A number of recent claims and appeals have focused on exposure to TCDD via evaporatively-distilled drinking water from Vietnamese estuarine and coastal waters. The following information appeared yesterday on the web. As it may be useful background information for Advocates, forwarded FYI and distribution through you networks. Richard Kelloway

Agent Orange

In December 2002 the DVA commissioned a report titled "Examination of the Potential Exposure of RAN Personnel to Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans via Drinking Water. A report to the Department of Veteran Affairs, Australia." The report is long and very detailed, but in short it proves that members of the Ship's Companies of RAN ships deployed to Vietnam waters during the war were exposed to the 'Agent Orange' toxins at unacceptable levels by consuming potable water which had been produced by evaporative distillation of estuarine Vietnamese Waters.

The report, in the main, has not been challenged by DVA. In point of fact, flowing from the report a number of Statement of Principles (SOPs) have been rewritten to reflect the contents of the report and others are under review.

However, further matters are yet to be taken into account and placed in context within the report. If water contaminated with 2,3,7,8-tetrachlorodibenzodioxin (TCDD, the main contaminant in "Agent Orange") is put through the evaporators it will co-distill at rates of 38% > 95% with the first 10% of the water distilled. (The presence of TCDDs in the waters off South Vietnam has been reliably established by the research of Baughman & Meselson

1973, into the TCDD concentration in fish in South Vietnam, an estimate of the fish lipid concentration of 2.5%) So the distillation process picks up the 2,3,7,8tetrachlorodibenzodioxin present in the source water (the brown estuarine water) and puts it in drinking water tanks (portable water) with the drinking water. The water returned to the estuarine water around the ship is then relatively free of TCDDs as most of the TCDDs are now in the water tanks and the normal ebb and flow of the estuary provides more contaminated water to the evaporator intakes in the ship's hull.

Fresh water obtained from the distillation of contaminated brown estuarine water was used exclusively as drinking water and fresh water obtained from the distillation of clean 'blue sea water' offshore was reserved as feed water for the boilers.

TCDDs co-distill at a greater rate the less turbid (less suspended solids) the water is. Codistillation rates for water taken from the Brisbane River were in the order of 48 > 60% for the first 10% of water distilled. I don't recall the visibility at Vaung Tau being as bad as the Brisbane River, so the co-distillation % could be expected to be higher at the Vaung Tau anchorages.

The regular spraying of the mangroves in the Vaung Tau anchorage with Agent Orange would suggest that TCCDs in the anchorage area would be greater than the results of the research of Baughman & Meselson 1973, into the TCDD concentration in fish in South Vietnam would suggest.

The report points out that as this is the "potable water" it was used for drinking, showering and cooking. So it was eaten, drank and washed in. The thing not mentioned in the report is that cloths were also washed in it. If the contaminant TCDDs remain in

the cloths after drying it is possible that in the hot and humid environment on deck in Vietnam and the even hotter conditions in boiler rooms, the TCDDs could have "aero soled" and become a respiratory danger as well as being in close contact with the skin when the skin is hot and sweaty with open pores.

The DVA has held meetings to investigate whether health problems affecting the personnel who served onboard HMAS SYDNEY and The Escorts could be connected with toxins directly digested into their bodies through the food and water supplies. The mortality rate amongst all veterans is 1.07% which means it's 7% higher than the general population in the relevant age groups. The study was carried out by the National Research Centre for Environmental Toxicology and the Queensland Health Services for the Department of Veterans Affairs. It was found that Prostrate Cancer (1.53% or 53% higher than the average) and Lung Cancer (1.29% or 29% higher than the average) are the main points and concern dioxins have been directly linked to these diseases. The breakdown amongst the services became even more surprising: ARMY 1.00% considering their supposed fitness level it should have been 0.94% RAAF 1.12% 12% above average RAN 1.37% 37% above the average So the navy became the main focus of most concern then the breakdown in areas of service in South Vietnam incurred to some extent more surprises:

Clearance Drivers	1.76%	76% higher than average
SYDNEY & ESCORTS	1.45%	45% " " "
Gun line	1.23%	23% " " "
RAN Helo Flight	1.20%	20% " " "
Other RAN	.35%	65% lower than expected

The distribution of navy figures when reviewed against the tasks undertaken and the geographical locations of the tasks clearly shows that exposure to the dioxins is directly linked to the marine

environment in which the RAN assets were operating during the Vietnam Era. (i.e. divers spending more time in and under the water)

I am indebted to Dr Roderick Bain MBBS FRCA FANZCA, RSL NSW State Vice President (Southern Country) and RAN Medical Officer (Rtd) for his information regarding Exposure to Agent Orange linked to prostate cancer in Vietnam Veterans by the University of California Davis Health, the University of California Davis Health System is reproduced here in full as available on the Universities Web Site.

Public release date: 5-Aug-2008 Contact: Karen Finney karen.finney@ucdmc.ucdavis.edu

REFERENCE: University of California Davis Health System SACRAMENTO, Calif.)

UC Davis Cancer Centre 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 de Vere White, UC Davis Cancer Centre 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-paradioxin (TCDD) during the manufacturing process. Named for the colour 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 Centre. In addition to Chamie and De Vere White, study authors were Bryan Volpp, associate chief of staff, clinical informatics, VA Northern California Health Care System; Dennis Lee and Joonha 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 Centre 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 emailing 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 Centre is leading the way in identifying the molecular pathogenesis of carcinoma of the prostate, enhancing therapeutic response and identifying chemoprevention. For more information; Visit: www.ucdmc.ucdavis.edu/cancer.