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June 8, 2020

Hon, Robert L. Wilkie
Secretary of Veterans Affairs
810 Vermont Ave., NW
Washington, DC 20420

Re: Response to the denial of rulemaking.

Dear Mr. Secretary:

I write in response to Mr. Paul Lawrence's letter of May 12, 2020 denying our various requests for rulemaking. I note that the letter was postmarked May 19, 2020 and not received until a few days later. Nevertheless, Military-Veterans Advocacy will file a suit under 38 U.S.C. § 502 on or before July 13, 2020 to challenge the denial. I invite you to withdraw your denial and agree to issue rules prior to or after we file suit.

I am surprised that Mr. Lawrence denied rulemaking when he knew that we are waiting for an Environmental Protection Agency (EPA) report that is expected to confirm the presence of dioxin in the soil. Perhaps he just did not want to know what it said. It does call into question whether his decision was supported by substantial evidence, or really any evidence at all.

Mr. Lawrence cites to the "Agent Orange: Actions Needed to Improve Accuracy and Communication of Information on Testing and Storage Locations," GA0-19-24 (Nov.15, 2018) (hereinafter GAO Report). While a fairly large number of documents were reviewed, as Mr. Lawrence says, there were many more records missing. During this time period the destruction protocol for shipping documents was two years. The fact that any were located is simply amazing.

Moreover, the GAO Report discusses only shipments of Agent Orange and not the other rainbow herbicides or commercial herbicide. It did acknowledge that four versions of the herbicide, Pink, Purple, White and Orange contained the deadly dioxin (2, 3, 7, 8 TCDD). GAO report at 6.

The denial concedes that herbicide was used extensively on Guam. To support his position, however, Mr. Lawrence tries to distinguish commercial herbicide from tactical herbicides This is a distinction without a difference. The GAO report noted:

> In reviewing supply catalogues from that time period, DOD officials identified more than 35 different commercial herbicides that were listed in the federal supply system for use on DOD installations between 1960 and 1973. Some of these commercial herbicides contained 2,4-D; 2,4,5-T; or both, although they were not

> in the n-butyl form used in Agent Orange. These included at least 4 commercial herbicides that contained some form of 2,4,5-T, the component that contained the contaminant 2,3,7,8-TCDD. In addition, numerous commercial herbicides that were not in the federal supply system but were being widely used elsewhere for agriculture purposes contained the form of n-butyl 2,4,5-T found in Agent Orange and thus its associated contaminant, 2,3,7,8-TCDD.

GAO report at 11.

It is not the name, or the designation given to the herbicide that is relevant to this process. Whether the herbicide was considered tactical or commercial is of no moment if the pertinent chemical composition was the same. The source and control of the herbicides is not relevant. Nor is the spraying method of any real import. What is relevant is that active duty military personnel, acting incident to their service responsibilities, were contaminated with herbicide sprayed by their government. Notably the Agent Orange Act of 1991, Publ. L. 102-4, covers all herbicide exposure and is not limited to Agent Orange. Section 2(a)(4) reads as follows:

> (4) For purposes of this section, the term `herbicide agent' means a chemical in an herbicide used in support of the United States and allied military operations in the Republic of Vietnam during the Vietnam era.

. As discussed in the GAO report *supra*., the commercial herbicides also contained 2. 4 D. This was confirmed by a study conducted for the Environmental Protection Agency in April of 2018. Several soil samples showed traces of 2,4-D and 2,4,5-T in the soil. (Hereinafter Weston Report) at pages 1, 2, 5 and 7. This report was forwarded to you on December 23, 2019.

On page 2 of the denial, Mr. Lawrence concedes the presence of 2,4-D and 2,4,5-T in the Guamanian soil. This coupled with the Weston Report, *supra*., underlines why the denial is arbitrary and capricious. Pub. L. 102-4 specifically refers to exposure to herbicide containing dioxin or 2-4-D.

Preliminary results from the pending EPA study confirmed 2,3,7,8-TCDD, or dioxin, in the soil. These results are based upon soil samples taken last November in areas designated by an MVA representative who witnessed the spraying. It is the dioxin that caused the diseases and disability associated with herbicide.

