# Exposure to Agent Orange linked to prostate cancer in Vietnam veterans

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**(SACRAMENTO, Calif.) — UC Davis Cancer Center physicians today released results of research showing that Vietnam War veterans exposed to Agent Orange have greatly increased risks of prostate cancer and even greater risks of getting the most aggressive form of the disease as compared to those who were not exposed.**

The findings, which appear online now and will be published in the September 15 issue of the journal Cancer, are the first to link the herbicide with this form of cancer. The research is also the first to utilize a large population of men in their 60s and the prostate-specific antigen (PSA) test to screen for the disease.

"While others have linked Agent Orange to cancers such as soft-tissue sarcomas, Hodgkin's disease and non-Hodgkin's lymphoma, there is limited evidence so far associating it with prostate cancer," said Karim Chamie, lead author of the study and resident physician with the UC Davis Department of Urology and the VA Northern California Health Care System. "Here we report on the largest study to date of Vietnam War veterans exposed to Agent Orange and the incidence of prostate cancer."

Chamie also said that, unlike previous studies that were either too small or conducted on men who were too young, patients in the current study were entering their prime years for developing prostate cancer. There was also the added advantage that it was conducted entirely during the era of PSA screening, providing a powerful tool for early diagnosis and tracking of prostate cancer.

More than 13,000 Vietnam veterans enrolled in the VA Northern California Health Care System were stratified into two groups — exposed or not exposed to Agent Orange between 1962 and 1971. Based on medical evaluations conducted between 1998 and 2006, the study revealed that twice as many men exposed to Agent Orange were identified with prostate cancer. In addition, Agent Orange-exposed men were diagnosed two-and-a-half years younger and were nearly four times more likely to present with metastatic disease. Other prostate cancer risk factors — race, body-mass index and smoking — were not statistically different between the two groups.

"Our country's veterans deserve the best possible health care, and this study clearly confirms that Agent Orange exposure during service in Vietnam is associated with a higher risk of prostate cancer later in life," said Ralph deVere

White, UC Davis Cancer Center director and a study co-author. "Just as those with a family history of prostate cancer or who are of African-American heritage are screened more frequently, so too should men with Agent Orange exposure be given priority consideration for all the screening and diagnostic tools we have at our disposal in the hopes of early detection and treatment of this disease."

Now a banned chemical, Agent Orange is a combination of two synthetic compounds known to be contaminated with the dioxin tetrachlorodibenzo-para-dioxin (TCDD) during the manufacturing process. Named for the color of the barrel in which it was stored, Agent Orange was one of many broad-leaf defoliants used in Vietnam to destroy dense forests in order to better visualize enemy activity.

It is estimated that more than 20 million gallons of the chemicals, also known as "rainbow herbicides," were sprayed between 1962 and 1971, contaminating both ground cover and ground troops. Most of the rainbow herbicide used during this time was Agent Orange. In 1997, the International Agency for Research on Cancer reclassified TCDD as a group 1 carcinogen, a classification that includes arsenic, asbestos and gamma radiation.

*The study was funded by the UC Davis Cancer Center. In addition to Chamie and deVere White, study authors were Bryan Volpp, associate chief of staff, clinical informatics, VA Northern California Health Care System; Dennis Lee and Joon-ha Ok, UC Davis resident physicians with the Department of Urology; and Lars Ellison who, at the time the study was conducted, was an assistant professor with UC Davis and chief of urology with the VA Northern California Health Care System. Ellison is now affiliated with the Penobscot Bay Medical Center in Maine and a major in the U.S. Army Reserve currently serving active duty in Iraq. A copy of the study can be requested by e-mailing Amy Molnar at amolnar@wiley.com.*

*Prostate cancer is the second most common malignancy and the second leading cause of cancer death in American men. It is estimated that there will be about 186,320 new cases of prostate cancer in the United States in 2008 and about 28,660 men will die of the disease this year.*

*Designated by the National Cancer Institute, UC Davis Cancer Center is leading the way in identifying the molecular pathogenesis of carcinoma of the prostate, enhancing therapeutic response and identifying chemopreventions. For more information;*

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