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Report/Article Title Memorandum: From Alvin L. Young regarding Reevaluation Review of Draft USAF SON 2-81, memorandum from Walter J. Rabe, Director, Avionics & Weapons, USAF regarding Reevaluation Review, dated April 7, 1981, Draft USAF SON 2-81 and distribution list attached, dated May 22, 1981

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SUBJECT: Reevaluation Review of Draft USAF SON 2-81

TO: AFSC/DLWM (Capt Reed)
Andrews AFB DC 20334

1. The following written comments are provided per your request and a subsequent telecon with Lt Col Bainter, 21 May 81.
2. Statement 2.1 on "Operational Need" mistakingly refers to the testing of Herbicide Orange. Hardstand 7 and Test Area C-52A, Eglin AFB FL were contaminated with Herbicide Orange and TCDD during the evaluation of aerial spray equipment, 1962-1970. The Air Force was not charged with the responsibility for testing herbicides.
3. Although the present statements on "Operation Deficiency" are appropriate, two major reasons for preparing USAF SON 2-81 have been overlooked. The Air Force Surgeon General has initiated a long-term health study of the AF personnel associated with Operation RANCH HAND in South Vietnam, 1962-1970. Many of these men were potentially exposed to TCDD and herbicides during handling operations at the herbicide storage depots in South Vietnam. Data on the environmental mechanisms associated with potential human exposure (e.g., volatility and water contamination) from contaminated soil can no longer be obtained from sites in South Vietnam, but may be obtained from the Hardstand 7, NCBC, or Johnston Island storage sites. Moreover, if the RANCH HAND Epidemiologic Study finds associated health problems, all of the chemical and environmental data collected from US sites will be invaluable in documenting the exposure of personnel that worked at the Eglin AFB, Gulfport, or Johnston Island sites. Another reason for conducting research on TCDD and herbicides at the referenced locations is to collect data that can be used by the Environmental Protection Agency to establish safe "limits" of exposure by documenting the effects of TCDD and the herbicides on the biota of the storage sites and associated drainage areas. In the absence of "exposure standards", the Air Force should not arbitrarily determine that the sites do not constitute potential health concerns.
4. Many Air Force personnel feel that the present Agent Orange controversy is strictly "political". I can assure you that the scientific data do not justify such a conclusion. The legal actions that will eventually come from military and civilian personnel previously associated with the Herbicide Orange projects at Eglin AFB, Gulfport, and Johnston Island dictate that the Air Force continue to show a positive approach to this very difficult and sensitive issue.
5. I am available to assist you in any way I can. I will depart PCS from ACSC on 15 June 81. I have been assigned to a liaison position, as of 15 July 81, as a Special Assistant on Military Herbicides, Department of Environmental Medicine, Veterans Administration Central Office, 810 Vermont Ave NW, Washington DC 20420, Area Code 202-389-5413.

Alvin L. Young

ALVIN L. YOUNG, Major, USAF, Ph.D.
Consultant, Environmental Sciences



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE SYSTEMS COMMAND
ANDREWS AIR FORCE BASE, DC 20334

REPLY TO
ATTN OF:

Nike
DLWM (Capt Reed, AV 858-2554)

7 April 1981

SUBJECT:

Reevaluation Review of Draft USAF SON 2-81

63923 PEM - Funds Tyndall

TO:

DISTRIBUTION

1. Please review the attached SON and provide your concurrence/non-concurrence IAW AFR 57-1. If you non-concur, please state why and offer the originator ways to achieve your coordination. If you concur, please provide detailed constructive comments on how to implement a program to meet this need.
2. A small effort has been started in PE 62601F to solve this need, however, the SON must be validated before a major effort can take place and activity can be programmed in a 6.4 PE.
3. Upon receipt of your inputs, I will develop a Form 79 and submit it to the RPG/RRG for validation. Please submit your inputs by COB 22 May 81.

