien Hoa airport on October 17, 2018. During his tour of the former Agent Orange storage site, Secretary Mattis reportedly said, "We had promised to help … so this is America keeping her promise to remediate some of the past."[55] He also reportedly stated prior to the visit, "I just want to get eyes on [the site] so when I go back and talk to Congress, I can tell them my impression with actually having seen the site."[56]

Issues Before Congress

Congressional interest in Agent Orange/dioxin in Vietnam has largely been focused on two issues. The first issue is determining the appropriate amount and type of assistance to provide to address the environmental damage and the health effects of dioxin contamination in Vietnam. The second issue is oversight of how such assistance has been utilized by the State Department and USAID.

Funding Assistance

Congress and the Obama Administration demonstrated a common interest in providing assistance to address the environmental remediation of Agent Orange and dioxin in Vietnam; the Trump Administration has indicated its support for the Agent Orange projects in Vietnam. The State Department regularly has requested funding for decontamination of dioxin "hot spots" in Vietnam in its budget request to Congress.

As described above, Congress has generally appropriated funds for health and disability services for persons residing in areas sprayed by Agent Orange and otherwise contaminated with dioxin. The State Department and USAID have utilized those funds for various programs for persons with disabilities regardless of the cause. In many, but not all, cases, those programs were conducted in locations near known Agent Orange "hot spots." President Obama's budget requests to Congress did not include funding requests explicitly for health and disability assistance programs for areas sprayed with Agent Orange or otherwise contaminated with dioxin. The Obama Administration budget requests were for disability programs and/or "vulnerable groups."[57]

[53] Mai An, "Dioxin Cleanup Project Kicked Off in Bien Hoa Airport," *Saigon Online*, May 12, 2018.

[54] Phuong Nguyen, "Vietnam to Try Safer Way to Clean Up Agent Orange Hotspots," *VN Express*, September 5, 2018.

[55] "Mattis Visits Agent Orange Cleanup Site at Bien Hoa," *Asia Times*, October 17, 2018.

[56] Ibid.

[57] For example, the FY2017 budget request includes $5 million of Development Assistance (DA) funding for "social and economic services and protection for vulnerable populations."

The Consolidated Appropriations Act, 2019 (P.L. 116-6) continues the past practice of designating funds for health and disability services for places contaminated with Agent Orange/dioxin. Section 7043(h)(2) of the act, states

> Of the funds appropriated by this Act under the heading 'Development Assistance', not less than $12,500,000 shall be made available for health and disability programs in areas sprayed with Agent Orange and otherwise contaminated with dioxin, to assist individuals with severe upper or lower body mobility impairment or cognitive or developmental disabilities.

The Victims of Agent Orange Relief Act of 2019 (H.R. 326) would "direct the Secretary of State, the Secretary of Health and Human Services, and the Secretary of Veterans Affairs to provide assistance for individuals affected by exposure to Agent Orange, and for other purposes." Section 3 would require the Secretary of State to "provide assistance to address the health care needs of covered individuals. Such assistance shall include the provision of medical and chronic care services, nursing services, vocational employment training, and medical equipment." "Covered individuals" is defined as Vietnamese residents affected by health issues related to their exposure to Agent Orange between January 1, 1961, and May 7, 1975, or is "the child or descendant of an individual" who was exposed to Agent Orange during the designated time period.

Under Section 3, the Secretary of State would also be required to provide assistance "to repair and rebuild substandard homes in Vietnam for covered individuals and the families of covered individuals." Section 4 would require the Secretary of State and the Secretary of Veterans Affairs to "identify and provide assistance to support research relating to health issues of individuals affected by Agent Orange."

Section 3 also would require the Secretary of State to provide assistance to "institutions in Vietnam that provide health care for covered individuals," and to "remediate those geographic areas of Vietnam that the Secretary determines contain high levels of Agent Orange." The section further states, "the Secretary of State shall give priority to heavily sprayed areas, particularly areas that served as military bases where Agent Orange was handled, and areas where heavy spraying and air crashes resulted in harmful deposits of Agent Orange."

