



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

70-371

JAN 20 1991

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MEMORANDUM FOR: Richard E. Cunningham, Director
Division of Industrial and
Medical Nuclear Safety, NMSS

FROM: Richard L. Bangart, Director
Division of Low-Level Waste Management
and Decommissioning, NMSS

SUBJECT: REQUEST FOR ASSISTANCE - UNC Naval Products, INC.,
SEPTIC LEACH FIELD DECOMMISSIONING

Enclosed are comments on the groundwater and soil sampling program proposed by UNC for the septic leach field, at the Naval Products facility. Most of the review centered on the groundwater sampling part of the proposed program since comments on the soil sampling part have already been provided by Oak Ridge Associated Universities (ORAU). We have included some additional minor comments on the soil sampling part of the program, that were not included in ORAU's comments; we have discussed these comments with ORAU.

Based upon our review of UNC's proposed program, we have expressed concern primarily with certain aspects of the monitoring program not being clearly defined beforehand. These would include specification of the method to determine whether or not groundwater contamination exists on the site, and specification of how samples will be collected. These aspects of the program should be clearly agreed upon prior to initiation of the program. In addition, we have some concerns with the location and number of background wells. Further, more than one groundwater sample should be collected and analyzed from each well to ensure reliability in the data.

The attached comments were put together by Mark Thaggard of my staff. If you have any specific questions concerning the comments, please contact Mr. Thaggard at X20568.

Richard L. Bangart

Richard L. Bangart, Director
Division of Low-Level Waste Management
and Decommissioning, NMSS

Enclosure: As stated

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ADEQUACY OF UNC'S PROGRAM FOR CONDUCTING GROUND
WATER AND SOIL SAMPLING IN THE LEACH FIELD

The following are comments on UNC's proposed groundwater and soil sampling plan for the septic leach field, at the Naval Products site. Primary emphasis is given to the proposed plan for sampling groundwater, since ORAU has already provided comments on the plan in terms of soil sampling. Some additional comments (besides ORAU's comments) on the plan in terms of the soil sampling are provided; these comments were discussed with ORAU.

UNC's sampling plan was reviewed from the context that they will be only attempting to determine whether or not contamination exists on the site. A more comprehensive monitoring program will be required to characterize the extent of contamination.

Background Sampling

1. Groundwater analysis should be made on samples collected up-gradient hydrologically from the suspected contamination area. Gross alpha concentrations of groundwater samples already collected from "background" boreholes 3 and 4 would appear to indicate that these boreholes are being affected by the source area, because their gross alpha concentrations are higher than what would be expected for ambient conditions. Relying solely upon "background" boreholes 3 and 4 to determine background groundwater concentrations may be inadequate, resulting in false negative (Type II error) conclusions. We suggest that UNC establish and analyze additional background groundwater sampling locations that are clearly hydrologically up-gradient from the source of contamination.
2. The sampling plan states that soil samples will be collected every three feet from the background boreholes; however, the data collected from "background" boreholes 1-4 are in two-foot increments. Two-foot increments also agree with what is stated for samples collected in the field. Accordingly, the plan should be changed to reflect that samples from background boreholes will be collected at two-foot increments.
3. UNC should clarify the location of the two "background" soil samples that were collected in 1985, to clearly show that these samples were taken up-gradient from the source of contamination. No information is provided on the location of these samples. UNC also needs to provide information on whether or not groundwater samples were collected from these locations, and if these soil sampling locations can be used as background groundwater sampling locations.

Field Sampling

1. The sampling plan indicates that soil samples will be collected at all locations in which the surface reading is above background. "Above background" is defined as those measurements that exceed the mean background level at the 95% confidence level. It appears that what this should say is background will be considered exceeded when the maximum statistical background reading is exceeded; with the maximum statistical background reading being the upper limits of the 95% confidence interval.
2. The sampling plan also states that any locations which are above background due to proximity to fuel handling buildings will not require soil sampling. The term "proximity" is somewhat vague, and should be clearly defined beforehand.

Both Background and Field Sampling

1. The plan indicates that selected soil samples will be analyzed (in addition to gross alpha) for total uranium, specific isotopes, and radium 226. The criteria for determining how samples will be selected for these additional analyses should be clearly defined beforehand. These additional analyses should not be limited to the soil, but should be extended to include some groundwater samples. It is important that adequate analyses be made on both background and field samples so that some comparisons can be made.
2. No mention is made, within the plan, for analyzing more than one groundwater sample from each well; however, more than one sample should be collected and analyzed to ensure the reliability of the results. Preferably a minimum of four samples should be collected at different time intervals. The time interval should be sufficient, based upon the groundwater velocity, to allow independent samples to be collected. If samples are not collected at different times, replicate samples should be analyzed.
3. Some type of procedure needs to be developed for determining whether or not the groundwater is contaminated; no procedure is stated. A simple comparison of field groundwater concentrations with the statistical maximum background concentration may not be appropriate, if an adequate number of background samples has not be collected. The EPA has proposed a number of procedures which may be appropriate (EPA, 1989). Again, this procedure should be developed beforehand.
4. No information is provided on how groundwater samples will

be collected. Specific sampling procedures should be developed and described, bearing in mind such factors as: the presence of stagnant water in the well, the hydrogeology, and the chemicals being monitored.

Reference:

EPA, 1989. "Statistical Analysis of Ground-Water Monitoring Data at RCRA (Resource Conservation and Recovery Act) Facilities, Interim Final Guidance", EPA/530/SW-89/026, 148p.