

# ARC ECOLOGY

N00236.001184  
ALAMEDA POINT  
SSIC NO. 5090.3

## ARMS CONTROL RESEARCH CENTER

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

---

### MEMORANDUM

TO: Mr. Gary Munekawa  
EFA West

FROM: Karen Hack

DATE: May 10, 1995

RE: DRAFT BASELINE HUMAN HEALTH RISK ASSESSMENT  
WORK PLAN, NAS ALAMEDA, APRIL 1995

Attached are Arc Ecology's comments on the Draft Baseline Human Health Risk Assessment Work Plan, dated April 1995. If you have any questions, please contact me.

cc: LCDR Mike Petouhoff, BRAC Environmental Coordinator  
Mr. Tom Lanphar, DTSC  
Mr. James Ricks, US EPA  
Ms. Sophia Serda, US EPA  
Mr. James Nusrala, RWQCB  
Mr. Ken O'Donoghue, RAB Community Co-chair  
RAB Technical Focus Group

# ARC ECOLOGY

## ARMS CONTROL RESEARCH CENTER

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

---

### **Comments on the Draft Baseline Human Health Risk Assessment Work Plan, NAS Alameda, April 1995**

#### General Comments

The purpose of the Baseline Human Health Risk Assessment work plan is to detail the methodology and procedures for quantifying the level of risk posed by current site conditions at NAS Alameda. This work plan, however, generally does not provide the level of detail necessary for understanding and implementing some of the fundamental steps in the process. Many sections describe how site-specific factors will be considered or additional information will be evaluated without indicating what those factors are and how they will be evaluated in the context of the risk assessment process. For example, the document states that site-specific factors may be used to eliminate chemicals of potential concern (COPC) without describing what those factors are and the criteria that will be used to evaluate them. The work plan must establish how each aspect of the assessment will be implemented in order to ensure valid results.

It is not clear from the document how data gaps in the existing remedial investigation (RI) data will be addressed and whether additional sampling will be conducted as part of the risk assessment. For example, information on page 16 indicates that new data will be collected; however, the text states on page 1 that the risk assessment will be based on previously collected data. If additional sampling is to be performed, the work plan should include a thorough description of the proposed sampling methodology. The extent to which data gaps will be filled with data derived from models should be explicitly stated, along with the models' underlying assumptions and degree of uncertainty. In addition, the work plan should discuss the use and incorporation in the risk assessment of data collected through the underground storage tank (UST) program, lead-based paint program, PCB program, asbestos program and the environmental baseline survey process.

The work plan lacks an analysis of the COPC fate and transport. This analysis is necessary in order to predict future exposure pathways and estimate future exposure point concentrations. An estimation of the risk to future receptors cannot be adequately determined without fate and transport analysis for all COPC.

The document lacks an acknowledgment and thus, an analysis of the risk associated with the ingestion of fish caught in the waters surrounding NAS Alameda. As substantial documentation shows, NAS Alameda discharged significant quantities of industrial and

hazardous waste to the Bay surrounding the base. This pathway is potentially complete for both the residential and the recreational scenarios and should be included in the assessment. It would be inappropriate and inaccurate to exclude this pathway, given that NAS is surrounded on three sides by aquatic environments that have been substantially impacted by NAS activities over the last 50 years.

The work plan proposes to use three distinct exposure scenarios for current and future use. It does not, however, propose a methodology for estimating the risk to an individual who, by living and working at the site, can be classified in each of the three categories.

### Regulatory History

One of the fundamental components of a human health risk assessment is the exposure assessment, which includes an analysis of the potential human exposure pathways for the chemicals of concern (COCs) and an identification of complete exposure pathways. Prior to completion of the exposure assessment and without any supporting data or rationale, how can it be concluded that three of the IR sites do not have complete human exposure pathways? The text states that “further site-specific information will be gathered to confirm whether completed pathways exist.” Please discuss the process by which this will be accomplished. As part of the IR program, IR sites 17, 18, and 20 should be evaluated in the human health risk assessment and the need for additional data should be identified and addressed through that process.