Section 8 states, "Not later than 30 days after the last day of each fiscal quarter beginning on or after 18 months after the date of the enactment of this Act, the Secretary of State, the Secretary of Health and Human Services, and the Secretary of Veterans Affairs shall each submit to Congress a report on the implementation of the provisions of this Act applicable to such Secretary during the immediately preceding fiscal quarter."

Oversight of Assistance

Beyond determining the level of funding for environmental remediation and the provision of health services to Agent Orange/dioxin-contaminated locations in Vietnam, Congress has overseen the utilization of appropriated funds. With regard to environmental remediation, congressional oversight has focused on the rising cost of the cleanup effort at Danang airport, and the potential implications for funding for the proposed cleanup of Bien Hoa. With regard to USAID's provision of related health services, congressional oversight has focused on what some Members perceive to be a slow pace at which available funds are being obligated and changes in USAID's approach to administering those funds.

As noted above, the estimated total cost of the environmental remediation of Danang airport rose from $33.7 million in 2010 to $116 million. Members could point to cost overruns at Danang airport when Congress looks ahead to possibly funding a similar environmental remediation

project at Bien Hoa airport, where a USAID study indicated that approximately 500,000 m^3 of soil—about four to five times the amount at Danang—is contaminated.

Although the Danang airport cleanup experienced rising costs and delays, USAID was able to keep the project going and the funding flowing. USAID has not been as successful in utilizing the funds provided for health services to areas contaminated with Agent Orange/dioxin. According to information provided by USAID, 63.5% of the funds appropriated in FY2011 to FY2017 have been obligated. In addition, USAID's approach to utilizing health services funds has shifted from direct obligation by USAID, to establishing a cooperative agreement to administer the funds, and back again to direct obligation by USAID. Some observers question whether the health services funds are being used effectively, and in accordance with congressional priorities. The specific language in Section 7043(h)(2) of Consolidated Appropriations Act, 2019 (P.L. 116-6) and H.R. 326 regarding health and/or disability assistance to Vietnam may in part reflect congressional dissatisfaction with State Department and USAID management of previously appropriated funds.

Appendix. Text of Public Laws Appropriating Funds for Environmental Remediation and Health and Disability Services in Vietnam

Congress has included language in legislation indicating that it is appropriating funds for environmental remediation and health and disability services in Vietnam. The precise amounts appropriated, however, in most cases have been stipulated in either an accompanying report or explanatory statement. The table below provides the relevant text in the public law, as well as the associated language in the accompanying report or explanatory statement.

Table A-1. Public Law and Relevant Text of Appropriations for Agent Orange/Dioxin-Related Activities in Vietnam

Public Law Number	Text in Legislation	Text in Accompanying Report or Explanatory Statement
P.L. 110-28	Sec. 3807. (a) Funds provided in this Act for the following accounts shall be made available for countries, programs and activities in the amounts contained in the respective tables and should be expended consistent with the reporting requirements and directives included in the joint explanatory statement accompanying the conference report on H.R. 1591 of the 110th Congress (H.Rept. 110-107).	H.Rept. 110-107: The conference agreement includes $3,000,000 for environmental remediation and health activities in Vietnam, instead of $3,200,000 as proposed by the Senate. The House did not include a similar provision. The conferees endorse language in the Senate report [S.Rept. 110-37; see also CRS Report RL34761, *Vietnamese Victims of Agent Orange and U.S.-Vietnam Relations*, by Michael F. Martin] regarding this matter, and stipulate that prior to the obligation of these funds the Committees on Appropriations be consulted on the planned use of the funds. The conferees recommend that these funds be matched, to the maximum extent possible, with contributions from other public and private sources. S.Rept. 110-37: The committee recommends $3,200,000 for the remediation of dioxin contaminated sites in Vietnam, and to support health programs in communities near those sites.
P.L. 111-8	Sec. 7071. (h) Vietnam.—Notwithstanding any other provision of law, funds appropriated under the heading "Development Assistance" in this Act may be made available for programs and activities in the central highlands of Vietnam, and shall be made available for environmental remediation and related health activities in Vietnam.	Joint Committee Print (Division H): Vietnam.—The bill provides $15,000,000 for assistance for Vietnam, which should focus on judicial and economic reform programs to strengthen the rule of law, protect human rights, and expand economic opportunities. Of this amount, $3,000,000 is provided to continue environmental remediation of dioxin contamination at the Danang Airport and related health activities in nearby communities in Vietnam.

