

The Importance of the IOM Report on C-123 Aircraft for Personnel of the Blue Water Navy

The implications of the January, 2015 Institute of Medicine (IOM) Report “Post-Vietnam Dioxin Exposure in Agent Orange–Contaminated C-123 Aircraft“ have far-reaching consequences because they deal with how the dioxin compound TCDD in Agent Orange was spread around in both time and location. The Report accounts for how Air Force Reservists were exposed to TCDD years after the Vietnam War ended and in several locations within the continental United States (CONUS). It examines the most plausible methods of later exposure and the timing of later exposure. There is nothing in the report that excludes an exposure scenario for contaminated objects that may have left the shores of Vietnam much earlier than the departure of the C-123 aircraft. Contaminated objects may have left Vietnam as early as their day of exposure during the War. Those objects would then have had at least the same possibility of exposing personnel who came within the influence of their physical location.

The methodology and assumptions used by the IOM in defining the aircraft as ‘contaminated objects’ coincide with the in-country exposure of many inanimate objects, including dirt that was sprayed or otherwise absorbed TCDD, and there is no “information to invalidate” this expansion of the original suppositions used. In fact, it is quite logical and reasonable.

Given the “plausible scenarios” used by the IOM in their earlier report on the “Blue Water Navy Veterans and Agent Orange Exposure,” this newly articulated information provides a well-reasoned basis to expand the concept of contamination with alternative scenarios that explain how the contamination of the Seventh Fleet actually occurred. It contradicts nothing within the original report and strongly supports other means of exposure not considered in the original report. However, exposure by contact with contaminated objects was mentioned in The Blue Water Navy Association's (BWNA) [“A Re-Analysis of Blue Water Navy Veterans and Agent Orange Exposure” published 12 June 2013.](#) The conclusions of this new IOM Report on the C-123 Aircraft validate the BWNA’s assumptions and further clarify the argument that all the ships of the Seventh Fleet were contaminated by objects moving from the mainland to the outlying ships, exposing everyone onboard each Fleet vessel.

We now know that contaminated objects existed, and that they left the mainland of Vietnam. It would be absurd to limit contaminated objects to the C-123 aircraft and to limit the movement of TCDD to objects only available years after their contamination.

I believe that a careful reading of the January 2015 IOM Report provides the smoking gun that accounts for the thousands of Agent Orange exposed veterans of the Blue Water Navy.

The report addresses effects of TCDD off the mainland of Vietnam;

The report addresses the toxicity of TCDD as persistent through time;

The report addresses contamination by TCDD of inanimate objects;

The report gives a clear scenario of the effects of TCDD on humans who interacted with contaminated objects.

Although the report addresses exposure occurring years after the end of the Vietnam War, it provides the logical basis for contemporaneous exposure by contaminated objects.

In both the scenarios of the Air Force Reservists and the Blue Water Navy personnel, the measurements and accountings of the exposure are based on data collected well after the actual exposure occurred.

What Can We Take Away From the IOM's 2015 Report on the C-123 Airplanes?

1. The C-123 aircraft were contaminated with TCDD when they left mainland Vietnam.
2. No estimates can be given regarding the degradation on the exterior of the planes by photolysis (exposure to sunlight) although this is known to happen over time. The exact process involved is poorly understood and rife with contradicting opinions. Any statement regarding how fast or how slowly this took place is purely conjecture, not backed by any known science.
3. All information from “the military or [those] associated with VA tend to minimize the possibility of an increased risk of exposure and adverse health outcomes...” These sources claimed that TCDD reached a point when it ceased its ability to contaminate. Contradicting that belief, the IOM states: “it is now accepted in the field of exposure science that the phyiochemical properties of semi-volatile organic compounds (SVOCs) like TCDD keep them in dynamic flux toward equilibrium” in all forms and from all surfaces and sources. In other words, no matter how diminished the toxicity of TCDD is, the physical properties of the chemical structure of TCDD are such that they will continue to give off molecular level contamination that can be absorbed by the skin, inhaled or ingested.