Mr. Lawrence argues that only small amounts of the herbicide components were found in the April 2018 sampling. While he is technically correct, this argument is a red herring. Herbicide deterioration half-lives have been estimated as a few months in the environment. The herbicide was sprayed from 1958 until 1980. The presence of small amounts of the chemical after almost five decades is uncontroverted proof that it was present in significant quantities during the covered time period.

Having conceded that the dangerous dioxin was present on Guam and that it contained 2,4-D, Mr. Lawrence then argues that there is no basis for rulemaking because "presumptive service connection only applies to chemicals in an herbicide used in support of the United States

and allied military operations." This argument is unpersuasive. The American military establishment on Guam did support military operations in Vietnam. Large B-52 strikes originated from Guam. The Ship Repair facility conducted repairs to vessels providing air operations and gunfire support off the coast of Vietnam. Replenishment ships based in Guam provided fuel, ammunition and provisions to deployed ships. Submarine tenders home ported in Guam provided support to the surface ships and submarines operating off the coast. Additionally, refugee camps for evacuees from the Republic of Vietnam were established on Guam shortly before and during the battles leading to the fall of Saigon.

Herbicide containing 2,4-D and dioxin was used on Guam to eliminate vegetative growth on the bases, including around the runways and the perimeters. MVA representatives witnessed its use on the Navy activity. It was used off-base to keep a pipeline running between Air Force and Navy activities clear of growth. Notably, Marines stationed on Guam performed physical training runs along that pipeline.

Mr. Lawrence argues that the wording of Pub. L. 102-4 precludes rulemaking. In making this rather broad assertion, he forgets that the provisions of 38 U.S.C. § 3113(b) also apply. That statute reads as follows:

> (b)Nothing in section 1112, 1116, 1117, or 1118 of this title, subsection (a) of this section, or section 5 of Public Law 98–542 (38 U.S.C. 1154 note) shall be construed to prevent the granting of service-connection for any disease or disorder otherwise shown by sound judgment to have been incurred in or aggravated by active military, naval, or air service.

The Agent Orange Act of 1991, as codified at 38 U.S.C. §1116, articulates that its provisions are subject to § 1113.

The MVA requests were a request for rulemaking. While the use of the presumption makes good sense, the request was not that narrow. While we provided a proposed rule In our December 2018 request that embraced presumption, you are free to issue rules that provide coverage based on direct exposure. MVA would be happy to assist your staff in preparing any proposed rule and would closely review any notice of proposed rulemaking to ensure that it is adequate.

Of course, there is precedent for extending the presumption past the land mass of the Republic of Vietnam. The Court in *Procopio v. Wilkie*, 913 F.3d 1371 (Fed. Cir. 2019) recognized such an extension. As Mr. Lawrence acknowledges, the VA has granted a presumption to the C-123 aircraft that were transferred to the Air Force Reserve. *See*, 38 C.F.R. § 3.307(a)(6). The VA has also extended the presumption to those who served on designated bases in Thailand. *See*, M21-1IV.ii.1.H.4.b. The same applies to Korea. Pub. L. 116-23.

The Lawrence document continues to miss the point. It is of no moment whether the herbicide was designated as tactical or commercial. The point is that it contained 2,4-D and dioxin. Military personnel were exposed to these chemical components while performing their duties. Additionally, they display the effects of this exposure by manifesting diseases and disabilities caused by these chemical components.

Mr. Lawrence then complains that "[e]xpanding the regulation as you urge would leave no principled reason why all military personnel throughout the United States and the world whose bases engaged in standard vegetation and weed control or contained trace amounts of dioxin would not qualify for a presumption." Mr., Lawrence is not correct. Only those who were exposed, while in a duty status, to herbicide containing dioxin or 2.4-D should be covered. If an herbicide containing those chemical components were used at bases overseas or in the United States, veterans exposed and manifesting a covered disease or disability, should be covered. That is the dictate of 38 US.C. § 1113. Whether the herbicide is called Orange, Pink, Green, Purple or polka-dot is irrelevant. Whether it was designed for tactical use or vegetation control is of no moment. Nor is there any need to discover whether it arrives on the island by sea, air or carrier pigeon. The VA should compensate all of the victims of herbicide containing 2,4-D or dioxin!

