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## Air Force Health Study of Ranch Hand Personnel Why the Final Report Released in July 2005 Qualifies as “Bad Science”

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**AIR FORCE DATA:** Significant cancer *data and results generated as part of the Air Force Health Study were left out of the final report.* See for example:

- ❑ The manuscript by Akhtar, Garabrant, and Michalek entitled “Cancer in US Air Force Veterans of the Vietnam War” dated 27 March 2003. The findings were “***consistent with an association between cancer and both service in Vietnam and dioxin exposure.***”
- ❑ The manuscript by Pavuk, Michalek, Schecter, Ketchum, Akhtar, and Fox entitled “Did TCDD Exposure or Service in Southeast Asia Increase the Risk of Cancer in Air Force Vietnam Veterans who did not Spray Agent Orange?” dated 27 December 2004. The authors concluded that “***all sites cancer risk increased with TCDD***” (dioxin) and “***TCDD and years of Southeast Asia service interacted with all sites cancer; the risk was greatest in those with highest TCDD levels and the longest time served in Southeast Asia.***”
- ❑ The presentation by Joel Michalek entitled “Air Force Health Study Update” on 10 June 2005. The data presented demonstrated, among other things, that “***calendar period of service, spray days, and years served in Southeast Asia are effect modifiers of the relation between dioxin and SEER cancer.***”

**PURPOSEFUL EXCLUSION:** The data omissions were unquestionably intentional, since the Ranch Hand Advisory Committee at its meeting of 19 November 2004 recommended that ***all Air Force Health Study cancer data and results should be included in the final report.***

**RESEARCH INTEGRITY ISSUES:** Well established scientific standards were circumvented by omitting Air Force Health Study data and results from the final report. ***Federal guidelines on research misconduct define specific concerns.*** See for example:

- ❑ 42 CFR Part 93—Public Health Service Policies on Research Misconduct. Falsification is one of three categories of research misconduct: “***Falsification is*** manipulating research materials, equipment, or processes, or changing or ***omitting data or results such that the research is not accurately represented in the research record***” [93.103(b)]. The purposes of 42 CFR 93 include to “promote the integrity of PHS supported research and the research process, and conserve public funds.” Research integrity is a primary issue; conserving public funds is as well.
- ❑ Veterans Health Administration Research Misconduct Handbook 1058.2. Falsification under the definition of research misconduct is identical to the PHS language above: “***Falsification is*** manipulating research materials, equipment, or processes, or changing or ***omitting data or results such that the research is not accurately represented in the research record***” [3.a.(3)].

**CONCLUSIONS:** The omission of cancer data and results from the Air Force Health Study of Ranch Hand personnel means that the research conducted by the Air Force “is not accurately represented in the research record.” This is confirmed in a VA Agent Orange Review – Vol. 22, No. 1, October 2005 – where the Air Force Health Study was summarized. It states that the “***results do not suggest that herbicides or dioxin exposure are related to cancer in these veterans.***” That is contrary to the Air Force results noted above.

Scientific research is an exploratory process of hypothesis testing where analyses evolve as data and results accrue. The Air Force Health Study didn’t evolve, at least not as conveyed in the final report. Moreover, the study may have been flawed from the outset by including individuals in the control cohort (20-30%) who were stationed in Vietnam. Fortunately, the announcement on 24 February 2006 by the National Academy of Science’s Institute of Medicine that “Ranch Hand Study Data and Materials Merit Further Study and Should Be Transferred to New, Active Management” offers hope. Good science may yet win out.

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