'PARTMENT OF TOXIC SUBSTANCES CONTROL

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MCAS EL TORO
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September 29, 1994

Mr. Wayne D. Lee
Assistant Chief of Staff
Environmental and Safety
Marine Corps Air Station El Toro
P.O. Box 95001
Santa Ana, California 92709-5001

Dear Mr. Lee:

DRAFT OPERABLE UNIT 1 (OU#1) BASELINE HUMAN HEALTH RISK ASSESSMENT REPORT

The Department of Toxic Substances Control (Department) has completed its review of the above mentioned report, dated July 1, 1994. Comments prepared by a toxicologist from our Human and Ecological Risk Section are enclosed.

The Department recommends rejection of this risk assessment for two reasons. ***First***, because analytical data were available from just two rounds of groundwater sampling, it is not appropriate to use an average to estimate exposure point concentrations. The highest concentration detected in either round of sampling should be used. ***Second***, the Navy has attempted to characterize the risks and hazards of inorganic chemicals as falling within the range of background without defining background. Baseline risk is not characterized in the absence of clear definition of background risk.

If you have any questions, please call me at (310) 590-4920.

Sincerely,

Albert A. Arellano, Jr., P.E.
Unit Chief
Region 4 Base Closure Unit
Office of Military Facilities

Enclosure

cc: See next page.

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PETE WILSON, Governor

MEMORANDUM

TO: Al Arellano
Office of Military Facilities
Region 4, Long Beach

FROM: John P. Christopher, Ph.D., D.A.B.T.
Staff Toxicologist
Office of Scientific Affairs (OSA)
Human and Ecological Risk Section (HERS)

DATE: 16 September 1994

SUBJECT: MCAS El Toro: Human Health Risk Assessment for Operable Unit 1
Outcome: 02 PCA: 14740 Site: 400055-45

Background

Marine Corps Air Station (MCAS) El Toro is an Federal Superfund site located in Orange County scheduled for closure. Remedial activities at the base are being directed by Naval Facilities Engineering Command, Southwest Division (SWDIV). Operable Unit 1 (OU1) is the groundwater at the site.

Documents Reviewed

We reviewed "Marine Corps Air Station El Toro, California, Installation Restoration Program, Remedial Investigation/Feasibility Study, Draft Operable Unit 1 Baseline Human Health Risk Assessment Report". The document is dated 1 July 1994. It was prepared for SWDIV by CH2M Hill, Inc. On 5 July 1994 HERS received your request to review this document.

Scope of Review

The document was reviewed for scientific content; any typographical or other minor errors are not noted unless they interrupt the interpretation of the risk assessment. HERS relies on the Office of Military Facilities for judging the adequacy of environmental sampling, analytical chemistry, and geological and hydrogeological interpretations. If we encountered omissions or inadequacies with regard to risk assessment, these are noted. Future versions of this document should clearly note all changes or additions. We prefer

that responses to our comments be presented in the same order as these comments are shown below.

General Comments

The risk assessment is thorough and clearly presented, but we are unable to call it acceptable for two reasons:

1. Two rounds of sampling results from groundwater cannot be deemed adequate characterization for purposes of defining exposure point concentrations. Therefore, use of the mean of the two measurements is unacceptable. We recommend recalculation of risks and hazards using the highest detected concentrations of each chemical of concern.

2. While we concur that the majority of the risks and hazards at OU1 are due to metals and other inorganic chemicals, especially nitrate and nitrite, we find no support for the assertion by the Navy that these risks and hazards do not differ from regional background. The Department should seek the advice of the Santa Ana Regional Water Quality Control Board regarding the ranges of concentrations of inorganic substances which might be considered naturally occurring for regional groundwater at MCAS El Toro.

Specific Comments

1. **Guidance Documents, Sec. 1.3, p. 1-6:** Please include and use DTSC guidance for risk assessment, *Supplemental Guidance for Human Health Multimedia Risk Assessments for Hazardous Waste Sites and Permitted Facilities* (DTSC, 1992). This guidance is intended for use with *Risk Assessment Guidance for Superfund* (USEPA, 1989).

2. **Chemicals of Concern, Sec. 2.2, p. 2-2, and Table 2-2, p. 2-17:** In the second paragraph, please make reference to where the body of data may be found from which the chemicals of concern were selected, e.g. which volume of the draft RI/FS report. In Table 2-2, the third column of Table 2-2 should be entitled "Insecticides".

3. **Secondary Pathways, Sec. 3.2.2, pp. 3-10 ff.:** Several of the chemicals of concern in Table 2-2 have high octanol-water partition coefficients, making the secondary pathways of homegrown meat and produce potentially important for risk and hazard. Please include these pathways as appropriate or present a justification for their exclusion.

4. **Exposure Assumptions, Table 3-2, p. 3-15:** Skin surface area should show footnote "d" not "c". The assumptions shown lead to an average exposure just 9% of the reasonable maximum exposure. Is it the Navy's belief that the distribution of exposures is actually this wide?

5. **Dermal Absorption, Sec. 3.3.2, p. 3-21 ff. and Table 3-3:** Table 3-3 does not seem to use the default value for K_p of 1.5E-03 cm/hr. Please eliminate text at the top of page 3-20 which refers to this default value.