### Data Evaluation

This section states that “...all data previously collected in each environmental medium at NAS Alameda will be reviewed...” for the risk assessment. Does this mean that data from all previous and current studies, such as those conducted by ERM West, Canonie, Harding Lawson, and Wahler Associates, will be reviewed and potentially used in the risk assessment? Data regarding the environmental condition of NAS Alameda is being generated through a variety of investigations in addition to the IR program, such as the environmental baseline survey, underground storage tank (UST), PCB, lead-based paint, and asbestos programs. These data should be evaluated for inclusion in the risk assessment.

The discussion on establishing “exposure units” is extremely unclear and should be completely rewritten (p. 16). What is the difference between exposure units and exposure areas and how will the boundaries be determined? Will “exposure areas” be determined for the recreational and occupational scenarios? What is meant by “aggregating data”? Please explain how aggregating sampling data will provide more meaningful risk estimates. The methodology for applying the residential scenario to areas that are currently industrial should be clearly stated.

The text stresses the importance of collecting data for “receptor-specific exposures”. Does this mean that additional data will be collected as part of the risk assessment? Will the data

be collected before or after the exposure units are determined? Receptor-specific exposure is a confusing and inaccurate term, since there is only one receptor in a human health risk assessment. It would be more accurate to describe it as exposure setting-specific.

The last sentence in the fourth paragraph on page 16 indicates that data for the exposure units will be collected as part of the risk assessment for all pertinent environmental media. If this work plan is proposing additional sampling, then it should include a detailed plan for the sampling that will be conducted.

Please describe the difference between and significance of censored and uncensored data and the percentage of the risk assessment data that would fall under each category.

The discussion regarding eliminating COPCs gives the impression that the goal of the COPC screening process is to make the list of COPCs manageable for the risk assessment, as opposed to identifying the COPCs that pose a potential human health risk. In addition, the implication that a long list of COPCs makes a risk assessment unmanageable is inaccurate. The elimination of any COPCs from the risk assessment must be thoroughly substantiated.

Please explain what “truly site-specific” chemicals are and how they will be identified.

The text states that chemicals will only be eliminated after consideration of site-specific factors. What are these factors and how will they be evaluated and applied in the final decision regarding a COPC?

Part of the screening criteria for the COPCs includes a background analysis. However, the work plan does not indicate how background levels have been or will be determined. The work plan should disclose the methodology and implementation strategy that has been or will be used to determine background levels for the risk assessment.

The discussion on eliminating COPCs concludes by stating that the mobility, persistence, and bioaccumulation of each COPC will be considered prior to eliminating the COPC. Please provide an explanation of how these factors will be evaluated individually and collectively. The mobility of each COPC should be determined in a fate and transport analysis as part of the risk assessment.

#### Exposure Assessment:

What procedure will be employed to determine whether average values or upper-bound values of the exposure point concentrations will be used for the calculation of reasonable maximum exposure (RME)? The rationale for using average values should be clearly documented in the risk assessment. Please substantiate the assumption that a “combination of average and upperbound values” will be “meaningful” and will “represent the actual reasonable maximum exposure” at a site. How can the “actual” reasonable maximum exposure be determined?

### Characterize exposure setting and identification of potential receptors

Why isn't air listed as a medium of concern?

The text is unclear regarding the potability of water in the deeper aquifer. The Navy should perform the potability tests required by the Regional Water Quality Control Board (RWQCB) before asserting that the water is not potable.

It is inaccurate and inappropriate to assume that "occupational and recreational exposures are the most reasonable exposure scenarios for future land use." The future use of the installation has not been decided yet and may change substantially in the future. DTSC appropriately requires a residential scenario evaluation for all of NAS Alameda..

### Identify Exposure Pathways and Exposure Routes

The ingestion of home-grown produce by residents and the ingestion of fish by residents and recreational anglers should be added to the list of potential exposure scenarios given on page 20.