Public Law Number	Text in Legislation	Text in Accompanying Report or Explanatory Statement
P.L. 111-117	Sec. 7071. (j) Vietnam—Funds appropriated by this Act that are made available for assistance for Vietnam for remediation of dioxin contaminated sites and related health activities may be made available for assistance for the Government of Vietnam, including the military, for such purposes.	H.Rept. 111-366: Vietnam.—The conference agreement provides not less than $3,000,000 for environmental remediation of dioxin contaminated sites and related health activities in Vietnam, including through Vietnamese institutions and organizations. The conferees direct the USAID Administrator to consult with the Committees on Appropriations prior to the obligation of funds for these purposes.
P.L. 111-212	Sec. 1002. (a) Funds appropriated in this chapter for the following accounts shall be made available for programs and countries in the amounts contained in the respective tables included in the report accompanying this Act: (1) "Diplomatic and Consular Programs". (2) "Economic Support Fund". (3) "International Narcotics Control and Law Enforcement". (b) <<NOTE: Notification.>> For the purposes of implementing this section, and only with respect to the tables included in the report [S.Rept. 111-188] accompanying this Act, the Secretary of State and the Administrator of the United States Agency for International Development, as appropriate, may propose deviations to the amounts referred in subsection (a), subject to the regular notification procedures of the Committees on Appropriations and section 634A of the Foreign Assistance Act of 1961.	S.Rept. 111-188: Vietnam.—The committee recommends $12,000,000 for assistance for Vietnam to support the remediation of dioxin contamination at the Danang Airport, which poses extreme risks to human health and welfare, and related health activities.
P.L. 112-10	Sec. 2120.(c) Division F of Public Law 111-117 shall be applied to funds appropriated by this division under the heading "Bilateral Economic Assistance, Funds Appropriated to the President, Economic Support Fund"— 2) by adding at the end before the period the following: "Provided further, That funds appropriated under this heading may be made available for activities to support the economic and social development and reconciliation goals of Public Law 99-415, and should not be made available for a contribution: Provided further, That not less than $15,500,000 of the funds appropriated under this heading should be made available for remediation activities, and not less than $3,000,000 should be made available for related health activities, referenced in section 7071(j) of this Act."	