WALTER J. RABE, Colonel, USAF
Director, Avionics & Weapons
Director of Laboratories

2 Atch

1. Draft USAF Son 2-81
2. Distribution List

USAF SON # 2-81
STATEMENT OF OPERATIONAL NEED FOR
RECLAMATION OF HERBICIDE ORANGE
CONTAMINATED SITES

1. MISSION: The mission addressed in this SON is reclamation of the Herbicide Orange storage sites at the Naval Construction Battalion Center (NCBC), Gulfport, MI; Johnston Island, Pacific Ocean; and Hardstand 7 and test area C-52A, Eglin AFB, FL. Methods are needed to decontaminate previous Herbicide Orange test and storage sites by the most rapid and cost-effective means. Knowledge is needed in the following areas: (1) the current level and extent of 2,3,7,8 - tetrachlorodibenzo-p-dioxin (TCDD) contamination; (2) the degradation rate of TCDD by natural means; (3) the degradation products and their toxicity; (4) the extent and rate of TCDD movement; (5) methods to control the translocation of TCDD; (6) methods to enhance the rate of degradation; and (7) methods to physically or chemically destroy TCDD in soil. The ultimate goal is to return these sites to full operational use compatible with national environmental public health goals.

2. OPERATIONAL NEED:

2.1 Immediately following the at-sea incineration of surplus inventories of Herbicide Orange in July 1977, the USAF Occupational and Environmental Health Laboratory initiated site monitoring studies of chemical residue in soil, silt, water and biological organisms associated with the sites where the herbicide had been stored, NCBC and Johnston Island. The presence of the highly toxic contaminant TCDD in the soil of these military storage sites, Hardstand 7 and test area C-52A at Eglin AFB, FL, has been attributed to the storage and testing of Herbicide Orange. Study results indicate that the herbicide is rapidly degrading, but the toxic contaminant, TCDD, has remained. The data also indicate that erosion has moved some contaminated soil from the old storage area at NCBC to sites off-base. As a result, SAF/MI directed measures be taken to preclude further erosion and stressed the requirements for early development of a protocol to decontaminate the sites. Stabilization of the drainage ditch banks and construction of siltation ponds in the drainage system at NCBC have been accomplished to prevent further translocation of the TCDD.

2.2 SAF/MI has committed the AF to return NCBC and the other sites contaminated with TCDD to full and beneficial use. Documenting the levels of contamination and insuring that the TCDD is not transported off-site are part of the obligation to satisfy the public that it is contained and controlled. A systematic monitoring program for TCDD contamination and translocation is required to resolve conflicting reports on transport mechanisms and degradation rates. Methods are needed to destroy the TCDD in the soil matrix which: (1) will not result in exposure of military or civilian personnel; (2) will not increase the extent of the contamination by spills or vapor releases; and (3) are compatible with national environmental and public health regulations and goals.

3. OPERATIONAL DEFICIENCY: SAF/MI has committed the Air Force to return the Herbicide Orange storage site at NCBC to full and beneficial use. Hardstand 7, Eglin AFB, FL, is needed to support such programs as the Advanced Medium Range Air-to-Air Missile program. This is the only area in the immediate vicinity of the Eglin AFB flight line which has a pit for working under aircraft, a unique asset that is needed for many projects. Test area C-52A, Eglin AFB, FL, is a large, flat, cleared test area with a 300 foot instrumented tower located in its center. This tower and associated vehicle turntables are needed for various

technology development programs such as missile and bomb guidance systems and the millimeter wave program. Establishing an equivalent test site would be very expensive and would have significant effects on the environment. In order to satisfy Air Force obligations and public concerns that the TCDD is contained and controlled, a systematic monitoring program is also required to document the level of TCDD contamination and insure that the contamination is not transported off-site. Knowledge is needed on the environmental fate and effects of degradation products on the environment. Knowledge is needed in the state-of-the-art of TCDD decontamination to establish if, or what, research is needed to achieve decontamination of the test and storage sites by the most direct and cost-effective means. Any decontamination approach must be compatible with national environmental and public health regulations and goals. Only through the development of a reclamation protocol can the contaminated sites be restored to their full and beneficial use.

