Name:

SSN:

Date:

Date of Birth:

Sex: male

Dates of military service:

Dates of service at Camp Lejeune:

The following report was based on record review.

Reviewer:

Member, Subject Matter Expert Panel

Camp Lejeune Contaminated Water Project

Time Dedicated to this review: XX Minutes

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Contention, the veteran claims the following condition as secondary to exposure to CLCW:

Contention 1:

Diagnosis:

Nexus: The diagnosis above Choose an item.

**Case Specific Discussion**:

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Claims file and other available evidence of record was review, applicable evidence is summarized below:

**VBMS/Claims file review:**

**VistaWeb/CAPRI/VVA review:**

**Other possible risk factors**:

Employment history prior to military service:

Smoking:

Alcohol use:

Obesity:

Genetic:

Employment history after military service:

Hobbies/ recreational leading to possible chemical exposure:

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**Disease Specific Discussion**:

Definition of thyroid cancer: Cancer that forms in the thyroid gland (an organ at the base of the throat that makes hormones that help control heart rate, blood pressure, body temperature, and weight). Four main types of thyroid cancer are papillary, follicular, medullary, and anaplastic thyroid cancer.

Estimated new cases and deaths from thyroid cancer in the United States in 2015: [1]

New cases: 62,450.

Deaths: 1,950.

About two-thirds of all cases are found in people between the ages of 20-55. The female to male ratio is 3:1.

Risk Factors:

* Family history of thyroid disease or thyroid cancer- the proportion of thyroid cancer accounted for by genetic factors was 53% which is higher than for any other form of malignancy [2]. The risk of developing papillary or follicular thyroid cancer is estimated to be 4 to 10 times higher for first degree relatives of a person with thyroid cancer than people in the general population.
* Genetic conditions such as familial medullary thyroid cancer (FMTC), certain multiple endocrine neoplasia syndromes, acromegaly, and familial adenomatous polyposis
* Exposure to radiation to the head and neck as a child or from an atomic bomb. The cancer may occur as soon as 5 years after exposure.
* History of goiter (abnormal enlargement of thyroid)
* Obesity
* Diabetes in women
* Being Asian

Literature review:

A review of the American Cancer Society, National Cancer Institute, Up-to-Date and Mayo Clinic sites failed to indicate a correlation between thyroid cancer and solvent. The NRC 2009 report does not list thyroid cancer as a potential health effect related to CLCW. The ATSDR site for Camp Lejeune and associated health effects linked with TCE, PCE, benzene and VC exposures does not list thyroid cancer as a known sequela of exposure.

Cancer Epidemiology and Prevention, 3rd Edition (2006) notes there are no established occupational chemical/solvent carcinogens related to thyroid cancer development. This was reiterated by the Textbook of Cancer Epidemiology, Second Edition (2008).

Wong, et al. reports an increased incidence of thyroid cancer in Chinese female textile workers with 10 or more years of benzene and formaldehyde exposure [3]. No increased association was found in women working ten or more years with exposure to other solvents. Lope et al. reported in increased risk of thyroid cancer in female workers exposed to solvents in glues and adhesives to include: acetone, ethylacetate, dichloromethane, methyl ethyl ketone, cyclohexane and toluene [4]. However men, despite being more exposed than women, displayed no association. Wingren et al. reported that occupational solvent exposure, to include trichloroethylene (TCE), was associated with benign thyroid disease; other studies have failed to substantiate any relationship between this solvent and thyroid cancer [5].

In response to concerns about cancer stemming from drinking water contaminated with PCE and TCE, Morgan et al. reviewed new cases for 16 cancer types and all sites combined in a California community (1988 to 1998). This study did not observe a generalized cancer or thyroid cancer excess [6].

ATSDR has stated that the Bove et al. study reported an increased risk of death in the Camp Lejeune cohort from several causes including cancers of the cervix, esophagus, kidney, and liver, Hodgkin’s lymphoma, and multiple myeloma. “However, due to its limitations it does not provide definitive evidence for causality nor can it answer the question whether an individual has been affected by these exposures at Camp Lejeune.”

References:

1. Schottenfeld D, Fraumeni JF (eds). Cancer Epidemiology and Prevention, 3rd Ed. New York: Oxford University Press, 2006.
2. Adami HO. Textbook of Cancer Epidemiology 2nd edition. Oxford University Press, 2008
3. Wong, E. Y., R. Ray, D. L. Gao, K. J. Wernli, W. Li, E. D. Fitzgibbons, Z. Feng, D. B. Thomas, and H. Checkoway. "Reproductive History, Occupational Exposures, and Thyroid Cancer Risk among Women Textile Workers in Shanghai, China." International Archives of Occupational and Environmental Health 79.3 (2006): 251-58.
4. Lope, Virginia, Beatriz Pérez-Gómez, Nuria Aragonés, Gonzalo López-Abente, Per Gustavsson, Nils Plato, Agustín Silva-Mato, and Marina Pollán. "Occupational Exposure to Chemicals and Risk of Thyroid Cancer in Sweden." International Archives of Occupational and Environmental Health 82.2 (2009): 267-74.
5. Wingren, Gun B., and Olav Axelson. "Occupational and Environmental Determinants for Benign Thyroid Disease and Follicular Thyroid Cancer." International Journal of Occupational and Environmental Health 3.2 (1997): 89-94.
6. Morgan, J., & Cassady, R. (n.d.). Community Cancer Assessment in Response to Long-Time Exposure to Perchlorate and Trichloroethylene in Drinking Water. Journal of Occupational and Environmental Medicine 44.2 (2002) 616-21.
7. Epidemiologic Studies of Solvent-Contaminated Water Supplies, Contaminated Water Supplies at Camp LeJeune: assessing Potential Health Effects, National Research Council of the National Academies. The National Academies Press, Washington, D.C. 2009
8. Bove FJ, Ruckart PZ, Maslia M, Larson TC. Evaluation of Mortality among Marines and Navy Personnel Exposed to Contaminated Drinking Water at USMC base Camp Lejeune: a Retrospective Cohort Study. Environ Health. 2014 Feb 19; 13(1):10.