30 December 2002

Commanding General
(ATTN): Mr. Scott Brewer, Director EMD)
Marine Corps Base
Psc Box 2004
Camp Lejeune, N.C. 28542-0004

SUBJ: Utilization of Geographic Information System (GIS) and Computer modeling to Explore a Possible Association Between Exposure to VOC Contaminents in the CLNC Water Supply System and the Incidence of Demonstrated Adverse Health Effects of Base Residents.

Ref: (a) Medical Monograph "Cancer Incidence in Southington, Connecticut, 1968-1991, in Relation to Emissions from Solvents Recovery Services of New England". 1998 GIS Conference, Cancer Incidence in Southington, Conn., 1968-1991, State of Connecticut Department of Environmental Protection

Dear Mr. Brewer,

In the materials provided to me by CLNC and other federal/state agencies over the past three years I have never read any description of the use of GIS technology, water exposure modeling or air exposure modeling related to determining, on an estimated basis, the relative exposure score of the various dependent housing and troop billeting areas supplied by the Hadnot Point Water Treatment Plant (WTP) prior to 1973 when the Holcomb Boulevard WTP came on line. The dependent housing served at that time included Hospital Point, Paradise Point, Berkeley Manor, Watkins Village and Midway Park. The troop billeting would have been at Hadnot Point and French Creek.

As reference (a) notes ATSDR and the Georgia Institute of Technology were able to hydrologically analyze the water supply system to

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determine the geographic areas with the greatest potential for TCE Contamination of the drinking water at the Southington site and rank them with a relative water exposure scoring. The techniques for the process using GIS and "as-built" data from water plant management are detailed in reference (a).

Water exposure modeling relied on a U.S. Environmental Protection Agency (EPA) software program entitled EPANET which I presume is still available for use using the shared data elements cited above.

The air exposure modeling of possible TCE emissions at Southington "was performed used the EPA Industrial Source Complex Long-Term (ISCLT2) model in conjunction with climatological data from the closest National WeatherService Station ----."

The contaminant constant of TCE in the Southington study relates very closely to MCB, CLNC. TCE was repeatedly found at very high concentrations (ppb) at both the Hadnot Point WTP and the newer Holcomb Boulevard WTP. Reference (a) also noted "TCE was modeled as the indicator contaminant because it was found in both the drinking water and air, but represents only a qualitative indications of the geographic areas in Southington most likely to be impacted by Contaminants."

Air modeling is important to this writer because TCE is readily released into the atmosphere to be breathed when using contaminated water in the form of bathing or showering. The exposure rate is approximately 4 times greater than simply drinking the water.

I happen to know a number of servicemen that in the course of their duties took frequent showers and many of them today have varying types of cancer which the Department of Veteran Affairs have conceded are service-connected and rated at 100% disabling.

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Without getting into the issue of who knew what and when it was known it should be sufficient to note that the U.S AEHA TTHM Surveillance inspection team noted abnormalities in the Hadnot Point WTP output in October 1980 and Grainger Laboratories in August 1982 cautioned CG, MCB of the problems with trichloroethylene at very high concentrations and the interference with the tri-halo methane data gathering.

Reference (c) further cited an analytical procedure entitled "SIR" which is described as calculated age and sex standardized incident ration." To calculate the SIR's, an estimate of the population at risk was made."

Nowhere, as noted earlier, is there any indication that the Department of the Navy, LANTDIV or MCB ever made an "Estimate of the Population at Risk" or ever utilized the methodology in calculating through computer modeling case ascertainment.

If pumping data at Camp Lejeune for multiple wells providing raw water on differing pumping schedules to two WTP's is still available nearly thirty five years later I would be delighted; however, such data has not been forthcoming in the past.

I have no idea whether ATSDR, EPA IV or North Carolina DEHNR or even MCB/LANT DIV ever utilized the methodologies of water and air modeling of probable exposures to VOC's or methylene and vinyl chloride that occurred at MCB, CLNC over a seventeen year period

The Connecticut Department of Environmental Health was able in In 1992 to conduct such a program ranging in time from 1968-1991, a longer period than the Camp Lejeune incident.

Considering that the Marine Corps was aware that the water supply was in jeopardy in the early 1980's what efforts were made by MCB and its environmental advisors/regulators to develop a

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technology based estimate of relative exposures and some estimate of population risk ?

Creditable information of this nature would be of great value in assessing the findings of the ATSDR/NORC survey of the in-utero cohort that has been on-going for the past three years and now in limbo. The exact address at CLNC of each child born there is known and the combination of GIS and modeling would enhance that epidemiological analysis.

In the future such data would be invaluable when ATSDR continues to investigate the possible adverse effects of this long exposure period on literally thousands of adult military dependents, minor dependent children and the uncounted number of Marines and Navy personnel that served on one or more tours at MCB CLNC during the midst of the Viet Nam war.

Reference (a) carefully cautions "It must be kept in mind that as an ecological study design this can only be considered hypothesis generating and that this type of study is not intended to demonstrate a causal relationship".

Since such a project does not seem to threaten the PRP with causal relationship issues, something of interest to many former residents, the question remains: Was such a technology based computer modeling ever attempted to help solve the contamination puzzle ever attempted at MCB and if not why not ?

Respectfully Submitted,

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