CHAPTER 2

RISK CONSIDERATIONS DURING PROJECT SCOPING

The project scoping stage of the remedial investigation (RI) and baseline risk assessment is critical to the success of a Superfund project. The EPA risk assessor should be involved in the project scoping discussions and meetings to help ensure that the planning and workplan development tasks incorporate risk assessment data needs and achieve appropriate standardization in risk assessment planning.

2.1 PLANNING

The following planning activities should be performed at the beginning of the project. These activities should involve the EPA RPM and EPA risk assessor, as decisionmakers, and the risk assessment author and other resources tasked with preparing the Remedial Investigation Report, to support planning. The following pertinent information should be incorporated, as appropriate, into the Remedial Investigation Report or Site Characterization Report and the Baseline Risk Assessment Report:

- Provide site background information, site maps, sample location map; discuss historical site activity and chronology of land use.
- Discuss historical data and data useability, previous studies and actions, and an overview of the nature and extent of contamination.
- Discuss the purpose of the investigation.
- Prepare the preliminary site conceptual model which clearly identifies all known or potential sources of contamination (soil, groundwater, surface water, leachate, air, etc.), release mechanisms, and receptor routes and identifies all potential exposure pathways (including secondary pathways) and the media and receptors associated with each.
- Discuss PRGs and ARARs for the site.
- Discuss involvement by the risk assessor in discussions with stakeholders concerning land

WHEN PREPARING THE SITE CONCEPTUAL MODEL, CONSIDER THE FOLLOWING:

- Sensitive populations, including but not limited to the elderly, pregnant or nursing women, infants and children, and people suffering from chronic illnesses
- People exposed to particularly high levels of contaminants
- Circumstances where a disadvantaged population is exposed to hazardous materials (i.e., Environmental Justice situations)
- Significant contamination sources
- Potential contaminant release mechanisms (e.g., volatilization, fugitive dust emission, surface runoff/overland flow, leaching to groundwater, tracking by humans/animals, soil gas generation, biodegradation and radioactive decay)
- Contaminant transport pathways such as direct air transport downwind, diffusion in surface water, surface water flow, groundwater flow, soil gas migration, and biomagnification in the food chain
- Cross media transfer effects, such as volatilization to air, wet deposition, dry deposition, groundwater discharge to surface water, groundwater recharge from surface water, and bioaccumulation by aquatic species.

use, groundwater use, and exposure pathways and variables. If possible, the risk assessor should also visit the site.

- Identify interim deliverables for the risk assessment.

INTERIM DELIVERABLES SHOULD INCLUDE THE FOLLOWING:

- Planning Tables 0 through 10
- Worksheets on Data Useability, TARA Schedule, Dermal, Radiation Dose Assessment, and Lead (as applicable)
- Supporting Information (Section 3.1.1)
- Assessment of Confidence and Uncertainty (Section 3.1.2) and Probabilistic Analysis information, as applicable (Section 3.1.3).

- Identify Draft and Final deliverables for the risk assessment. Draft and Final deliverables include the Draft and Final Baseline Risk Assessment Reports, which also incorporate the Interim Deliverables.
- Prepare a preliminary version of Planning Table 1.
- During project scoping, the EPA RPM and EPA risk assessor may also meet to discuss the potential usefulness of including a Probabilistic Analysis (Monte Carlo) in the RI and the need for a separate Workplan. This preliminary discussion should address whether funds need to be allocated to carry out a Probabilistic Analysis. This decision should be revisited throughout Workplan development and the risk assessment process.

2.2 WORKPLAN DEVELOPMENT

Tasks to be conducted during the remedial investigation/feasibility study (RI/FS) should be identified and documented in several workplans. These usually include the RI/FS Workplan, a Sampling and Analysis Plan (SAP), and a Quality Assurance Project Plan (QAPP). Tasks related to development of the baseline risk assessment are sometimes presented in a separate Risk Assessment Workplan or incorporated into the RI/FS Workplan.

WHEN EVALUATING WHETHER TO CONDUCT PROBABILISTIC ANALYSIS, CONSIDER THE FOLLOWING:

- Extent of site remediation
- Potential costs of remediation
- Degree of uncertainty associated with the exposure information available for each portion of the site conceptual model

Risk assessment needs should be considered not only in tasks related to development of the baseline risk assessment but also in tasks related to sampling and analysis (i.e., those in the SAP and the QAPP) in the RI and tasks needing risk assessment input in the feasibility study(e.g., development of remedial goals and estimates of potential risk from remediation options).

