CHAPTER 5

RISK EVALUATIONS AFTER THE FEASIBILITY STUDY

After completion of the FS, EPA risk assessor involvement in risk evaluations should support the EPA RPM in ensuring that the remedy is protective. While these risk evaluations may not always require a significant level of quantitation, continuous involvement of EPA risk assessors is importantl to ensure consistency in risk evaluation and risk communication. Post-FS activities benefitting from EPA risk assessor involvement typically include the Proposed Plan, the Record of Decision (ROD), the Remedial Design/Remedial Action, and Five-Year Reviews.

5.1 RISK EVALUATION FOR THE PROPOSED PLAN

The Proposed Plan should include sufficient risk assessment information to support the basis for the proposed remedial action. EPA risk assessor support is recommended during the preparation of the Proposed Plan to ensure the consistency of risk information with the Baseline Risk Assessment Report and the FS Report. The level of detail in the Proposed Plan should be appropriate to the needs of the public. Additional EPA risk assessor support at this time may be qualitative or quantitative, typically focusing on refinement of previous analyses, based on newly developed information.

5.2 RISK EVALUATION ASSOCIATED WITH THE RECORD OF DECISION

EPA risk assessor involvement in preparation of the risk evaluation in the ROD is strongly recommended. A summary of the relevant information from the Baseline Risk Assessment Report should be presented in a mixture of text format and table format. In addition, the risks

(short-term and residual) associated with each alternative should be discussed.

5.2.1 BASELINE RISK SUMMARY IN THE RECORD OF DECISION

To support the preparation of the Record of Decision, the EPA risk assessor should prepare or review a summary of the Baseline Risk Assessment Report which supports the basis for the remedial action. The primary focus should be on those exposure pathways and chemicals of concern found to pose actual or potential threats to human health or the environment. Chemicals included in the risk assessment but determined not to contribute significantly to an unacceptable risk need not be included in the Risk Characterization Summary in the ROD (e.g., chemicals with risk levels less than $1x10^{-6}$ or HQ less than 0.1) unless they are needed to justify a No Action ROD.

Refer to *Interim Final Guidance on Preparing Superfund Decision Documents* (U.S. EPA, 1989b) and *Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* (U.S. EPA, 1999a) for a recommended format for summarizing human health risk assessment information in the ROD.

Other risk information may also be included in the ROD depending upon the level of detail preferred. Information related to values used for intake calculations and non-cancer and cancer toxicity data and exposure point concentrations are summarized on Planning Tables 4, 5, 6, 7, and 8, which could be placed in appendices to the ROD. Section 3.3 provides recommended ROD Risk Worksheets that correspond to ROD guidance highlights 6-15, 6-16A, 6-16B, 6-18A and 6.18B. Preparation of these recommended

Worksheets previously, as interim deliverables (see Section 3.3), is strongly recommended

because it should greatly facilitates risk evaluation in the ROD. If these recommended Worksheets were not previously prepared, refer to Exhibit 3-4 for RAGS Part D Planning Table sources for this information.

5.2.2 RISKS ASSOCIATED WITH CLEANUP LEVELS IN THE RECORD OF DECISION

The ROD (except for no-action RODs) should describe how remedial alternatives will reduce risks by achieving cleanup levels through treatment or by eliminating exposures through engineering controls for the contaminated media.

In addition, the risk assessor should prepare/review the following information related to the selected alternative:

- Document short-term risks that may occur during remedy implementation
- Document risks that may remain after completion of the remedy (including residual risk from untreated waste remaining at the site)
- Evaluate the need for five-year reviews.

Refer to the ROD guidance (U.S. EPA, 1999a) for suggestions regarding presentation of risks associated with cleanup levels in the ROD.

5.3 RISK EVALUATION DURING REMEDIAL DESIGN AND REMEDIAL ACTION

The EPA risk assessor's role during remedial design and remedial action may be qualitative or quantitative depending on the site and phase of the project. During the remedial design, short-term and long-term risks may be assessed through refinement of previous analyses and identification of the need for engineering controls or other measures to mitigate risk.

During the remedial action, the EPA risk assessor is more likely to provide quantitative risk evaluation support. Short-term risk evaluation may address impacts to remediation workers and neighboring communities.
Long-term risk evaluations typically focus on the following:

- Whether cleanup levels specified in the ROD have been attained
- Whether residual risk after completion of the remedy ensures protectiveness.

5.4 RISK EVALUATION ASSOCIATED WITH EXPLANATIONS OF SIGNIFICANT DIFFERENCES (ESDs) AND AMENDED RODs

This may occur when conditions relevant to a site change following the signing of a ROD. It is sometimes necessary to prepare an ESD or amended ROD. Examples of conditions causing this situation may include, but are not limited to, the following:

- Toxicity values change
- Additional technology performance information becomes available
- ARARs change (e.g., Land Disposal Restrictions).

EPA risk assessor involvement with RPM evaluations of ESDs and Amended RODs should focuses on evaluating: whether cleanup levels are still protective when considering new ARARs; new parameters for risk and hazard calculations; new technology information; and, other new information. Any new information and revised risk evaluations should be thoroughly documented.

5.5 RISK EVALUATION DURING FIVE-YEAR REVIEWS

CERCLA provides for reviews of certain remedies at least every five years to assure that human health and the environment are being protected by the remedial alternative implemented. EPA risk assessor involvement with RPM evaluations during Five-Year Reviews are generally quantitative and should focus on the following three goals:

- Confirm that the remedy remains protective (including any engineering or institutional controls)

- Evaluate whether cleanup levels are still protective by considering new ARARs, new parameters for risk and hazard calculations, and other new information
- Evaluate whether cleanup has reduced risks to levels no longer requiring restricted site use and five-year reviews (U.S. EPA, 2001b).