There was one error in our original request. We asked for rulemaking to cover the period 1962 to 1980. We have since discovered the use of herbicides containing 2.4-D prior to August 15, 1958. I have enclosed an extract from the Navy Public Works manual "Guam Soils Conservation Series No, 2" to support this claim. We therefore modify our request to issue rulemaking commencing August 15, 1958.

Mr. Lawrence's narrow interpretation here is at odds with the pro-claimant or pro-veteran canon of construction which has been repeatedly recognized by the Supreme Court. The High Court unanimously re-affirmed "the canon that provisions for benefits to members of the Armed Services are to be construed in the beneficiaries' favor." *Henderson ex rel. Henderson v. Shinseki* 561 U.S. 428, 441, 131 S.Ct. 1197, 1206 (2011). *See, also*, *Gamble v. Shinseki*, 576 F.3d 1307, 1317 (Fed. Cir.2009). The *Gamble* court described the process as uniquely pro-claimant." *Id.* at 1316. Mr. Lawrence's interpretation has been anything but pro-veteran.

The denial of rulemaking for Johnston Island is even more ludicrous. Mr. Lawrence concedes that not only herbicide, but Agent Orange herbicide was stored on the atoll and that the 55-gallon steel drums, did leak. He then shockingly said that since civilians were charged with maintaining the barrels, no military personnel were exposed.

Johnston Atoll is actually four small coral islands. The total land area for all four of the islands is 2.68 square kilometers or 1.03 square miles. The largest of the four islands is Johnston Island, where the Agent Orange was stored, with an area of 241 hectares or approximately .93 square miles. We forwarded you information concerning Johnston Island on December 2, 2019. Photographs included in that package show the small land area.

I am also attaching an affidavit from Dr. Wayne Dwernychuck, an environmental scientist and Agent Orange specialist. I have also enclosed Dr. Dwernychuk' resume to establish his credentials. He notes that the civilians and military shared common areas including latrine and shower facilities, recreational facilities, a common laundry, dining hall, chapel etc. In these close quarters, cross-contamination between civilian and military would have been rampant. Mr. Lawrence did not address or consider this issue in denying rulemaking.

Although we have requested that American Samoa be included in the rulemaking, we note that anyone traveling to Samoa would have normally gone through Guam for processing.

Accordingly, I ask you to overrule Mr. Lawrence and issue the proposed regulations provided in December of 2018, or at a minimum agree to issue regulations for the areas of Guam, American Samoa and Johnston Island.

Unfortunately, due to the sixty-day time limit of Court of Appeals for the Federal Circuit Rule 47.12, we must move forward with filing litigation. Nevertheless, we wish to keep the lines of communication open and we hope that we can reach an agreement early in the litigation process.

Please consider this additional information as part of our rulemaking request.

Thank you for your consideration.

Sincerely,

John B Wells
Commander USN (ret)
Director of Litigation

UNITED STATES NAVY

GUAM SOILS CONSERVATION SERIES NO. 2

HERBICIDES

15 AUGUST 1958

MATERIALS TESTING & EVALUATION DIVISION

AREA PUBLIC WORKS OFFICE

MARIANAS AREA · GUAM, M. I.

BUREAU OF YARDS AND DOCKS
DEPARTMENT OF THE NAVY
WASHINGTON 25, D. C.

HERBICIDES --- CHEMICALS FOR CONTROL OF VEGETATION ON GUAM

by Paul B. Souder

A plant species which is desirable under one set of circumstances may become highly undesirable under slightly different conditions. In the wrong area all types of vegetation from trees to microscopic plants may be weeds, vegetation that needs control.

A survey of installations on Guam indicates that the types of areas involved in the undesirable vegetation problem fall into three fundamental categories:

(1) Control of weeds and brush on unimproved grounds - elimination of tangantangan and brush along road and utility line right of ways;

(2) Control of weeds in turf grasses - burr grass, sensitive plant and wild daisy removal in lawn areas; and

(3) Control of weeds and brush on semi-improved grounds - antenae fields, airfields, igloos, storage areas, etc.

The control of weeds and brush on unimproved grounds is limited to work necessary to prevent a return of undesirable trees and brush to open areas. This control can be accomplished by mowing or spraying once or twice a year.