What is the basis for limiting the assessment of radionuclide exposure to only IR 1 and 2? Past NAS Alameda documentation indicates the potential for radiological contamination at sites in addition to IR 1 and 2. Please clarify this statement and cite supporting documentation.

Will the exposure pathway analysis include the identification and assessment of the potential exposure of sensitive subpopulations at areas such as daycare centers, schools, and playgrounds?

How can figures 4 through 6 present complete exposure pathways prior to completion of the exposure pathway analysis and identification of COCs? Prior to completion of the exposure assessment, these pathways can only be considered as potentially complete exposure pathways.

### Estimating Exposure Point Concentrations

The 95 UCL should be defined in this section.

### Quantify Chemical Intake for Pathway Specific Exposures for Each Potential Receptor

The methodology and criteria for determining the value of all site-specific exposure parameters should be clearly described. How will those parameters be "selected so that the estimated intake represents the average and RME exposure"?

To what extent will models be used to estimate exposure point concentrations?

How will the impact of seasonal variations on the level of exposure be assessed and incorporated into the exposure assessment?

### Toxicity Assessment

The toxicity assessment section should include a discussion regarding the methodology that will be utilized to estimate the reference dose for dermal exposure to noncarcinogenic chemicals.

### Risk Characterization

What is the basis for the statements on page 27 which state that shorter exposure periods are not anticipated and will not be evaluated, and that the COCs are not likely to cause acute effects? How can these statements be made prior to completion of the risk assessment? The work plan should provide details regarding how the risk assessment will evaluate the potential for acute exposure.

### Uncertainty Assessment

What criteria will be used for determining whether an uncertainty evaluation will be performed and how will the evaluation be made? How will the potential magnitude of each uncertainty be assessed? The approach used for this element of the risk assessment should be clearly defined.

The limitations of the risk assessment with respect to exposure to multiple contaminants should be thoroughly discussed.

### Tables

Table 1 should include potentially complete pathways for dermal contact with surface water, sediments, tap water and groundwater (since groundwater is shallow and may be encountered during construction activities).

Table 2: There seems to be an assumption that tap water referred to in the tables is groundwater. This should be clarified for all of the tables. Potentially complete pathways for office workers should include dermal contact with water while washing hands, ingestion of tap water, and inhalation of vapors from tap water.

Table 3: Additional potentially complete pathways for recreational receptors are ingestion of fish, ingestion of tap water, dermal contact with tap water, and dermal contact with sediment.

Table 4: The residential scenario should include dermal contact with surface water, dermal contact with sediment, and ingestion of fish. Claiming that the Bay is not part of the base is inaccurate and an inappropriate basis for the exclusion of the fish ingestion pathway from the analysis. Property maps show the installation's boundaries extending out into the Bay. In addition, subsistence fishing does occur around the Bay and should not be dismissed from the assessment.

Tables 5 - 28: Many of the parameters listed in these tables will be determined on a site-specific basis. What types of information will be collected, how will it be collected, and how will it be evaluated? The methodology and procedure for establishing these parameters should be stated explicitly.

Table 27: Why is the exposure pathway only applicable to IR site 2? What about maintenance of the piers, docks, other sea walls and breakers?

#### Figures

Without the assessment of the COCs, how can complete pathways be determined? Figures 4 through 6 should be called potentially complete pathways.

Figure 4: Why aren't the following pathways considered potentially complete: inhalation of indoor VOCs for current and future on-site workers; inhalation of outdoor VOCs for all three exposure categories; dermal contact with surface water for current workers and future construction workers; and dermal contact with first zone groundwater for current workers and future construction workers? Please provide justification of the exclusion of these pathways from the analysis.

Figure 5: The following pathways should be considered potentially complete: ingestion of contaminated fish; inhalation of outdoor VOCs; and both ingestion and dermal contact with surface water contaminated by groundwater.

Figure 6: The following pathways should be considered in the exposure pathway analysis for both the current and future resident: ingestion of fish; ingestion and dermal contact with surface water; and ingestion and dermal contact with surface water contaminated by groundwater.