Public Law Number	Text in Legislation	Text in Accompanying Report or Explanatory Statement
P.L. 112-74	Sec. 7044. (h) Vietnam.—Funds appropriated under the heading "Economic Support Fund" shall be made available for remediation of dioxin contaminated sites in Vietnam and may be made available for assistance for the Government of Vietnam, including the military, for such purposes, and funds under the heading "Development Assistance" shall be made available for related health/disability activities.	H.Rept. 112-331: Vietnam.—The conferees recommend not less than $5,000,000 under this heading be made available for health/disability activities in areas in Vietnam that were targeted with Agent Orange or remain contaminated with dioxin. The conferees endorse Senate report language on consultation and the development of a multi-year plan. Vietnam.—The conferees recommend not less than $15,000,000 for environmental remediation of dioxin contamination at the Danang and Bien Hoa airports and other severely contaminated sites.
P.L. 113-6	Division F—The following sums are hereby appropriated, out of any money in the Treasury not otherwise appropriated, and out of applicable corporate or other revenues, receipts, and funds, for the several departments, agencies, corporations, and other organizational units of Government for fiscal year 2013, and for other purposes, namely: TITLE I. GENERAL PROVISIONS Sec. 1101. (a) Such amounts as may be necessary, at the level specified in subsection (c) and under the authority and conditions provided in applicable appropriations Acts for fiscal year 2012, for projects or activities (including the costs of direct loans and loan guarantees) that are not otherwise specifically provided for, and for which appropriations, funds, or other authority were made available in the following appropriations Acts: (b) The Department of State, Foreign Operations, and Related Programs Appropriations Act, 2012 (division I of Public Law 112–74). (c) The level referred to in subsection (a) shall be the amounts appropriated in the appropriations Acts referred to in such subsection, including transfers and obligation limitations, except that such level shall be calculated without regard to any rescission or cancellation of funds or contract authority….	
P.L. 113-76	Sec. 7043. (g) Vietnam.—Funds appropriated by this Act under the heading "Economic Support Fund" shall be made available for remediation of dioxin contaminated sites in Vietnam and may be made available for assistance for the Government of Vietnam, including the military, for such purposes, and funds appropriated under the heading "Development Assistance" shall be made available for health/disability activities in areas sprayed with Agent Orange or otherwise contaminated with dioxin.	Explanatory Statement: The agreement includes $22,000,000 under Economic Support Fund for environmental remediation of dioxin contamination in Vietnam and an additional $7,000,000 under this heading for health and disability programs in areas sprayed with Agent Orange or otherwise contaminated by dioxin.

Public Law Number	Text in Legislation	Text in Accompanying Report or Explanatory Statement
P.L. 113-235	Sec. 7043. (h) Vietnam.—Funds appropriated by this Act under the heading "Economic Support Fund" shall be made available for remediation of dioxin contaminated sites in Vietnam and may be made available for assistance for the Government of Vietnam, including the military, for such purposes, and funds appropriated under the heading "Development Assistance" shall be made available for health/disability activities in areas sprayed with Agent Orange or otherwise contaminated with dioxin.	Explanatory Statement: [In table listing allocation of Economic Support Fund (in thousands of dollars)] Vietnam (Environmental Remediation of dioxin) - $15,000 The agreement provides $2,507,001,000 for Development Assistance. Vietnam.—Funds made available under this heading for assistance for Vietnam for health/disability activities should prioritize assistance for individuals with severe upper or lower body mobility impairment and/or cognitive or developmental disabilities. [In table listing allocation of Development Assistance (in thousands of dollars)] Vietnam health/disability programs - $7,500
P.L. 114-113	Sec. 7043. (g) VIETNAM.— (1) DIOXIN REMEDIATION.—Funds appropriated by this Act under the heading "Economic Support Fund" shall be made available for remediation of dioxin contaminated sites in Vietnam and may be made available for assistance for the Government of Vietnam, including the military, for such purposes. (2) HEALTH AND DISABILITY PROGRAMS.—Funds appropriated by this Act under the heading "Development Assistance" shall be made available for health and disability programs in areas sprayed with Agent Orange and otherwise contaminated with dioxin, to assist individuals with severe upper or lower body mobility impairment and/or cognitive or developmental disabilities.	Explanatory Statement: In implementing this agreement, Federal departments, agencies, commissions, and other entities are directed to comply with the directives, reporting requirements, and instructions contained in H.Rept. 114-154 (House report) accompanying H.R. 2772 (House bill) and S.Rept. 114-79 (Senate report) accompanying S. 1725 (Senate bill) as though stated in this explanatory statement, unless specifically directed to the contrary. Vietnam.—The agreement supports funds under Economic Support Fund to continue the DNA forensic technology program to identify Vietnamese persons missing-in-action. The agreement provides funds under Economic Support Fund to support the environmental remediation of dioxin contamination at the Bien Hoa Airport. The Department of Defense is strongly encouraged to contribute funds for this project, which is expected to further United States-Vietnam relations. S.Rept. 114-79: Vietnam—The committee recommends $7,000,000 for assistance for Vietnam under this heading for health/disability programs in areas sprayed with Agent Orange or otherwise contaminated by dioxin, to address the mobility, psycho-social, vocational, and other needs of persons with severe upper and lower body mobility impairment and/or cognitive or developmental disabilities. In order to minimize administrative costs and maximize impact in the field, the committee intends that, to the maximum extent practicable, health/disability funds shall be implemented by Vietnamese organizations and entities. Vietnam—The committee recommends not less than $25,000,000 under this heading for environmental remediation of dioxin contamination at the Da Nang and Bien Hoa Airports.