MISSION ELEMENT NEED ANALYSIS (MENA)

1. Mission:

a. Mission Area. Air Force Systems Command Environmental Policy Goals, Technology Base and Management & Support areas.

b. Mission Element Need Tasks. SAF/MI has committed the Air Force to return Herbicide Orange test and storage sites to full and beneficial use. Documenting the levels of contamination and insuring the toxic contaminant 2,3,7,8-Tetra-Chlorodibenzo-p-Dioxin (TCDD) is not transported off-site are part of the obligation to satisfy the public that the contamination is contained and controlled. Methods are needed to decontaminate previous Herbicide Orange test and storage sites by the most rapid and cost-effective means. Knowledge is needed in the following areas:

- (1) Current level and extent of TCDD contamination.
- (2) Natural degradation rate of TCDD in soil.
- (3) Degradation products and their toxicity.
- (4) The extent and rate of TCDD movement.
- (5) Methods to control the translocation of TCDD.
- (6) Methods to enhance the rate of TCDD degradation.
- (7) Methods to physically or chemically destroy TCDD in soil. The goal of returning these sites to operational use must be compatible with national environmental and public health goals.

2. Existing and Planned Capabilities:

a. No method currently exists for the decontamination of very large quantities of soil containing TCDD. Due to the type and large quantity of soil involved (12 acres at the Naval Construction Battalion Center (NCBC), Gulfport, MS; 12 acres at Johnston Island, Pacific Ocean; approximately ten acres at Hardstand 7, Eglin AFB, FL; and approximately one square mile at test area C-52, Eglin AFB, FL), site specific solutions will be required.

b. Laboratory scale methods have been developed to reduce TCDD to the parts per billion level in various media. However, no method can achieve one part per trillion which has been proposed as an acceptable level of TCDD contamination.

c. The Environmental Protection Agency (EPA) is evaluating analytical methods and organizational capabilities for the identification and quantification of TCDD. No action to unify technology to resolve decontamination of TCDD on a large-scale has been or is contemplated.

d. The need addressed here is specific to the decontamination of Herbicide Orange test and storage sites. However, the technology that may be developed in this effort could be applicable on a worldwide basis for the destruction of TCDD in soils.

3. Assessment:

The Air Force has a legal and moral obligation for the containment and control of TCDD contaminated sites. This obligation has been supported by SAF/MI commitment to document the levels of contamination, insure that the TCDD is not transported off-site and develop a decontamination protocol for the return of the sites to operational use.

4. Constraints:

This project must analyze current state-of-the-art concepts and techniques and develop a decontamination protocol which will return these sites to operational use by the most rapid and cost-effective means compatible with national environmental and public health goals. The available options for decontamination are limited due to the current emotionalism associated with TCDD, the lack of published standards for "uncontaminated" soil, the necessity for avoiding transport of contaminated material off the installation, occupational health risks associated with any materials handling operation and the large quantity of soil involved. Because of these issues, in-place decontamination and restoration appear to offer the best possibility for success.

5. Impact of Staying with Present Capability:

Only through the development of a reclamation protocol which addresses the deficiencies in knowledge of TCDD decontamination can the sites be restored to operational use.

Hardstand 7, Eglin AFB, FL, is needed to support such programs as the Advanced Medium Range Air-to-Air Missile program. This is the only area in the immediate vicinity of the Eglin AFB flight line which has a pit for working under aircraft, a unique asset that is needed for many projects. Test area C-52A, Eglin AFB, FL, is a large, flat, cleared test area with a 300 foot instrumented tower located in its center. This tower and associated vehicle turntables are needed for various technology development programs such as missile and bomb guidance systems and the millimeter wave program. Establishing an equivalent test site would be very expensive and could have significant effects on the environment.

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