Highway weed control emphasizes the diversity of this problem. Weeds along road shoulders threaten to break up the pavement surface and interfere with drainage. They may make the surface slippery. It takes a good deal of manpower to trim weeds and grass around guardrails, culverts, signs and signals, bridge approaches, and traffic islands. In such locations, vegetation may be a safety hazard and an eyesore and may shorten the life of pavement, curbing and wood or metal fixtures. In dry months, vegetation along the road may be the tinder that spreads fire from a carelessly discarded cigarette or match. Furthermore, weeds and grass may catch windblown rubbish, keeping the roadside cluttered.

Another weed problem is frequently found along drainage ditches, where vegetation clogs the ditch, interfering with

the flow of water. Since the ditch bottom cannot usually be mowed, digging and scraping is the only alternative. But this also is a costly hand operation. Worse than that, shoveling and scraping soon cuts away enough elevation to change the flow of water. Here, of course, we are making a distinction between rank weed growth, which is an obstruction in the ditch, and a good sod bottom where each blade of grass acts as a little check dam to prevent erosion and silt deposits.

In the control of weeds in turf grasses (on lawns, parks and other improved areas) much of the necessary weed control can be achieved by well regulated programs for fertilizing, mowing, watering, and control of insects and diseases. Inadequacies in any of these may cause a weakening of the turf grasses, with subsequent weed invasion.

The control of weeds on semi-improved grounds, can usually be accomplished by mechanical mowing, which should prevent invasion of an area by trees and brush, and which should protect grass from excessive shading, which may kill it. Turf here is used for soil stabilization where a trim appearance is not so essential.

Economically the problem of weed and brush control along right of ways (highway, powerlines, and drainage ditches) in open storage and fuel storage areas and weed control in ornamental turf (home lawns, golf courses, institutional grounds, communication areas and airfields) throughout military reservations, has consumed enormous amounts of time, labor, and public funds.

The control of weeds is therefore a serious matter to nearly everyone, since their effects are felt directly or indirectly. There are several methods of weed control which parallel the general methods of insect and disease control. Mechanical methods, such as cultivation, mowing, hand pulling, flooding, smothering by nonliving materials, pasturing, and turning have all been used in the past. Biological methods are frequently used, especially employment of competitive and smother crops to suppress weed species. Insects have been highly useful in the control of cacti.

Chemical methods of weed control have been used for many years. Alone or in combination with other methods, they are extremely efficient. Chemicals used to destroy plant life are called herbicides, and they are usually classified into two broad groups. Nonselective herbicides are chemicals which destroy plant life in general without regard to species.

Selective herbicides are selective in their action, as the name implies, and may be used to control specific undesirable plants without serious damage to desirable species growing in the same area.

The problem of destroying all plant growth on a given area is relatively simple. There are a number of efficient non-selective herbicides from which to choose. On the other hand, the selective destruction of one plant species without harming other species growing contiguously is considerably more difficult. The killing of burr grass in a lawn without damage to the remainder of the grass is an example of this type of problem. Both the burr grass and desirable grass plants have many characteristics in common. It is only by utilizing some characteristic which they do not share that it is possible to effect selective killing. Such characteristics may involve the size of leaf, type of leaf surface, susceptibility to specific chemicals, or other physical or physiological property. By the careful regulation of the concentration of chemicals, it is often possible to turn a non-selective herbicide into one which is selective, since the lethal doses for different plants vary considerably. The choice of the proper chemical for a particular weed-killing problem may thus be simple or complex, depending upon guides one may have to follow, few of which exist on Guam.

Whether it is desired to eradicate scrub growth along roadways, remove brush from utility and pipeline right of ways, and remove woody growth from cleared land, many factors must be considered.

Some methods use chemicals more effectively than others, requiring a minimum of application. Some methods are easier and cheaper to perform from the standpoint of labor needed. Different species show variations in ability to withstand treatment by different methods. The choice of application method may depend upon the size of the weed trees, number of stems or amount of brush, quantity and size of desirable trees, availability of suitable labor and equipment, and finally - the end result desired.

Economics in a direct fashion holds the key to rapidly expanding interest in herbicides. As "hoe labor" becomes less available and more expensive, selective herbicides acceptance and demand mount among users throughout the world.

