

NAVY RESPONSE TO DEPARTMENT OF HEALTH SERVICES COMMENTS  
ON THE AIR SAMPLING PLAN, HUNTERS POINT ANNEX

Comment:

Section 2.0 The stated objective of the Air Sampling Plan is "data collected during the air sampling program will be used to assess whether atmospheric contamination is present at HPA at detectable concentrations and if so, to assess the extent of such contamination". Explain how the data obtained will be used to evaluate current air quality conditions at HPA. The receptors of concern and the type of exposure of concern must be identified. Future land use must also be considered and it would be appropriate to assume that the receptor of concern is a resident and that the exposure of concern is an annual average concentration based on 24-hour integrated samples. These items must be addressed before an adequate air sampling plan can be designed and they should be used to help determine the locations of samplers, sampling durations, and analytical methods etc. Furthermore, once the purpose of the sampling is determined, it should be realized that the first "round" of sampling may indicate that further studies are required.

Response:

After discussions with the Department of Health Services (DHS), the air sampling program was extensively modified, including the program's objective. The main objective is to perform a screening sampling effort to assess the presence of toxic air contaminants originating from the chemicals found in the subsurface. The data collected in this program will be evaluated, along with the other data collected during or in support of the remedial investigation (RI), by the toxicologists performing the Public Health and Environmental Evaluations (PHEEs). The receptors of concern, the type of exposure(s), future land use, and the representativeness of the conditions at the time of sampling are addressed in the PHEE plan (*ATT, 1988*) and will be further evaluated in the PHEE reports. The Air Sampling Plan has been revised to address the assumed potential human receptors for the air exposure pathway and to elaborate on the rationale for sampling at or near the potential sources rather than at the potential receptors. Additional needs or modifications to the program will be addressed after the first "round" of sampling. Section 2.0 of the Air Sampling Plan has been modified to reflect the DHS comments, as appropriate.

Comment:

Section 3.4.3 The data obtained in the "PHA 1 & 2 Risk Assessment" air sampling is suspect since the methods used did not address breakthrough, extraction efficiency, particulate borne SOCs, and did not include proper QA/QC.

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**Response:**

The Navy has not yet received formal comment from DHS on the report cited and defers comment on that study to a further date. However, the Navy feels that the data collected in that study were valid and can be used for the purposes for which they were intended; these purposes were different from that of the Air Sampling Plan. The purpose of the housing assessment was not to characterize air quality but to perform a screening sampling to assess the presence of air contaminants that might pose a risk to human health in the area of the proposed Housing Areas 1 and 2 and that might require relocation of the housing areas at an early stage in the Navy planning process. The report was referenced in the Air Sampling Plan only to present the background of previous air-related studies at the site.

**Comment:**

Section 4.0 As mentioned above, the purpose of the air sampling must be determined. "Ambient air concentrations that pose a threat to human health or the environment" will vary depending on the receptor. "The air sampling program has been designed to...evaluate air dispersion characteristics at the site"--this will be difficult using the present sampling strategy because the entire site may be sampled on different days and because of the larger number of potential sources at the site.

**Response:**

As previously stated, the objectives of the air sampling program have been modified and the document has been revised. We are assuming receptors of concern to be human.

**Comment:**

Section 4.1 The location of the 4 background samplers should be clarified. All sampling locations should be shown on a topographical map.

**Response:**

The tentative locations of the background samplers have been added to the site map. Evaluation of on-site meteorological data collected before the sampling effort may indicate that these locations should be changed.

**Comment:**

Section 4.2.2 The identification of an "upwind" monitor in each "sampling zone" is not a good idea because even though the monitor may be "upwind" of that particular "sampling zone" it might be "downwind" of other "sampling zones" or contaminated areas. The use of "sampling zones" might not be the best approach. It would be preferable to look at the entire site as the "sampling zone". -- Minimum distances from buildings (10x height) should be specified.

