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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
348 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

November 22, 1994

4WD-OHA

MEMORANDUM

SUBJECT: Guidance on Preliminary Risk Evaluations (PREs) for the purpose of reaching a Finding of Suitability to Lease (FOSL),

FROM: Ted W. Simon, Ph.D. DABT, Toxicologist
Office of Health Assessment *Ted*

THROUGH: Elmer W. Akin, Chief
Office of Health Assessment

TO: Michelle Glenn, BRAC Team Leader
BRAC Remedial Project Managers
FFB/BRAC

Introduction

On September 9, 1993, the Department of Defense issued its guidance on the Environmental Review Process to Reach a FOSL. The first objective in this guidance is to "ensure protection of the public health and the environment. USEPA Region IX has the largest number of BRAC sites and has issued draft guidance on the risk evaluation protocol to be used in reaching a FOSL. The purpose of this memorandum is to express the policy of Region IV Office of Health Assessment regarding the risk evaluation required to reach a FOSL.

Tiered Screening Based on the Environmental Condition of the Property

The BRAC Cleanup Plan Guidebook provides seven categories for properties (See sidebar next page). A summary of the requisite risk evaluations for the various property categories is presented below:

- White, Blue No hazardous substances are present and these properties should be available for lease without any further study.
- Lt. Green, Dk. Green Follow the PRE procedure below based on the proposed land use under the lease.

- **Yellow** A FOSL may be issued based on the proposed land use if comparisons to existing Baseline Risk Assessments for the Operable Units/Hazardous Waste Sites on the property indicate that the risks to human health and the environment will not exceed protective levels. In addition, property access easements will be needed for remedial activities.
- **Red** If environmental sampling has been performed with sufficient DQOs, then a PRE based on the proposed land use under the lease is needed to reach a FOSL.
- **Gray** These properties require an examination of the history and past disposal practices at the property. Based on this examination; sampling and risk evaluation may be indicated.

BRAC Property Categories	
White	Areas where no storage, release or disposal of hazardous substances has occurred.
Blue	Areas where only storage of hazardous substances or petroleum products has occurred without migration of these substances from adjacent areas.
Light Green	Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred at concentrations low enough not to require removal or remedial action.
Dark Green	Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred and all remedial actions necessary to protect human health and the environment have been taken.
Yellow	Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred, removal and/or remedial actions are underway but all required remedial actions have not yet been taken.
Red	Areas where storage, release, disposal and/or migration of hazardous substances has occurred, but the required remedial actions have not yet been implemented.
Gray	Areas that have not yet been sufficiently examined.

When appropriate, the FOSL should clearly specify that a property is not suitable for unrestricted use. For example, a lease restriction preventing the use of certain properties as a daycare center or school may be established to prevent children from having access to a hazardous waste site.

In most cases, it will be sufficient to specify lease restrictions to ensure protection of human health and the environment. However, if the PRE indicates that there may be site risks that exceed those appropriate for the land use under the lease, and if the Base Cleanup Team is unable to identify risk management steps to reduce exposure, it will be necessary to perform a risk assessment that quantifies risks associated with

the property. This risk assessment should be performed by a toxicologist knowledgeable in EPA risk assessment methodology.

Human Health Preliminary Risk Evaluation Protocol

It is necessary to have analytical results that are representative of the most contaminated areas within the property to be leased. In addition, at least several samples from each possible site should receive a full scan TCL/TAL analysis to increase confidence that all hazardous chemicals present are detected.

Performance of the PRE is best accomplished through the use of tables. Separate tables are constructed for carcinogens and systemic toxicants. These tables include columns listing (i) individual hazardous chemicals, (ii) their maximum detected concentrations, (iii) their Region III risk-based concentrations values in groundwater and soil and (iv) the ratios between the maximum concentrations and the screening values. For carcinogens these ratios are multiplied by 10^4 giving a risk estimate (Eq. 1, next page); for systemic toxicants, the ratios themselves give an estimate of the non-cancer hazard (Eq. 2, next page. A generic table is shown below.