The selectivity in selective herbicides may mean many levels of weed killing activity. In some cases overuse of

c. Ethylene dibromide, $C_2H_4Br_2$, 1, 2-dibromonethane, EDB, a temporary non-selective herbicide and soil sterilent. Controls nematodes and other soil organisms. Use 9 gallons per acre. Costly. Mfd. Dow (Dowfune W-85, 83% by weight).

d. Tetrachloroethane, $C_2H_4Cl_4$, 1, 1, 2, 2-tetrachloroethane, a temporary non-selective herbicide and soil sterilent. Controls nematodes and other soil organisms. Costly.

e. "D-D" mixture, a combination of Dichloropropane, $ClCH_2$-CH_2CH_2Cl, and Dichloropropene, $ClCH=CHCH_2Cl$, a temporary soil sterilent and herbicide, non-selective. Controls nematodes and other soil organisms. Costly.

f. Chlorobromopropene, CBP, $CH_2=CHCHClBr$, water emulsions at high rates produce almost weed-seed-free seed beds. Residual effects very short.

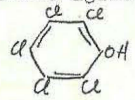
g. Monochloracetic acid, $ClCH_2COOH$, a selective herbicide and defolient. On Guam, 60% turf vegetation killed by 0.4% solution after 30 days. Non-selective, Nut grass unaffected.

h. TCA, trichloroacetic acid, CCl_3COOH, 90% sodium ammonium calcium salts used which are water soluble and soluble in most organic solvents. Corrosive on metals. Most effective on grasses and is selective as a pre-emergence treatment for annual grasses, though not so effective as DCU. In the two to three leaf stage, grasses can be controlled with 10 to 20 lbs per acre, and even lower rates may be effective for pre-emergence application. For post-emergence application, grasses and perennials require 80 to 150 lbs per acre, and a second application for complete destruction. Is most effective when applied to light, moist soil. Light rains following application are beneficial, whereas heavy rains are likely to cause dilution and leaching, reducing killing action. 30 to 100 lbs per acre is insufficient to kill nut grass. 5 to 7 lbs per acre will control weeds in legumes (7 lbs per acre is injurious to legumes). Better effects can be produced by using smaller quantities of TCA, if it is mixed with 2,4-D, CADE, MCPA, or sodium chlorate. TCA is superior herbicide compared to salts. Mfd Dow, Hooker, Monsanto, Standard Agricultural Chemicals (Santox Sodium TCA), American Chemical Paint Co (ACP Grass Killer). Cost $.37 per pound.

i. DCB, Ortho dichlorobenzene.

j. TCB, Trichlorobenzene. 2, 3, 6-trichloro benzoic acid is effective against bindweed and deep-rooted perennial weeds. Mfd Heyden Newport

k. PCP, Pentachlorophenol, Penta, is a non-selective, non-translocated, contact herbicide. The water soluble sodium salt, 85% NaPCP, is selective against broad leaf weeds and grasses. Selective action is function of ability to wet and penetrate leaf surfaces. On Guam dry pentachlorophenol has little herbicidal value at 2% concentration. As a residual herbicide, persistence in the soil enables it to destroy germinating seeds in upper layers, depending upon amount of dosage and environmental conditions. PCP would appear to decompose more rapidly in soils with a high humus content than in soils poor in organic matter. The microbiological optimum of soil conditions would seem to correspond to the lowest point of the herbicide's effectiveness.



The Sodium Salt (Santobrite), however, is an excellent sterilent, applied dry, in 1% concentration, after 30 days. CADE is a chemically activated Diesel emulsion, incorporating Diesel oil and sodium pentachlorophenate, used as a contact herbicide. ARCADE has an aromatic oil substituted for the Diesel oil. A herbicide mixture containing 8 lbs NaPCP, 2 lbs acid equivalent butyl ester of 2,4-D, 2 pints Diesel oil, in 140 gallons water, applied 30 gallons per acre, gives good brush control. A pre-emergence spray of 25 lbs per acre NaPCP is required for elimination of weeds in legumes. Such a concentration is lethal to Cyperaceae, Amaranthus, Crolataria, Ipomea, Euphorbia hirta, Desmodium triflorum, Euphorbia prostata, and Lantana camara.

6 CA-4 is a contact herbicide containing PCP and an aromatic distillate. CADE when mixed with TCA is more effective than either alone. Mfd Dow (Dowicide G, 85% NaPCP); Monsanto (Santophen 20 and Santobrite, NaPCP). Cost 40% $.29 per pound.