6. **Exposure Point Concentrations, Sec. 3.3.3, pp. 3-20 and 3-25:** The mean may be used as an estimator of the concentration term if a site is well characterized. Two rounds of groundwater sampling do not constitute a base of data broad enough to establish any trends in time or space, or even to verify frequency of detection. Therefore, we do not accept at this time that the average may be used as an appropriate estimator of concentration of chemicals of concern in groundwater. Instead, we recommend using the maximum concentration detected for each chemical detected in either round. For those wells with more than two rounds of sampling, we recommend the continued use of the 95% upper confidence limit of the mean concentration over the most recent four quarters of sampling. This change will entail recalculating all risks and hazards and regenerating all tables.

   Strike the last sentence on page 3-25. Find and strike the numerous other occurrences in the document of this highly speculative and contentious sentence. Natural attenuation, if it ever occurs, cannot proceed until sources of contamination have been identified and remediated.

7. **Toxicity Values, Table 4-1:** We note that no toxicity values were located for several chemicals of concern. Rather than fail to assess the presence of such chemicals, HERS recommends that surrogate chemicals be identified which have toxicity values; these values may then be used in the risk assessment. We have had good success with USEPA Region IX achieving consensus on appropriate surrogates in situations like this.

8. **Health Effects of Lead, Sec. 4.2.3, p. 4-19:** Rather than comparing levels of lead in water to the USEPA action level of 15 µg/L, we recommend the use of LEADSPREAD, an easy-to-use spreadsheet approach to assessing the health effects of lead in multiple media.

9. **Toxicity Profiles, Appendix A:** Regarding 1,1-dichloroethene, the last sentence on page A-6 is not credible. A concentration of 0.06 µg/L is lower than a typical detection limit of 0.1 µg/L in water. If all detected concentrations are in the saturable

range, then the quoted unit risk would never be of any use. Could the units be transcribed incorrectly?

10. **USEPA vs. Cal/EPA Cancer Potency Factors, Tables 5-3 and 5-4:** Table 5-4 is very informative. The Navy should complete its analysis by providing a similar table breaking out by chemical groups the estimated cancer risks in Table 5-3 which were calculated using Cal/EPA cancer potency factors.

We understand that the Cal/EPA cancer potency factor for hexavalent chromium is responsible for non-zero estimations of cancer risk in some wells in which USEPA values indicate no cancer risk. Please provide details on the following wells where the difference between the estimates in Table 5-3 using the two sets of factors is greater than twofold:

18_TIC083	07_DBMW70	13_DGMW78
13_UGMW32	15_DBMW51	16_DBMW52
18_BGMWO1E	18_MCAS03	19_DGMW85

In particular, we are interested in the estimates for 16_DBMW52 and 18_MCAS03, which differ by 100-fold and 20-fold, respectively.

11. **Estimated Risks and Hazards from Inorganic Chemicals, Sec. 5.2, p. 5-47 et al.:** The following statement is made on page 5-47 and at numerous other places in the risk assessment:

> "[M]ost inorganic chemicals present in groundwater are expected to be present at background concentrations within the study area. The levels of inorganic chemicals detected appear to be the result of oxidation of reduced minerals in the aquifer sediments and past agricultural activities throughout the region."

While HERS agrees that the majority of the risks and hazards associated with OU1 are due to the inorganic constituents, we find no support for the assertion that these risks and hazards are indistinguishable from background. The health risk assessment for OU1 will continue to be deficient until the Navy identifies and quantitates the risks associated with regional background and compares them to the results shown in Section 5 of this report.

Background concentrations of inorganic chemicals in groundwater has been the subject of discussion at project meetings for at least two years. If clarification is needed on defining background in this complex geologic formation, HERS

recommends the Navy consult with the Santa Ana Regional Water Quality Control Board.

12. **Hazards from Volatile Organic Chemicals, Sec. 5.2.1.1, p. 5-47:** The text on page 5-47 lists seven wells with summed hazard quotients for volatile chemicals greater than unity, but Table 5-2 shows eight. Well 08_DGMW74 should also be listed. The summed hazard index for volatile chemicals in this well was 1, with 0.93 coming from trichloroethene, but no single volatile chemical had a hazard quotient exceeding unity.

13. **Spatial Distribution of Risks and Hazards, Figs. 5-1 through 5-13:** These figures clearly show that risks and hazards from volatile chemicals are localized over the known plumes, but spatial variations are not clear for other classes of chemicals. If risks or hazards due to other classes of chemicals are localized in any way, it is not apparent in these figures or in their supporting text. These figures would have been a place to present contours of concentrations or risks or hazards correlated with soil types, sedimentary history, or some other parameter related to geologic processes underlying the distribution of naturally occurring substances. place to present.

    In particular, nitrate and nitrite are by far the most prominent inorganic contaminants in terms of total mass. The Navy could buttress its argument about agricultural sources of these materials with a presentation of the distribution of concentrations both in area and depth.

Conclusions and Recommendations

This risk assessment is thorough and clearly presented, but HERS finds it unacceptable, principally for two reasons. First, because analytical data were available from just two rounds of groundwater sampling, it is not appropriate to use an average to estimate exposure point concentrations. HERS recommends using the highest concentration detected. Second, the Navy has attempted to characterize the risks and hazards of inorganic chemicals as falling within the range of background without ever defining background. We agree with the Navy that inorganic chemicals present the great majority of the health risks and hazards. We agree further that at least some portion of these risks and hazards are contained within the range of background. This being the case, baseline risk is simply not characterized in the absence of clear definition of background risk.

Reviewed by: Michael J. Wade, Ph.D., D.A.B.T.
Senior Toxicologist, HERS

cc: Judy Parker, HERS
Dan Stralka, USEPA Region IX