Public Law Number	Text in Legislation	Text in Accompanying Report or Explanatory Statement
P.L. 115-31	Section 7043(h) Vietnam— (1) DIOXIN REMEDIATION—Notwithstanding any other provision of law, of the funds appropriated by this Act under the heading 'Economic Support Fund', not less than $20,000,000 shall be made available for activities related to the remediation of dioxin contaminated sites in Vietnam and may be made available for assistance for the Government of Vietnam, including the military, for such purposes. (2) HEALTH AND DISABILITY PROGRAMS—Of the funds appropriated by this Act under the heading 'Development Assistance', not less than $10,000,000 shall be made available for health and disability programs in areas sprayed with Agent Orange and otherwise contaminated with dioxin, to assist individuals with severe upper or lower body mobility impairment and/or cognitive or developmental disabilities.	
P.L. 115-141	Section 7043(g) Vietnam— (1) DIOXIN REMEDIATION- Notwithstanding any other provision of law, of the funds appropriated by this Act under the heading 'Economic Support Fund', not less than $20,000,000 shall be made available for activities related to the remediation of dioxin contaminated sites in Vietnam and may be made available for assistance for the Government of Vietnam, including the military, for such purposes. (2) HEALTH AND DISABILITY PROGRAMS- Of the funds appropriated by this Act under the heading 'Development Assistance', not less than $10,000,000 shall be made available for health and disability programs in areas sprayed with Agent Orange and otherwise contaminated with dioxin, to assist individuals with severe upper or lower body mobility impairment or cognitive or developmental disabilities.	

Public Law Number	Text in Legislation	Text in Accompanying Report or Explanatory Statement
P.L. 116-6	Section 7043(h) Vietnam— (1) DIOXIN REMEDIATION.—Notwithstanding any other provision of law, of the funds appropriated by this Act under the heading "Economic Support Fund", not less than $20,000,000 shall be made available for activities related to the remediation of dioxin contaminated sites in Vietnam and may be made available for assistance for the Government of Vietnam, including the military, for such purposes. (2) HEALTH AND DISABILITY PROGRAMS.—Of the funds appropriated by this Act under the heading "Development Assistance", not less than $12,500,000 shall be made available for health and disability programs in areas sprayed with Agent Orange and otherwise contaminated with dioxin, to assist individuals with severe upper or lower body mobility impairment or cognitive or developmental disabilities. (3) RECONCILIATION PROGRAMS.—Funds appropriated by this Act under the heading "Economic Support Fund" that are made available for assistance for Vietnam shall be made available for reconciliation programs to address war legacy issues.	

Source: CRS research.

Author Information

Michael F. Martin
Specialist in Asian Affairs

Disclaimer

This document was prepared by the Congressional Research Service (CRS). CRS serves as nonpartisan shared staff to congressional committees and Members of Congress. It operates solely at the behest of and under the direction of Congress. Information in a CRS Report should not be relied upon for purposes other than public understanding of information that has been provided by CRS to Members of Congress in connection with CRS's institutional role. CRS Reports, as a work of the United States Government, are not subject to copyright protection in the United States. Any CRS Report may be reproduced and distributed in its entirety without permission from CRS. However, as a CRS Report may include copyrighted images or material from a third party, you may need to obtain the permission of the copyright holder if you wish to copy or otherwise use copyrighted material.