This finding totally invalidates the VA's attempt to establish blockades such as a “Bio-Availability Factor” that would limit TCDDs ability to expose a person at any state of its presence and shows this to be absolutely wrong.

4. Tests for the presence of active TCDD on sun-protected surfaces of the C-123 aircraft, regardless of their high unreliability, nonetheless show that levels within the C-123s were above internationally acknowledged “safe levels” and that the certainty of these high levels come from observations and testing done from 20 year to 34 years after the end of the Vietnam War (in 1975), which was the most extreme end-time when these aircraft had the opportunity to be actively contaminated with new sources of TCDD.
5. The entire set of conclusions within the IOM report is built on “plausible scenarios” rather than on known fact and science, because no quantifiable data beyond the questionable testing done many years after the War. Nonetheless, “the Committee states with confidence that the AF Reservists *were exposed.*” (Emphasis from the Report). This is true because tests at Date X can be assumed to represent levels that existed at any point in time preceding Date X. (In other words, if a measurement is made, the level of measurement could not have been lower at an earlier time, and must have previously been at least as high as the measurement made at a later date.)

6. Regardless of the uncertain nature of the Committee's qualitative assumptions, the Committee gained confidence in their conclusions because it “did not find information to invalidate any of the reported measurement data.”
7. Regarding the contaminated equipment used during and up to ten years after the Vietnam War, the toxic residues were “available for transfer by dermal contact, inhalation and ingestion.” Just being around the equipment was dangerous to one's health.

What Analogous Scenarios Can Be Assumed From This Data?

1. Equipment that was exposed to Agent Orange/dioxin (TCDD) could have remained contaminated for years following exposure, even if it left the mainland. This was especially true of objects that were not exposed to the sun. Good examples of this would include the interiors of objects.
2. It can also be postulated that dirt that was contaminated by Agent Orange could have contained highly toxic levels of dioxin, especially very shortly after contamination. If this dirt was turned into mud, for example, all but its exterior surface could have held toxic levels of TCDD for years after the original contamination. The outer surfaces could have suffered some bit of degradation due to photolysis (exposure to sunlight). When this mud was washed, scraped and cleaned off equipment, the toxic levels of TCDD present in the dirt presented nearly-identical “plausible scenarios” for exposure to those around it, not just those who directly handled it.
3. The probability that contaminated equipment remained toxic for days or weeks after initial exposure is a logical corollary to the IOM's findings; if it was contaminated at a later date, it must have been at least that contaminated at an earlier date. Items carried from the mainland to the ships at sea represent a highly probable “plausible pathway of exposure.” There was a steady flow of items taken from shore to the ships for repair or returned from land-based repair facilities back to the ships.
3. Aircraft carriers had multiple COD flights, often several daily, departing from the ship to air bases such as at Da Nang, to pick up people, supplies and equipment that may well have been contaminated with TCDD. Da Nang Air Base was a primary Ranch Hand Operation location and the dirt area off the north runway immediately adjacent to the Ranch Hand storage and loading area remained contaminated and a source of exposure to the Vietnam People until an intensive decontamination and remediation project was begun after the year 2000.

I propose that a major source of contamination of the Seventh Fleet, perhaps equaling or surpassing the probability of contamination by water distillation, was from the constant movement of dioxin-contaminated items from the mainland Vietnam to the ships at sea, including those whose locations were much further from shore than the Territorial Sea limits. Specifically, the major points of material distribution were the air craft carriers, who dispatched daily COD flights to bring contaminated people, materials and supplies back to their decks. (Additionally, per the “Dioxin On The Carriers” Report, the planes themselves brought back contamination clinging to their outer

skin). From there, further distribution was made to the carrier task force that included Destroyers and Supply Ships. It was the responsibility of the carriers to keep the people, material and supplies moving within their assigned accompaniment of ships. Carriers were not the sole source of supplies to their accompaniment, but they represented the hub of constantly moving contaminated people and materials directly from the mainland to the smaller ships, such as mail, all of which originated on the mainland of Vietnam.

What Data is Available?