Apply at rate of 4 lbs per acre. Mfd Naugatuck, costs $3.25 per lb.

(4) Alanap-3, a water soluble liquid containing 22% by weight N-1 naphthyl phthalamic acid as sodium salt. New 9.1 lbs per gallon; each gallon containing 2 lbs active alanap. Is selective herbicide for pre-emergence and post emergence weed control. Costs $4.75 per gallon. Mfd Naugatuck.

r. Hydrin, mixture of aromatic hydrocarbons with boiling range of 260° to 340°C, specific gravity of 1.006 to 24°C. Contact spray of 5 to 7 gal in 75 gal water per acre for smaller weeds, 15 to 20 gal in 100 gal for larger weeds. Directed contact spray in certain crops, 5 to 15 gal in 75 gallons water. Pre-emergence applications in certain large seeded crops at 15 to 20 gallons per acre without water.

s. Petroleum oils, the toxicity of oils appears to depend upon the presence of unsaturated hydrocarbons, the heavy aromatics being most effective as general weed killers. They are characteristically slow in their action and, therefore, termed "chronic" weed killers. In the case of oils of low toxicity, the toxicity may be increased by "fortifying" with phenolic compounds such as the dinitros or pentachlorophenol. Agronyl R, containing 40-50% aromatics (boiling range 450°-700°F) is a non-selective contact herbicide. Annual weeds and grasses killed, perennials retarded. Several applications necessary to kill the latter. Apply by spray at rate of 60 to 80 gal per acre at delivery rate 1.5 gal per minute at 50 lbs per square inch pressure. Agronyl A, lower in aromatics, is less effective than Agronyl R. Agronyl A can be fortified with 30 pounds of pentachlorophenol per 75 gallons of Agronyl A per acre for more effective use. Mobilsols 544B and 544C are effective herbicides but much more expensive than Agronyl R. The lighter oil fractions in boiling range of 150°C to 275°C are used to control broad-leaved weeds. Stove oil and trade-name napthas, ordinarily used as paint thinners and for dry cleaning, Kerosene and light fuel oils are not effective herbicides.

The warm and humid conditions which prevail in tropical

Guam encourage luxuriant growth of weeds and brush. Many herbicides at concentrations used in the temperate zone with good results are not applicable in the tropics because of continuous rapid growth, leaching of herbicides from soil, more rapid breakdown of herbicides as result of higher temperatures and greater microbiological action. Factors which determine choice of herbicide include cost, effectiveness, selectivity, and ease of mixing and spraying. Data on herbicide activity on Guam is limited to the summary herein. It would appear that Chloro IPC, Monuron, and Na PCP have potential as turf killers, mixtures of 2,4-D, 2,4,5-T, TCA, NaPCP and diesel oil, ammonium sulfamate and amino triozole as brush killers; and MCP Amine, Sodium Arsenite, and 2,4-D as selective weed killers in turf.

TO WHOM IT MAY CONCERN

Re: Johnston Atoll - Exposure to TCDD (DIOXIN) during military service

I have been asked to provide a professional opinion on the probability of dioxin (2,3,7,8-Tetrachlorodibenzo-*p*-dioxin or TCDD) exposure of US military personnel following the introduction and storage of Agent Orange (AO) onto the Johnston Atoll (Atoll). AO was a 50:50 mixture of two herbicides, 2,4-D and 2,4,5-T. The 2,4,5-T fraction contained the TCDD dioxin impurity generated during this herbicide's manufacturing process.

My understanding is (*pers. comm.,* CDF J. B. Wells U. S. Navy):