**Response:**

The zone concept has been deleted. The on-site data will be compared with background data. EPA (1984 and 1988) sampling procedures will be followed, including their specification for the minimum distance from buildings and obstructions.

**Comment:**

Section 4.3 A proper QA/QC program must be described and followed before data that is "consistent, reproducible, and representative" can be generated. This hasn't been done. -- If the purpose of the 3 eight hour sampling periods is to collect data that is representative of a "worst case" scenario and then assume that this is an annual average concentration based on 24-hour integrated samples, then a description of and rationale for the "worst case" scenario should be included in the work plan.

Once data is collected then HLA must be able to prove that these are indeed "worst case" data. This must be proven for all types of possible exposure scenarios (i.e. both semi-volatiles and volatiles in the vapor phase and also for particulate borne contaminants). Note: See comment under Section 6.1.2 regarding "worst case" meteorological data). This might not be feasible and a different sampling strategy might be more appropriate. Furthermore, to obtain some of the required detection limits, sampling durations greater than 8 hours might be required.

**Response:**

- o The QA/QC program for the air sampling effort has been added and is included as an appendix to the Air Sampling Plan.
- o The objectives of the sampling program have been revised and currently only one sampling "round" is described; additional needs and/or modifications will be addressed after review of the data from the initial "round." The air sampling program is designed to maximize the potential of detecting the presence of toxic air contaminants. This is achieved by the collection of air samples at or downwind of known potentially contaminated sites at HPA. Because sampling locations are nearer to these potential emissions sources, it is anticipated that ambient concentrations would be higher than farther away at the potential receptors. For the purposes of this Air Sampling Plan, it is assumed that potential human receptors for the air exposure pathway include residents in the surrounding community and workers at the shipyard. The residents are located topographically higher and generally upwind and the shipyard workers are not generally downwind of the potential contaminated site. Because these potential receptors are at widely separated locations and because of the potential variability in wind directions, it was felt that the presence of air contaminants could be evaluated nearer the potential emissions source than at the potential receptors. In addition, the air sampling program was designed such that sample collection would be accomplished at times when meteorological conditions are considered to be conducive to generating maximum concentrations in the air. The data obtained are expected to be conservative estimates of exposure and will be

extrapolated to represent worst-case exposures. This approach of maximizing potential ambient concentrations, by minimizing dispersion and maximizing emissions, is discussed in detail in Section 4.1 and in Appendix A.

- o On-site 24-hour meteorological data, collected concurrently with the sampling, will be evaluated to assess representativeness of the data. Details regarding the rationale used in selecting sampling durations are outlined in Appendix A. Selection of sampling durations was based on the two main considerations of assessing maximum ambient concentrations and on technological restraints. The proposed sampling strategy is designed to assess average peak concentrations by conducting the sampling during periods when meteorological conditions are thought to be conducive to producing maximum emissions. Because of dilution, contaminant concentrations in a sample collected over a 24-hour period would probably be lower than the values obtained in the proposed sampling.

**Comment:**

**Section 5.2**

**Table 2**

-- For VOCs- please provide the method or reference for the extraction of VOCs from Tenax using methanol. If no method can be provided, this method should be thoroughly validated and the data submitted to the Department before it can be used to generate any data for this site.

-- Explain the rationale for not sampling for Ketones such as MEK.

-- For absorbents, especially for VOC analysis using Tenax, the compound specific breakthrough volumes and sampling rates must be addressed. The sampling conditions described in this report will result in the breakthrough of many compounds and as a result the data generated will be useless. Furthermore, the sampling method should be such that a back-up absorbent is mounted behind the primary absorbent. If the proper sampling volume is used, this will indicate if breakthrough is occurring in the primary absorbent.