2.2.1 RI/FS WORKPLAN/BASELINE RISK ASSESSMENT WORKPLAN

The RI/FS Workplan should summarize site background, the current and potential problems posed by site contaminants, and the objectives and scope of the RI/FS. It also should include a description of the tasks to be performed and the information and work products that should be produced from each task. Deliverables for specific tasks should be included. Tasks and deliverables for the baseline risk assessment may be included as a part of the RI/FS Workplan or in a separate Risk Assessment Workplan.

Within these Workplans, it should be clear that risk assessment needs are being considered in the RI/FS objectives. The site-specific objectives and scope of the risk assessment should be included in the Workplan.

This includes information to complete the baseline risk assessment in the RI as well as information for

the FS, such as that used to develop risk-based preliminary remedial goals (e.g., PRGs), and to assess risks from remediation (e.g., incineration).

These Workplans should also reference the methods (e.g., National guidance such as RAGS/HHEM [U.S. EPA, 1989c]; RAGS Probabilistic Guidance [U.S. EPA, 1997e and g and 2001d.]), used to prepare the Interim, Draft, and Final risk assessment deliverables and define the schedule for submission. These deliverables are described in more detail in Chapter 3. Deliverables related to development of risk-based remedial goals and assessment of risk from remediation should also be included in the Workplan (see Chapter 4).

The EPA risk assessor and EPA RPM may revisit the question of the potential value added by using Probabilistic Analyses in the risk assessment. If these analyses are to be used, the issues concerning the time, expense, and possible benefit associated with the collection of additional exposure information or sampling data should be considered to identify those exposure parameters with the greatest uncertainty, where collection of additional data and/or information may be warranted. A separate Probabilistic Analysis Workplan identifying associated deliverables should be prepared and approved by the EPA RPM and risk assessor.

2.2.2 SAP AND QAPP

Sampling and analysis activities undertaken during the RI should provide adequate data to evaluate all appropriate exposure pathways. Therefore, risk assessors should be involved in the development of the data quality objectives (DQOs) for sampling and analysis and in selecting the types of sampling and analyses that will be done. The DQOs should address the qualitative and quantitative nature of the sampling data in terms of relative quality and intent for use, to ensure that the data collected will be appropriate for the intended objectives. Note that the data quality evaluation should be recorded in the Data Useability Worksheet in Appendix C.

Sampling. The SAP should discuss how the types, numbers, and locations of samples to be collected will be adequate to evaluate each exposure pathway (both current and future) and medium. The SAP should be accompanied by detailed sampling maps showing the location and type of samples (e.g., grab, composite, or duplicate). It is important to consider how sample results will be used to estimate exposure point concentrations. Background samples should be collected from appropriate areas (e.g., areas proximate to the site, free of potential contamination by site chemicals and similar to the site in topography, geology, meteorology, and other characteristics).

If models will be used to evaluate exposure pathways and estimate exposure point concentrations, these models should be identified in the Workplan. Site-specific data collection needed for these models should also be discussed.

WHEN DEVELOPING THE SAP, CONSIDER THE FOLLOWING:

- How will data from multiple groundwater wells collected over time be used to calculate exposure?
- At what depths will soil samples be taken and how will they be combined to describe exposures for different scenarios (e.g., industrial versus residential) or to characterize hotspots?
- What type of sampling design (e.g., random versus purposive) will be used?
- Are SAPs adequate to distinguish site contamination from background contamination for each medium and for organic and inorganic parameters?

Analysis. Development of the DQOs for analysis should not be limited to concern for the precision, accuracy, representativeness, completeness, and comparability of the data. DQOs that are important for risk assessment should consider: types of laboratory analyses used, sensitivity of detection limits of the analytical techniques (especially for non-Target Compound List [non-TCL] chemicals and non-standard matrices), resulting data quality, and the employment of adequate quality assurance/quality

control (QA/QC) measures.

In some cases, risk assessment data needs may be best supported by additional chemicals, different analytical methods, and/or lower detection limits than are being used for the RI. Based upon the values of the risk-based PRGs calculated during scoping, detection limits may need to be lower than those obtained by the standard Superfund methods. The adequacy of detection limits for conducting the baseline risk assessment and for comparing to PRGs should be evaluated in the Workplan (QAPP). For example, a table listing expected contaminants and comparing the method detection limit or quantitation limit for each compound with the appropriate risk-based goal for that chemical could be presented. This information along with issues of cost and other data uses should affect the methods and detection limits finally selected.

Analytical data should be evaluated and reviewed in accordance with the criteria to evaluate data (e.g., the National Functional Guidelines). Also refer to your regional Agency office for guidance on data validation and/or other chemical-specific guidance, as applicable.

The Workplan should also discuss how split samples, duplicates, blanks (trip, field, and laboratory), and qualified and rejected data can be used in assessing site risks. The Workplan should describe the analysis for each medium and how the types of analyses were selected based on site history.