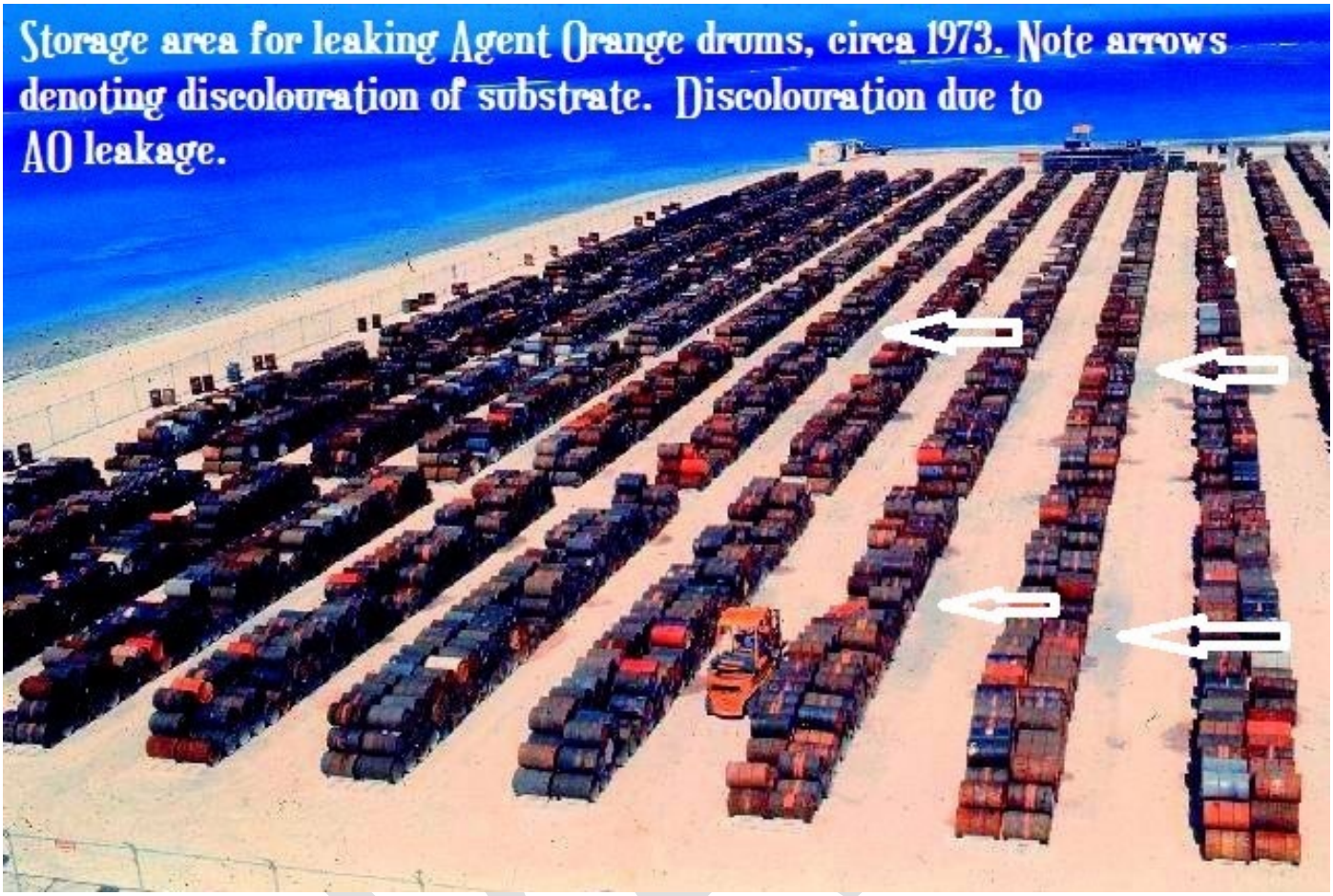
- The Atoll consists of four islands. Johnston (or Kalama) Island and Sand Island are both enlarged natural features, while *Akau* (North) and *Hikina* (East) are two artificial islands formed by coral dredging.

- The four islands compose a total land area of 2.67 square kilometres.

- AO was stored on the Atoll from 1972 to 1977. Steel barrels were placed on the beach in racks which were susceptible to corrosion resulting from salt air and water.

- 1,800,000 US gallons of AO were stored on the Atoll, equating to approximately 32,000 55 gallon barrels.

- AO leaked from the steel barrels onto the Atoll substrate (see photo below) and into the lagoon which was the source for the water desalinization plant.



- Contractor's clothes were washed in the same laundry as the military.

- There were common showers and latrine facilities.

- There were separate barracks for contractors and the military. However, there existed a common dining hall, clubs, hobby shops, chapel, par 3 golf course, ball fields, and movies.