-- Because the receptors are identified as "resident" then the methods described may not have detection limits that are low enough because the Action Levels for some compounds are below these detection limits. For example:

Listed detection

<u>Compound</u>	<u>Action Level (<math>\mu\text{g}/\text{m}</math>)</u>	<u>Limit (<math>\mu\text{g}/\text{m}</math>)</u>
Chloroform	0.43*	4.0
Benzo(a)pyrene	0.0087**	10.0
Arsenic	0.00007**	5.0

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\* DHS Applied Action Level

\*\* Draft Health Effects Assessment Document, EPA, 1984

Response:

- o Sampling and analysis methods for VOCs have been revised. The new EPA recommended procedures employ thermal desorption rather than methanol extraction.
- o Common ketones including MEK are included in the revised list of analytes (Table 3 of the Air Sampling Plan).
- o Appendix A of the Air Sampling Plan addresses breakthrough volumes and sampling rates. Revised sampling volumes are based on the limiting breakthrough volume, as well as detection limit goals. As an additional safety factor, a backup absorbent cartridge will be mounted behind the primary cartridge to assess breakthrough. This backup cartridge will only be analyzed if compounds in question are detected in the primary cartridge.
- o The revised air sampling program is designed as a screening sampling in which 140 compounds will be screened. Such a large number of analytes prohibits the tailoring of the sampling program to meet detection limits for each individual analyte. Sampling and analysis methods were selected to be applicable to a broad range of compounds (e.g., VOCs) and yet yield low detection limits. The methods selected for this sampling program should yield nanogram and sub-nanogram detection limits for all of the compounds in question. In addition, selection of methods was limited by the availability of established and validated procedures. For example, in the case of metals, the established NIOSH method (NIOSH 7300) originally proposed, was eliminated and replaced with a procedure that is not recognized as standard protocol (*EPA, 1983*), because the former method did not meet DHS detection limit requirements. To summarize, technical considerations (e.g., methodology, breakthrough volumes) are the limiting factors in obtaining DHS detection limits.

Comment:

Section 5.2.1.1 The desorption efficiency of the chosen methods must be determined via a proper QA/QC to show the percent recovery from each absorbent for each compound.

-- The collection of samples in Tedlar bags and stainless steel canisters at the same location as samples on Tenax tubes are to be collected appears to be the extent of QA/QC for air sampling method validation. As described, it is unacceptable. The statement that these different sampling methods will be evaluated to select appropriate air quality monitoring procedures if future monitoring is necessary is inappropriate. If the actual concentrations in the air sampled are not known, how can it be determined which method gives the "best answer"? This type of study should be done in the controlled environment of a lab using air with known concentrations of contaminants.

**Response:**

- o We understand that DHS refers to the originally proposed methanol extraction. As stated earlier, solvent extraction of the Tenax has been replaced with the thermal desorption procedure as outlined in EPA Test Method TO-1.
- o The use of Tedlar bags and stainless steel canisters has been eliminated from the sampling program.

**Comment:**

Section 5.2.2 As mentioned above, the detection limits may not be appropriate.

**Response:**

See response to comment on Section 5.2, bullet 4.

**Comment:**

Section 6.0

- The rationale for dividing the site in 5 zones is suspect.
- If the meteorological data is to be compared to meteorological data from San Francisco Airport, then data must be sampled concurrently for at least 90 days.
- If "air contamination" is to be compared between stations, then the stations must be sampled concurrently.
- Samples should be collected at the "breathing zone height". Equipment description/calibration and probe siting criteria must be specified.
- All methods must be validated before field use.
- Define "lot" and also describe the frequency of "duplicates".
- QA/QC should include "spikes".

**Response:**

- o The zone approach has been eliminated.
- o On-site meteorological data will be collected for a period of time dependent upon future evaluation of data from the San Francisco Airport meteorological station. The on-site meteorological data will then be evaluated to assess the need for

further monitoring. The Navy does not feel that it is appropriate to specify a time period for monitoring at this time.

