

# 4<sup>th</sup> International Conference and Exhibition on **Biometrics & Biostatistics**

November 16-18, 2015 San Antonio, USA



## **Joel E Michalek**

*University of Texas Health Science Center at San Antonio, USA*

### **Agent Orange exposure and monoclonal gammopathy of undetermined significance: A Ranch Hand Veteran cohort study**

Multiple myeloma has been classified as exhibiting “limited or suggestive evidence” of an association with exposure to herbicides in Vietnam Veterans. Occupational studies have shown that other pesticides (i.e., insecticides, herbicides, fungicides) are associated with excess risk of multiple myeloma (MM) and its precursor state, monoclonal gammopathy of undetermined significance (MGUS); however no studies have uncovered such an association in Vietnam Veterans. Our objective was to examine the relationship between MGUS and exposure to Agent Orange, including its contaminant 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), in Vietnam Veterans. We conducted a prospective cohort study, testing for MGUS in serum specimens collected and stored in 2002 by the Air Force Health Study (AFHS). The relevant exposure data collected by the AFHS was also used. We tested all specimens in 2013 without knowledge of the exposure status. The AFHS included former US Air Force personnel who participated in Operation Ranch Hand (Ranch Hand Veterans) and other US Air Force personnel who had similar duties in Southeast Asia during the same time period but were not involved in herbicide spray missions (comparison Veterans). We included 479 Ranch Hand Veterans and 479 comparison veterans who participated in the 2002 follow-up examination of AFHS. Agent Orange and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD, a contaminant of Agent Orange) measured on a lipid weight basis in serum in 1985, 1987, 1992, 1997, and 2002. The prevalence of MGUS in Ranch Hand Veterans (7.1%) was higher in comparison to Veterans (3.1%) (adjusted OR=2.37, 95% CI, 1.27-4.44; P=0.007). The cohort status was significantly (P=0.0001) associated with TCDD levels: 47% of Ranch Hand Veterans had serum TCDD levels >10.92 ppt compared to 2.5% of comparison Veterans. Ranch Hand Veterans have a significantly increased risk of MGUS, supporting an association between Agent Orange exposure and multiple myeloma.

#### **Biography**

Joel E Michalek completed his PhD from Wayne State University. He has a broad background in biostatistics pertaining to theory and methods, preclinical and clinical trials, and epidemiology. He has written protocols and grants, analyzed data, and co-authored manuscripts arising from clinical studies in surgery, emergency medicine, cancer, and pediatrics. He was formerly Principal Investigator of the Air Force Health Study, a 20-year prospective epidemiological study of veterans who sprayed Agent Orange and other herbicides in Vietnam. He has authored 180 journal articles and two book chapters.

[michalekj@uthscsa.edu](mailto:michalekj@uthscsa.edu)