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North Carolina Department of Human Resources
Division of Health Services
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James G. Martin, Governor
Phillip J. Kirk, Jr., Secretary

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State Health Director

MEMORANDUM

TO: Douglas Dixon
Groundwater Section
Natural Resources and Community Development

FROM: Ted Taylor, Ph.D., Toxicologist ⁴
Environmental Epidemiology Branch

SUBJECT: Soil and Groundwater Contamination - Tarawa Terrace I,
Camp Lejeune

DATE: June 12, 1986

I have reviewed the analytical results from Tarawa Terrace (wells b1-b6) and the septic tank sludge which are involved in the contamination of soil and groundwater at Camp Lejeune. These results indicated that the ABC septic tank and wells b1 and b6 are heavily contaminated with tetrachloroethylene (Perc), a common dry cleaning solvent. Wells b2, b3, b4, b5 show Perc at concentrations ranging from 0.4 to 4.9 ug/l.

Recent studies performed by the National Toxicology Program indicated that Perc showed clear evidence of carcinogenicity in both rats and mice. By using the EPA Carcinogen Assessment Group (CAG) classification criteria, Perc would be placed in Category 2B, a probable human carcinogen. CAG has not yet derived a carcinogenicity potency factor or an excess lifetime cancer risk estimate based on this data; however, criteria used by the EPA Office of Drinking Water would assign a 1×10^{-6} cancer risk as acceptable. In the past, 0.7 ug/l of Perc would be equivalent to a 1×10^{-6} incremental cancer risk.

Although the groundwater is unfit for prolonged human consumption, I understand that an alternate water supply has been provided and thus, since no exposure via groundwater consumption will take place, no risk exists from this route of exposure. It is obvious that this degree of groundwater contamination will require some remedial action in order to prevent further groundwater contamination. This action will likely reduce the concentration of other chemicals found at the site. A few points concerning these chemicals should be made.

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Well b4 contained toluene at 2.3 ug/l and well b5 contained benzene at 2.3 ug/l. These chemicals are not typically used in dry cleaning solvents and are more typically associated with petroleum based solvents, e.g. gasoline, paint thinner, etc.

With one exception, all of the other chlorinated solvents were found at concentrations that were considerably less than Perc concentrations. All of these chemicals, (trichloroethylene, dichloroethylene, and vinyl chloride) have recently been shown to be biodegradation products of Perc via the dechlorination route. Vinyl chloride is a known human carcinogen, while Perc is classified as a probable human carcinogen. Removal of the Perc from groundwater would prevent the formation of vinyl chloride and should serve as a further incentive for a cleanup.

I hope this information is useful. If you have any questions, please feel free to contact me at 3410.

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