- o Background samples will be collected concurrently with downwind samples for each day of sampling. The only comparison between sampling stations will be between upwind and downwind samples.
- o High-volume samplers will be placed in the breathing zone (1.2 - 1.8 meter above ground level). However, in order to minimize dispersion and obtain maximum potential ambient concentrations, samplers for the VOCs will be placed directly over the potential emission source (8 - 15 cm above ground level).

Details regarding equipment description/calibration and probe siting criteria are discussed in Section 6 and in Appendix A.

- o It is beyond the scope of a RI to perform method validation. The methods selected were judged to be the best available for the broad range of compounds of interest and to meet detection limit goals. The methods selected are recognized EPA procedures (i.e., Test Method TO-1 and TO-2 for VOCs and NIOSH 7402 for asbestos) or closely parallel EPA procedures, as is the case with the SOCs. For metals, a procedure used by the EPA's Environmental Monitoring System Laboratory (EMSL) at Research Triangle Park was selected.
- o Frequency and types of quality control samples are described in Section 6 and in Appendix A.
- o The QA/QC program is described in Appendix A. The QA/QC procedures closely parallel those used in the EPA's CLP program. Accuracy will be evaluated by assessment of laboratory spike samples (for VOCs, SOCs, and metals). The asbestos analysis will not be evaluated for accuracy as the method does not have procedures for the evaluation.

**Comment:**

Section 6.1.2 The wind pattern "characterization" should cover a 24-hour time period (for ex. day vs. night patterns/seasonal variations etc.) and include all pertinent data, especially if a short analytical sampling period is to be used to estimate "worst case" annual average concentrations based on 24-hour integrated samples. Additionally, it should be realized that conditions that are "worst case" for volatile emissions will not be "worst case" for particulate emissions.

-- The "data interpretation" should be further explained, especially in regards to "industrial and other activities that may impact the air quality at a sampling station".

**Response:**

- o On-site meteorological data will be collected prior to the air sampling effort and will be used to confirm meteorological patterns at HPA described by a local meteorologist (personal communications, Avi Okin, BAAQMD). In addition to

the pre-sampling collection of meteorological data, such data will also be collected concurrent with the air sampling (24-hour periods) and will be evaluated to assess the representativeness of the data. The sampling program is designed to coincide with environmental conditions that should generate worst-case emissions for the particular analytes of interest. The rationale is described in detail in Section 4 and in Appendix A.

- o The criteria for siting of samplers has been altered to include placement of samplers away from the influence of any site operations. Thus there is no need to interpret data with respect to potential impacts from site operations.

**Comment:**

Section 6.2 Sampling rate, breakthrough, and the use of backup absorbents must be addressed in the sampling methods.

**Response:**

See response to comment on Section 5.2, bullet 3.

**Comment:**

Section 7.0 The statement "if possible, air sampling will not be scheduled concurrently with any soil sampling activities that are judged to have a potential impact on air quality monitoring results" needs further clarification. It may be necessary to address air quality during the RI/FS activities as a separate issue.

**Response:**

It is not the intent of the air sampling effort to address the issue of air quality during RI/FS activities. RI/FS activities will be treated as an interfering source and sampling stations will be placed away from the influence of these interfering sources, to the extent possible. Monitoring of air quality during RI/FS activities is to address health and safety concerns and, as such, is described in the HPA Site Safety Plan.

**Comment:**

Section 7.2 Describe the qualifications of "qualified field technician".

**Response:**

The qualifications of the field technician are clarified in the revised Air Sampling Plan.

**Comment:**

**Section 7.3** Please explain what "unusual meteorological conditions" will be avoided during sampling.

**Response:**

Unusual meteorological conditions that might interfere with sampling, such as rain or excessive high winds, will be avoided. Wind velocities that might be considered "excessive" will be evaluated upon assessment of the meteorological data prior to sampling. Generally, the same sampling guidelines developed for the landfill gas monitoring will be followed; however, it should be noted that HPA is located in an area where foggy and windy conditions are common. Therefore, meteorological data collected during the air sampling activities will be evaluated to assess the representativeness of the data.