We know the soil at the north end of the Da Nang Air Base runway was contaminated during the war because in August, 2012, nearly four decades after the end of that war, the US Agency for International Development (USAID) began a decontamination project involving 45,000 cubic meters of contaminated soil. Data gathered between 1998 and 2007 indicated that the TCDD toxicity levels in the soil at the former Mixing and Loading Area for the Ranch Hand Operation was 365 times higher than the maximum acceptable global standard. That would mean that by the end of Ranch Hand operations near the end of the Vietnam War, levels of toxicity were likely to be at least that high, and remained at least that high until testing for this project was done almost 40 years later. This is nearly a perfect analogy to the situation with the C-123 aircraft, which were determined to be contaminated by testing done well after the end of the War. Information on this soil contamination can be found in a Hatfield Consultants Report, "Comprehensive Assessment of Dioxin Contamination in Da Nang Airport, Viet Nam: Environmental Levels, Human Exposure and Options for Mitigating Impacts, *Final Report*," dated November 2009.

The implication is twofold: the dirt just off the north end of the Da Nang Air Base runway that blew around the airfield and blew just down the runway to the Fleet Support Unit facilities, was highly toxic. Material, supplies and people waiting to be flown out to the carriers waited out on the open runway where the daily COD flights loaded these dusty items on-board and flew them directly to the carrier decks; dirt from the north runway location was so highly toxic that anyone exposed to even the slightest modicum meant receiving a toxic dose at least two hundred times higher than what is currently seen as the globally accepted "safe level" for dioxin exposure. It should be remembered that there was active spraying of toxic herbicide in Vietnam from about 1962 until 1973 or later. The accumulation of toxicity over that time period has profound implications on how much and how often equipment that was contaminated might have been carried out to the aircraft carriers when transport of objects occurred on a daily basis.

All areas that underwent spraying are sources of contaminated dust and debris that was stirred up by the movement of troops, by explosions and by the natural forces of wind and rain. The burning of the sprayed jungle by multiple causes including napalm sent contaminated particles into the air on a very regular basis. The distance these wind-blown particles, in addition to wind-drifting spray droplets is hundreds of miles, with several research projects showing wind-borne transport more than 1,000 miles.

Elsewhere in Vietnam, attention was given to the residuals in the water itself. An article from the Russian Journal of Marine Biology, titled "Present-Day State of Coral Reefs of Nha Trang Bay

(Southern Vietnam) and Possible Reasons for the Disturbance of Habitats of Scleractinian Corals,” which was published in 2004, clearly tells us that:” the spectrum and distribution pattern of persistent congeners of PCDD/Fs (dioxins) in bottom sediments are similar to those of the defoliant ‘Agent Orange’ and that the bottom sediments are toxic and display photo inhibition and a mutagenic effect. The bottom of the bay is heavily silted throughout its depth. Many large dead colonies of corals without mechanical damage were observed everywhere. The total coverage by live corals in all sites investigated does not exceed 30%. Although, without a doubt, many factors contributed much to the disturbance of the bay ecosystems, the actual trigger for the degradation of the coral reefs seems to be the input of dioxin-containing chemicals used as defoliants during the American-Vietnamese war (Vietnam War).” In other words, there was Agent Orange-dioxin in the water to the extent that it had killed nearly 70% of coral life in the Nha Trang Bay area. Nha Trang is between Da Nang Harbor (which we now know about) and Vung Tau Harbor, where the majority of Agent Orange shipped in by commercial ships was unloaded. To say that the dioxin was not in the offshore waters is clearly in error.

Conclusion

By the same logic that was applied to the investigation of the C-123 aircraft, it appears there is clear evidence that movement of contaminated people, supplies, materials and other equipment occurred between mainland Vietnam locations and the aircraft carriers of the Seventh Fleet, who were generally stationed further from shore than the Territorial Waters. Evidence also exists to support the theory that the water offshore Vietnam was contaminated with dioxin, bolstering the theory that the desalination of such water contaminated the desalination process of ships at least within the Territorial Seas.

Given this evidence, there is no question that passage of HR-969 and S-681 is scientifically warranted. The legislation will provide the presumption of exposure to Blue Water Navy personnel of the Seventh Fleet offshore Vietnam.

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June 8, 2015
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