- By the mid 70s the base was obsolete. Originally it served as a submarine fuel stop and a launch station for atmospheric nuclear tests. By the 70s, all US subs were nuclear with no additional atmospheric nuclear tests undertaken. The Atoll was abandoned in 2004, and is currently uninhabited.

My personal experience, regarding Agent Orange investigations, is summarizes in my CV (attached herewith). I served as the Chief Scientist on numerous scientific studies in Vietnam documenting the impact of Agent Orange/TCDD on local natural environments and associated human populations living near AO storage areas, and within and in close proximity to areas sprayed with AO. My tenure on these research programs extended from 1994 through 2006, with an advisory role following retirement. Continuation of my personal efforts regarding Agent Orange extend to the present day … 2020.

A highly significant fact involving TCDD is the persistence of this contaminant in the natural environment. Hatfield Consultant studies in the late 1990s involved the collection of ploughed-field soils in the A Luoi Valley; this being the A Shau Valley, named so during the conflict.

These agricultural fields were ploughed for agricultural purposes by local hill-tribes people a number of times per year. Within the Valley, *per se*, there were no industrial developments which may have generated 'confounding' variables as to the origin of TCDD. Our data showed that nearly 30 years following the cessation of hostilities, TCDD remained in the surface soils of these ploughed fields and unquestionably originated as a result of applications of AO during the conflict (*see* Hatfield Consultant studies).

Paustenbach *et al.* (1992) in his research, concluded that TCDD originating from AO can remain in soil for well over 100 years. On this basis, I have no hesitation stating that during the tenure of US military personnel living/working on the Atoll they were exposed to TCDD dioxin, as likely as not. I would venture to say that if samples of soils in the storage area were taken today, there is a very high probability TCDD would be detected.

There exist three avenues of dioxin entrance into the human body … inhalation, dermal absorption, and ingestion. In the case of inhalation, winds undoubtedly caused fine sediments in the storage area to be blown around the Atoll with military personnel breathing in fine particulates. The TCDD molecule is adsorbed onto fine particulate matter, which in turn can

be inhaled. Similarly, contaminated particulate matter settling on human skin could result in dermal absorption of dioxin into the body.

Contractor's clothes were laundered in the same facilities as military personnel. It is highly conceivable that during laundering, fine particulates from contractor's clothing could attach to military personnel clothing, thus promoting dermal absorption.

Given the lagoon, from which the desalination plant accepted bulk water, was the recipient of dioxin contaminated runoff from the AO storage area, there is high probability that dioxin-laden very fine sediments could escape the filtration system thus passing contaminated water to military personnel.

It is my contention that US military personnel serving on Johnston Atoll, the storage site of over 32,000 leaking drums of Agent Orange (and, of course, TCDD), were definitely exposed to TCDD through their activities on the Atoll. The route of contamination into the human body were potentially one or more avenues … inhalation of contaminated fine dust particles, dermal adsorption, and/or ingestion of contaminated desalinated water or food laden with fine airborne contaminated sediments.

The relative level of exposure cannot be ascertained given no quantitative data exist regarding environmental levels of TCDD within the perimeter of the Atoll.

My assessment is based solely on science and direct experience in Vietnam and Canada addressing TCDD contamination of the environment, food materials, human blood, and human breast milk. Various studies focussing on these topics may be perused in Hatfield Consultants reports.

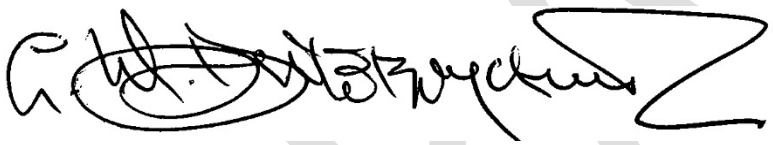
CITATIONS

Commander J. B. Wells U. S. Navy (Retired),
Attorney at Law,
Chairman of the Board and Director of Litigation,
Military-Veterans Advocacy, Inc.

Hatfield Consultants.
https://www.hatfieldgroup.com/services/contaminant-monitoring-agent-orange/hatfield-agent-orange-reports-and-presentations/

Paustenbach, *et al.*, 1992. Recent developments on the hazards posed by 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin in soil: Implications for setting risk-based clean-up levels at residential and industrial sites. Jour. of Toxicology and Environmental Health 36:103-149

With respect …



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