



# Conservation Science Institute

*Exploration, Environmental Problem Solving, and Education*

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ALAMEDA POINT  
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Mr. Gary J. Munekawa  
Remedial Project Manager  
Engineering Field Activity, West  
Naval Facilities Engineering Command  
900 Commodore Drive  
San Bruno, California 94066-5006

**SUBJECT: COMMENTS ON THE DRAFT BASELINE HUMAN HEALTH RISK ASSESSMENT WORKPLAN, NAVAL AIR STATION (NAS), ALAMEDA, CALIFORNIA**

Dear Mr. Munekawa:

This letter represents Conservation Science Institute's comments on the Draft Baseline Human Health Risk Assessment Workplan, Naval Air Station (NAS), Alameda, California. Our organization conducts research and education for the benefit of the general public. We have provided the following comments with the hope that they will be used constructively. We feel that the work plan is inadequate in its current form and that some of your underlying assumptions are unrealistic and incorrect. At this time, we have limited our comments to the following three points:

1. The authors have excluded ingestion of fish and seafood as a complete exposure pathway. This is both incorrect and unrealistic.

The statement on page 2, "Sites 17, 18, and 20 will not be evaluated in the HHRA at this time because they have no complete human exposure pathways.", and the statement in table 3 that ingestion of fish and seafood does not represent "a complete exposure pathway for recreational receptors" reflects classic Type II error (Zar 1984), a rejection of the logic of falsificationist scientific protocol (Dayton and Oliver 1980, Underwood 1990), a limited understanding of the types of information currently available, and an unwillingness to acknowledge reality.

Gradients of contaminated sediment surrounding NAS Alameda indicate that the air station is a historical source of chemical and trace metal contaminants to San Francisco Bay waters, sediment, and biota (Karras et al. 1978, CSI 1994, PRC 1994, Kopek et al. 1995). Toxicity and other ecological studies at NAS and elsewhere indicate that the levels of contamination present can and do severely impact the local and regional ecosystem. Bioaccumulation and tissue-residue studies at NAS and elsewhere indicate that such contaminants bioaccumulate and are transferred throughout the food web, including fishes (Phillips 1988, Ohlendorf et al. 1985, Stephenson 1992, Lee et al. 1993, SFRWQCB 1994). Sport fish creel studies throughout the bay area and elsewhere (Thompson and Huppert 1987), as well as simple observation, indicate that many people catch the species of fish containing high levels of contaminants, and that they catch these fish at, surrounding, and near NAS Alameda. Additional evidence

indicates that local contaminated seafood is commonly caught and consumed on Alameda and throughout the bay area (SSFBA in progress).

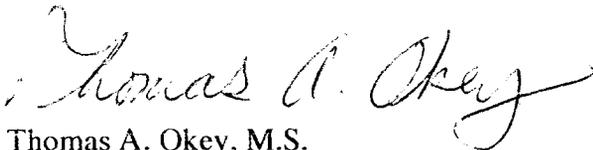
The above paragraph is a conceptual model that is reasonable and well supported by evidence. Each sentence within the paragraph is a reasonable hypotheses. It is the task of the investigator to list all of the reasonable alternative hypotheses, re-state them as null hypotheses, and design sampling, experimentation, and statistical tests to evaluate them. Each hypothesis remains in the model as a viable alternative until it is disproven. Alternative hypotheses cannot be thrown out simply because of limited information. In other words, you cannot decide that there is no human exposure pathway for fish and seafood just because you have limited information.

2. The question of how human health exposure and effects compare to other places, or "background", is unrelated to questions of human health exposure and effects associated with hazardous substances and operations at Naval Air Station, Alameda.
3. The authors seem to exclude children from all exposure models except for residential soil ingestion. It is my understanding that children also breathe, eat, swim, recreate, and generally crawl around in soil and intertidal sediment.
4. The Navy, PRC, and other contractors must address complex mixtures of chemicals, not just single chemicals, during the overall ecological risk assessment process.

Unfortunately, this work plan is not adequate. The above comments represent some of the basic problems. These comments do not represent a comprehensive list of the inadequacies of the Draft Baseline Human Health Risk Assessment Workplan. If you do not understand the scientific rationale for inclusion of the fish and seafood exposure pathway, please simply trust those who advise you that it should be included. It is to the Navy's and the public's best interest that these studies proceed with full impartiality and rigor. I am still optimistic that the U.S. Navy will uphold its honorable and legal responsibilities to defend and protect U.S. Citizens and the environment from chemical contamination associated with its operations.

Please respond to these comments. If you have any questions regarding these comments or suggestions, please do not hesitate to call me at (510) 814-9469.

Sincerely,



Thomas A. Okey, M.S.  
Executive Director / Research Coordinator  
Conservation Science Institute

cc: open distribution

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