

ARC ECOLOGY

ARMS CONTROL RESEARCH CENTER

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April 28, 1995

Mr. Richard Powell
Head, Environmental Restoration Section 1
Engineering Field Activity, West
900 Commodore Drive
Code 09ER1
San Bruno, CA 94066-5006

Dear Mr. Powell,

Please find enclosed ARC's comments on *Results of Subsurface Radiation Investigation in Parcels B and E* for Hunters Point Annex, San Francisco, California.

In addition, I would greatly appreciate it if you could update me on the status of replies to comments that I have submitted for earlier documents.

Should you have any further questions regarding this matter, please contact me at the above telephone number.

Sincerely,



Donald Meyers, Ph.D.

Encl. 1

Distribution:

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833 Market Street, Suite 1107, San Francisco, CA 94103 Tel: (415) 495-1786 Fax: (415) 495-1787

April 25, 1995

Comments on
Results of Subsurface Radiation
Investigation in Parcels B and E
for
Hunters Point Annex
San Francisco, California

General Comments

While it is appreciated that estimates of health risks posed by the presence of radioactive substances will be addressed in the Remedial Investigation report for Parcel E, the methodology employed in the present investigation determines the scope of the risk assessment that can be performed and the level of any remediation that may be required. As such, clear, concise and defensible explanations of the origin of base-line information (e.g. "background" levels) and site-screening criteria (e.g. investigation when cpm > 5,000 to 10,000) is essential. The authors should bear in mind that public documents will be read by many people who will be unfamiliar with the discussions and agreements made between the Navy, the regulatory agency representatives and the contractors. Inadequate explanations of basic definitions at this point will only lead to greater confusion when subsequent documents, such as the risk assessment, are reviewed.

Specific Points

Detection of alpha emitters by monitoring the gamma emissions of decay progeny requires further explanation. For instance, what is the possibility that radionuclides are present which produce alpha but not gamma emission and therefore remain undetected? As the gamma detection method limit is $1\mu\text{Ci}$ at a distance of 1 ft through soil, what is the possibility that the figure quoted for the quantity of radioactivity at the site has been underestimated? Establishing a maximum and minimum range for this quantity would be a useful addition to the report. Is the detection method affected by soil moisture content? If so, discussion of the seasonal effects on the measurement of radiation levels should be included. What is the volume of soil sampled by the NaI detector when stationary?

The use of the word "background" requires substantial clarification. If it refers to radiation levels found in regions of the site where no radioactive contamination is suspected, then the word "ambient" or something similar should be used. Use of the word "background" implies that this is the level of radiation that would be present if human activity had not taken place at the site. No case has been made for this in the report and no literature is cited to support the asserted background levels. What does "background" mean when it is preceded by the words "normally

expected"? Why should any measurement of radioactivity in an excavation known to be in a contaminated area (e.g. excavations in IR02) be considered "background"?

Background measurements appear in the text in three different units; 5,000-10,000 cpm, 0.5 pCi/g and 7-12 $\mu\text{R/hr}$ at 3 feet above ground surface. The origin of each of these and the relationship between them should be explained either in the text or in an appendix and should include all relevant equations and conversion factors. This is particularly important for the cpm measurement as it is used as the basis for source investigation.

It is stated in section 3.1 that "Gamma exposure rate measurements at all locations were consistent with expected background levels of approximately 7-12 microrentgen per hour ($\mu\text{R/hr}$) at 3 feet above the ground surface." Does "all locations" refer only to IR07 and IR18? If not, this sentence should be deleted. Please explain how the rate measurements made in the test pits are related to the "expected background". Has the radiation level at three feet above ground surface been measured? If not, what is the point of making a comparison between test-pit rate measurements and an estimate of radiation levels three feet above ground?

Investigation of parcel E has revealed severe contamination with a variety of hazardous wastes. Cross sections of the areas investigated in Parcel E show that sands of a variety of grades and color are prevalent throughout this area. Given the lack of record keeping associated with dumping activities, it does not seem unlikely that radionuclide-contaminated sand-blast grit could have been disposed of at this site. As a proportion of the sandy regions had elevated gamma counts, why was there no attempt to identify specific radionuclides? The NaI detectors used in the present investigation can be used in conjunction with spectral analyzers for identification of radionuclides.