Chemical Col. 1	Media Conc.		Screening Value				Risk Ratio				
			Residential		Industrial		Residential		Industrial		
	GW col. 2	Soil col. 3	GW col. 4	Soil col. 5	GW col. 6	Soil col. 7	GW col. 8	Soil col. 9	GW col. 10	Soil col. 11	
Chemical ₁											
Chemical ₂											
Chemical ₃											
	<i>next to last row</i>		Risk/Hazard Sums by Medium								
	<i>last row</i>		Risk/Hazard Sums by Use Scenario								

The listing of the chemicals and their maximum concentrations in groundwater and soil (columns 1-3) should be obvious. Screening values for groundwater in a residential use scenario (column 4) are taken from the Risk-Based Concentration Table (RBC), Third Quarter, 1994 from EPA Region III (attached). Screening values for groundwater in an industrial scenario (column 6) are the residential values multiplied by 0.25 for VOCs and 0.5 for other chemicals. Screening values for soil in both the residential (column 5) and industrial setting (column 7) are provided in the RBC Table.

divided

The risk ratio values (columns 8-11) are calculated as follows:

$$\text{Carcinogens: Risk Ratio} = \frac{\text{Media Concentration}}{\text{Screening Value}} \times 10^{-6} \quad (1)$$

$$\text{Non-carcinogens: Risk Ratio} = \frac{\text{Media Concentration}}{\text{Screening Value}} \quad (2)$$

The risks from all the chemicals are summed to arrive at an aggregate risk for that medium (next to last row). The risk ratios are preliminary estimates of the risks and hazards associated with individual chemicals. Both the NCP (40 CFR 300) and RAGS indicate that individual receptors should be protected. Hence, the sums for each medium are added and the aggregate estimated risk/hazard for each use scenario (last row) is determined. The estimated risk/hazard for the use scenario should provided the basis for decision-making.

Generally, property will be leased with specific uses in mind. If the property will not be used for residential purposes, the aggregate risk for the industrial scenario should provide a preliminary working estimate of the risks at the site.

If the use scenario cancer risk at a given site are great r than 10^{-4} or the non-cancer hazard is greater than 1, this is a general indication that the site will require further investigation. In this case, the results of this PRE should b reviewed by a toxicologist to determine if additional work is warranted.

Ecological Preliminary Risk Evaluation

The Ecological PRE should include a walkover survey to confirm ecological habitat types, flora and fauna on the property to be leased. During the walkover, site-specific exposure pathways should be identified and any effects on biological receptors should be observed. Sensitive ecological receptors should be identified and the presence of rare, threatened or endangered species should be determined.

Analytical results from surface water and sediment should be compared to Region IV Screening Values (attached). Exceedance of these screening values indicates that further study should be performed.

Ecological screening values for soil have not yet been derived. However, the presence of certain chemicals (e.g. PCBs, lead) in analytical results from soil would suggest that toxicity tests should be performed. If this is the case, the ETAG coordinator at USEPA Region IV should be consulted.

Easements for Wetlands and Sensitive Areas

Environmentally sensitive areas may include wetlands, water supply watersheds, groundwater recharge areas, flood plains and river corridors, forests, undevelopable soils, mountains and coastal areas. When property at a BRAC site is leased, it may be advisable to grant a conservation easement, setting aside some of the land in its natural state and preserving it as open space in perpetuity. The granting of a conservation easement does not involve a change in leaseholdership; instead it means giving up development rights to the property. The conservation easement remains with the property during this and future leases or transfers.

Conservation easements may be more efficiently managed by non-profit land conservation organizations such as land trusts. These organizations can provide expertise in drafting conservation easements, coordinating with and soliciting aid from various foundations, and serving as land owners, trustees or managers of the conservation easement.

A sample conservation easement is attached. Should more information be required, Jennifer Darby of USEPA Region IV should be contacted at (800)962-6216 X6510.

Other Easements

Provisions for underground pipelines, sewers, powerlines and other utilities should also be provided in the FOSL. Base records should provide the location of these, and the appropriate utility companies and/or governmental entities should be consulted.

In addition, the DoD, EPA and their respective contractors must have access to properties to conduct investigation or remedial activities where necessary.

Please let me know if I can be of any further help.

Attachments

1. Risk-Based Concentration Table, 7/11/94 USEPA Region III.
2. Fresh Water Quality and Sediment Screening Values, 10/13/93, USEPA Region IV.
3. Sample Conservation Easement

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