

[Prostate Cancer Prostatic Dis.](#) 2013 Sep 10. doi: 10.1038/pcan.2013.33. [Epub ahead of print]

## **High level of dioxin-TEQ in tissue is associated with Agent Orange exposure but not with biochemical recurrence after radical prostatectomy.**

[Li Q](#), [Lan L](#), [Klaassen Z](#), [Shah SR](#), [Moses KA](#), [Terris MK](#).

### **Source**

Section of Urology, Charlie Norwood Veterans Affairs Medical Center and Section of Urology, Georgia Regents University, Augusta, GA, USA.

### **Abstract**

**Background:** Agent Orange (AO) was previously identified as a significant risk factor for biochemical recurrence (BCR) after radical prostatectomy (RP) in prostate cancer patients. In this study, we determined the levels of dioxin biological toxicity using toxic equivalency (TEQ) values and examined the impact of dioxin-TEQ level on BCR. **Methods:** A total of 93 men who underwent RP, with a median of 5.3 years of postoperative follow-up, were included in the study. The dioxin-TEQ level of each patient was measured using intraoperatively harvested abdominal subcutaneous fat. The dichotomous categorization of dioxin-TEQ by the 50th percentile (low < 50% vs high  $\geq$  50%) was also used to regroup the patient cohort, regardless of the previous history of AO exposure. Comparisons between the dioxin-TEQ levels, clinicopathological characteristics and BCR in AO-exposed and -unexposed men were made to allocate possible risk factors. The multivariable logistic regression model was used to identify significant risk factors associated with BCR, adjusting for other confounding factors. **Results:** The median dioxin-TEQ level in 37 AO-exposed patients was significantly higher than that in 56 unexposed patients (22.3 vs 15.0 pg g<sup>-1</sup> fat, respectively,  $P < 0.001$ ). The men with AO exposure were more likely to have a high dioxin-TEQ level ( $P < 0.001$ ). Neither AO exposure nor the level of dioxin-TEQ was associated with BCR. Tumor stage (T3/T4 vs T2) and Gleason grade (Gleason  $\geq$  3+4) were independent risk factors for BCR after RP. **Conclusions:** Exposure to AO significantly increases the adipose level of dioxin-TEQ in patients treated with RP. However, exposure to AO or a high dioxin-TEQ level was not associated with an increased risk of BCR after RP. This lack of association supports

the current conclusion that the evidence of carcinogenicity of AO in prostate cancer patients is not sufficient and remains 'limited'. Prostate Cancer and Prostatic Disease advance online publication, 10 September 2013; doi:10.1038/pcan.2013.33.

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[Urol Nurs.](#) 2013 Mar-Apr;33(2):87-90, 99.

## **Urologic cancer risks for veterans exposed to Agent Orange.**

[Hoenemeyer LA.](#)

### **Source**

Department of Urology, James A. Haley Veterans Administration Hospital, Tampa, FL, USA.

### **Abstract**

Agent Orange, an herbicide widely used during the Vietnam War, has been linked to various health risks, including urologic malignancy. Exposed veterans are at risk for prostate cancer and may be entitled to compensation if diagnosed with prostate cancer. Current research studies are aimed at mitigating prostate dysplasia and prostate cancer

[Cancer.](#) 2013 Jul 1;119(13):2399-404. doi: 10.1002/cncr.27941. Epub 2013 May 13.

## **Agent Orange as a risk factor for high-grade prostate cancer.**

[Ansbaugh N,](#) [Shannon J,](#) [Mori M,](#) [Farris PE,](#) [Garzotto M.](#)

### **Source**

Public Health and Preventive Medicine, Oregon Health and Science University, Portland, Oregon, USA.

### **Abstract**

#### **BACKGROUND:**

Agent Orange (AO) exposure (AOe) is a potential risk factor for the development of prostate cancer (PCa). However, it is unknown whether AOe specifically increases the risk of lethal PCa. The objective of this study was to determine the association between AOe and the risk of detecting high-grade PCa (HGPCa) (Gleason score  $\geq 7$ ) on biopsy in a US Veteran cohort.

#### **METHODS:**

Risk factors included clinicodemographic and laboratory data from veterans who were referred for an initial prostate biopsy. Outcomes were defined as the presence versus the absence of PCa, HGPCa, or low-grade

PCa (LGPCa) (Gleason score  $\leq 6$ ) in biopsy specimens. Risk among AOe veterans relative to unexposed veterans was estimated using multivariate logistic regression. Separate models were used to determine whether AOe was associated with an increased risk of PCa, HGPCa, or LGPCa.

### **RESULTS:**

Of 2720 veterans who underwent biopsy, PCa was diagnosed in 896 veterans (32.9%), and 459 veterans (16.9%) had HGPCa. AOe was associated with a 52% increase in the overall risk of detecting PCa (adjusted odds ratio, 1.52; 95% confidence interval, 1.07-2.13). AOe did not confer an increase in the risk of LGPCa (adjusted odds ratio, 1.24; 95% confidence interval, 0.81-1.91), although a 75% increase in the risk of HGPCa was observed (adjusted odds ratio, 1.75; 95% confidence interval, 1.12-2.74). AOe was associated with a 2.1-fold increase (95% confidence interval, 1.22-3.62;  $P < .01$ ) in the risk of detecting PCa with a Gleason score  $\geq 8$ .

