



UNITED STATES MARINE CORPS

MARINE CORPS BASE
PSC BOX 20004
CAMP LEJELINE, NORTH CAROLINA 28542-0004

05.01-01/27/98-02258

IN REPLY REFER TO:

6286
BEMD

27 JAN 1998

Ms. Felicita Aquino
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry
1600 Clifton Road NE
Mailstop E-31
Atlanta, Georgia 23511-30333

Dear Ms. Aquino:

The enclosure has been reviewed by the Installation Restoration Division. It is requested that the Installation Restoration Division be notified of the actions taken to accommodate the comments.

If you have any questions or comments please contact Mr. Brian Marshburn or Mr. Mick Senus, Installation Restoration Division, Environmental Management Department, at DSN 484-5068 or commercial (910) 451-5068.

Sincerely,

SCOTT A. BREWER, PE
Deputy Assistant Chief of Staff
Environmental Management
By direction of
the Commanding General

Enclosure: 1. Comments on the Draft Final Report-Volatile Organic Compounds in Drinking Water and Adverse Pregnancy Outcomes

Copy to:
CMC (LFL, K. Dreyer)
COMLANTNAVFACENGCOM (Katherine Landman, Code 1823)
NEHC (A. Lunsford)

Draft Final Report
Volatile Organic Compounds in Drinking Water and Adverse Pregnancy Outcomes
Marine Corps Base
Camp Lejeune, North Carolina

General Comments:

1. Throughout the document, Lejeune is spelled "LeJeune". Please correct.
2. Our drinking water aquifer is referred to as "very permeable" or "highly permeable" in various places throughout the document. Most drinking water aquifers do have a high degree of permeability, which make them ideal as a drinking water source. Our drinking water aquifer, the Castle Hayne, is approximately 40 to 80 feet below the ground surface. The Castle Hayne is hydrogeologically disconnected from the Surficial (water table) aquifer by an approximately 5 to 10 foot thick clay semi-confining layer that impedes or restricts the migration of contaminants into the drinking water aquifer. It should also be noted that Marine Corps Base (MCB), Camp Lejeune routinely monitors contaminant plumes at our hazardous waste sites and samples all water supply wells on either a annual or semi-annual basis to ensure that contaminants will not encroach on the groundwater used by our drinking water system.

Therefore, to say that our drinking water aquifer is vulnerable to contamination due to its permeability is somewhat misleading and appropriate changes should be made to the document to reflect the aforementioned information.

3. One of the conclusions reached by the study is that decreased mean birth weight and increased small for gestational age were associated with exposure to PCE among offspring of mothers over the age of 35, and offspring of mothers with one or more fetal deaths. It is our opinion that valid arguments can be made to support the fact women in these subgroups are generally at higher risk than normal to adverse pregnancy outcomes. Furthermore, the sample size of women over 35 in both the exposed and unexposed groups are small compared to the overall number of individuals studied, and thus may not provide valid evidence of an association between decreased mean birth weight (MBW) and small for gestational age (SGA).

Nonetheless, the study concludes that further evaluation of the findings for two aforementioned associations require further evaluation. Concurrence for further action must be obtained from the U.S. Environmental Protection Agency since they have lead agency authority for the ABC Cleaner's site, which is the source of the PCE-contamination at Tarawa Terrace.

4. Another conclusion reached by the study is that there were strong associations between long-term exposure to TCE and decrease MBW and increased SGA in male infants, while no associations were observed in female infants within this exposed group. With sample size of only 31 individuals, 12 of which were male, we do not believe that it is possible to state with confidence that a real association exists. The document's Abstract mentions that the findings of decreased mean birth weight and small for gestational age in males within the long-term TCE exposed group warrant follow-up in a larger TCE-exposed population. Is there such a TCE-exposed group that ATSDR has in mind, or do we

wait for one to surface? Once such a group is located, what will be required of MCB, Camp Lejeune?

Specific Comments:

5. Abstract, page 1, paragraph 1. This opening paragraph mentions the potential confounders and effect modifiers evaluated by the study. Those listed are social in nature. What about those that are medical in nature, such as smoking, alcohol consumption, substance abuse, diet, and exercise?

6. Objectives, page 5, paragraph 1. There is mention of strong public health concern over "effects of VOCs on birth defects". Please reference these concerns and note studies done and their conclusions that support the concerns.

7. Site Description and Exposure History, page 6, paragraph 3. It is stated that the first detection of Volatile Organic Compounds (VOCs) coincided with a change in the laboratory that conducted routine water quality testing, yet the detection was unlikely to have been related to the onset of first exposure. Please reference the source of data or groundwater flow model that was used to make this assumption. The source should include such items as contaminant vs. groundwater flow rates, the presence or absence of any geological barriers that may affect groundwater flow, and evidence that natural attenuation has or has not been occurring in the vicinity of the wells which supply groundwater to the exposed areas of MCB, Camp Lejeune listed in the document.

8. Site Description and Exposure History, page 7, paragraph 2. Please note that MCB, Camp Lejeune receives funding for response actions under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) through its Environmental Restoration, Navy (ER,N) account. Superfund moneys are intended to fund clean-ups at non-Federal sites on the National Priorities List (NPL). Please make the appropriate changes to this paragraph.

9. Site Description and Exposure History, page 8, paragraph 1. The second to last sentence in the paragraph states that "there are no such records to indicate when the various VOC plumes now contaminating supply wells in the Hadnot Point System may have originated". In the past year, MCB, Camp Lejeune tested the majority of the wells in our water supply system for VOCs; some wells were sampled twice. Test results indicate that each parameter tested at each well was below the analytical laboratory's minimum detection limit. Furthermore, this document indicates on page 7, paragraph 2 that no notable contamination has been detected in Camp Lejeune's drinking water system since February 1985.

Therefore, we request that you please make the appropriate changes to the above quoted statement to reflect that there is no evidence of current VOC contamination in the supply wells in the Hadnot Point System.

10. Site Description and Exposure History, page 9, paragraph 2. In 1984, benzene was detected in a single Hadnot Point System supply well at concentrations as high as 700 ppb. However, the well was shut off before the distribution system itself could be sampled in again in 1985 (the distribution system had been sampled previously in 1982, but analyses were limited to TCE and PCE) and

benzene was never detected in Hadnot Point tap water. Nonetheless, the study estimates that low level exposure around 35 ppb benzene would have been expected among women receiving Hadnot Point water prior to December 1984. Please explain the basis for this estimate.

11. Rationale and Hypotheses, page 26, paragraph 1. The opening sentence states that drinking water at Camp Lejeune was recently found to be contaminated with VOCs. Please define recently. If this is in reference to the VOC detections in the early to mid-1980s, then the sentence wording should be changed in order to prevent confusion.

12. Rationale and Hypotheses, page 26, paragraph 1. Please see General Comment No.2 in regarding aquifer vulnerability to contamination.

13. Definition of Disease, page 31, paragraph 1. Pertaining to the last sentence in the paragraph "...but were male and weighed more than ? grams or were female and weighed more than ? grams...". Please fill in the blanks.