### **CONCLUSIONS:**

The current results indicated that an increased risk of PCa associated with AOe is driven by an increased risk of HGPCa in men who undergo an initial prostate biopsy. These findings may aid in improved PCa screening for Vietnam-era veterans.

[Environ Health Prev Med](#). 2013 Sep;18(5):356-60. doi: 10.1007/s12199-013-0330-1. Epub 2013 Mar 23.

## **The relationship between Agent Orange and prostate specific antigen: a comparison of a hotspot and a non-sprayed area in Vietnam.**

[Sun X](#), [Kido T](#), [Okamoto R](#), [Manh HD](#), [Hoang NV](#), [Nakano M](#), [Koh E](#), [Maruzeni S](#), [Nishijo M](#), [Nakagawa H](#), [Suzuki H](#), [Honma S](#), [Nhu DD](#), [Hung NN](#), [Son le K](#).

### **Source**

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### **Abstract**

#### **OBJECTIVES:**

The aim of this study was to explore the impact of Agent Orange exposure for prostate cancer with a comparison of the prostate specific antigen (PSA) levels between a hotspot and a non-sprayed area.

#### **METHODS:**

The study was conducted in Phu Cat district (hotspot) and Kim Bang district (non-sprayed), with a total of 101 men in the hotspot and 97 men in the non-sprayed area older than 50 years of age. About 5 mL of whole blood and a health status questionnaire were collected from each subject in August 2009-2011.

## **RESULTS:**

The mean age of the subjects in the hotspot (68.0 years old) was significantly higher than that of those in the non-sprayed area (65.0 years old). No significant difference was found between the hotspot area (0.93 ng/mL) and the non-sprayed area (0.95 ng/mL) in terms of PSA levels. Likewise, this was not statistically significant after adjusting for age. The prevalence of high PSA levels (>3 ng/mL) did not differ significantly between the hotspot (14 men; 13.9 %) and non-sprayed area (9 men; 9.3 %). No significant difference was found between the hotspot area and the non-sprayed area in terms of occupation (farmer and others). In control subjects, no significant difference was found between the PSA levels in subjects exposed to Agent Orange and non-exposed subjects. Likewise, no significant difference was found between the PSA levels of combatants and civilians.

## **CONCLUSION:**

The PSA levels were not significantly different between the hotspot and the non-sprayed area.

*Cancer*. 2008 Nov 1;113(9):2464-70. doi: 10.1002/cncr.23695.

## **Agent Orange exposure, Vietnam War veterans, and the risk of prostate cancer.**

Chamie K, DeVere White RW, Lee D, Ok JH, Ellison LM.

### **Source**

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### **Abstract**

#### **BACKGROUND:**

It has been demonstrated that Agent Orange exposure increases the risk of developing several soft tissue malignancies. Federally funded studies, now nearly a decade old, indicated that there was only a weak association between exposure and the subsequent development of prostate cancer. Because Vietnam War veterans are now entering their 60s, the authors reexamined this association by measuring the relative risk of prostate cancer among a cohort of men who were stratified as either exposed or unexposed to Agent Orange between the years 1962 and 1971 and who were followed during the interval between 1998 and 2006.

#### **METHODS:**

All Vietnam War era veterans who receive their care in the Northern California Veteran Affairs Health System were stratified as either exposed (n=6214) or unexposed (n=6930) to Agent Orange. Strata-specific incidence rates of prostate cancer (International Classification of Diseases, 9th Revision code 185.0) were calculated. Differences in patient and

disease characteristics (age, race, smoking history, family history, body mass index, finasteride exposure, prebiopsy prostate-specific antigen (PSA) level, clinical and pathologic stage, and Gleason score) were assessed with chi-square tests, t tests, a Cox proportional hazards model, and multivariate logistic regression.

**RESULTS:**

Twice as many exposed men were identified with prostate cancer (239 vs 124 unexposed men, respectively; odds ratio [OR], 2.19; 95% confidence interval [95% CI], 1.75-2.75). This increased risk also was observed in a Cox proportional hazards model from the time of exposure to diagnosis (hazards ratio [HR], 2.87; 95% CI, 2.31-3.57). The mean time from exposure to diagnosis was 407 months. Agent Orange-exposed men were diagnosed at a younger age (59.7 years; 95% CI, 58.9-60.5 years) compared with unexposed men (62.2 years; 95% CI, 60.8-63.6 years), had a 2-fold increase in the proportion of Gleason scores 8 through 10 (21.8%; 95% CI, 16.5%-27%) compared with unexposed men (10.5%; 95% CI, 5%-15.9%), and were more likely to have metastatic disease at presentation than men who were not exposed (13.4%; 95% CI, 9%-17.7%) than unexposed men (4%; 95% CI, 0.5%-7.5%). In univariate analysis, distribution by race, smoking history, body mass index, finasteride exposure, clinical stage, and mean prebiopsy PSA were not statistically different. In a multivariate logistic regression model, Agent Orange was the most important predictor not only of developing prostate cancer but also of high-grade and metastatic disease on presentation.

**CONCLUSIONS:**

Individuals who were exposed to Agent Orange had an increased incidence of prostate cancer; developed the disease at a younger age, and had a more aggressive variant than their unexposed counterparts. Consideration should be made to classify this group of individuals as 'high risk,' just like men of African-American heritage and men