Human Health Risk Assessment Scoping Documents Guidelines, Recommendations, and Examples

Northern Division Naval Facilities Engineering Command
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Abstract

This issue paper gives an overview of the tasks that are involved in a Human Health Risk Assessment Scope. A description of each task is also included. Deliverables and Meetings are an integral part of the scoping process and should be listed in the government scope. The Human Health Risk Assessment can be part of the Remedial Investigation or a stand-alone document. This issue paper assumes that it is a stand-alone document.

The parts of the scope include Site Evaluation, Risk Screening, and Baseline Risk Assessment (Data Evaluation, Exposure Assessment, Toxicity Assessment, and Risk Characterization).

1.0 Site Evaluation

The first task of the risk assessment is site evaluation. This step is important in the risk assessment process because this helps us to establish pathway, scenarios, and formulate the process for the site.

Task 1 — Site Evaluation: Evaluate site conditions and contamination. The contractor shall conduct a preliminary screening of the extent of contamination, and the potential for adverse human health effects to take place at the site. At a minimum, the following major issues must be addressed:

- Identify complete exposure pathways that may exist at the site.
- Identify all contaminant fate and transport mechanisms that may exist at the site.
- Identify the toxic mechanisms of site contaminants and categories of likely exposure scenarios.
- Initial problem formation.

2.0 Risk Screening

Risk Screening involves screening the site data against the Risk Based Concentrations (RBC) or Preliminary Remediation Goals (PRG) which ever are being used by the EPA Region that your site is in. Usually, the screening will include a residential and an industrial screen. If this is a State lead site, screening should be done with the State's criteria or according to the State's guidance on doing risk assessments (if the state advocates a risk assessment process).

Screening against background should take place in this step. Other screening methods involve elimination of essential nutrients and of chemicals based on frequency of detection .

After the site evaluation is completed, then the contractor should be tasked to design a risk assessment screening based on the pathways and scenarios that exist at the site.

Task 2 — Risk Screening: Perform an initial screening evaluation for residential and commercial/ industrial receptors using Region IX Preliminary Risk Goals (PRGs) or Region III Risk Based Concentrations (RBCs). If background values are available, they should be used in the initial screening. This screening and risk assessment will be conducted in accordance with US EPA guidance.

3.0 Baseline Risk Assessment

The chemicals that remain after the Region specific screening, background, essential nutrients, and frequency of detection are called Chemicals of Potential Concern (COPC). These COPCs should be carried through the risk assessment process.

The data now needs to be manipulated. Calculation of the 95 Upper Confidence Limit (95 UCL) and the average takes place in this task. This information is needed for the Reasonable Maximum Exposure (RME) and the Central Tendency (CT) or average.

Exposure Assessment, Toxicity Assessment, and Risk Characterization occur in this task.
The identification of future and current scenarios is an important step in this process. Only evaluate the scenarios that will or are occurring at your site.

Task 3 — Risk Assessment

Subtask 1 — Industrial Risk Assessment: For those constituents which remain after the initial screen, perform a HHRA using the 95th percentile upper confidence limit (UCL) and the average under the following exposure scenarios. This will document two exposure events - RME and CT:

a) Industrial (construction worker) for total soils and groundwater (if applicable)
b) Commercial (office worker) for surface soils

Additional scenarios can be added based on the discussion between Navy's Human Health Risk Assessors and the regulators.

Note: If lead is a COPC, then a model that evaluates the risk to industrial workers from lead should be used.

Subtask 2 — Residential/Recreational Risk Assessment: If the industrial risk assessment yields an acceptable risk, perform risk assessment calculations for the following scenarios:

a) Residential Child and Adult (surface soil) and groundwater (if applicable)
b) Recreational Child and Adult (surface soil)

Additional scenarios can be added based on the discussion between Northern Division's Human Health Risk Assessors and the regulators.

Note: If lead is a COPC, then a lead model should be included that evaluated residential risk to lead. For children, the IEUBK model is used.

4.0 Deliverables

The next task should be deliverables. Usually rough draft, draft, and final. Response to Navy and regulator comments will also be included.

Task 4 — Deliverables

- Rough Draft
- Draft

- Response to Comments
- Final

5.0 Meetings

The next task is meetings. Usually, 2 meetings are required. The meetings involve regulators and or public.

Task 5 — Meetings
The contractor shall attend 2 meetings with the navy and the regulators to discuss the comments and the HHRA.

6.0 Point of Contact

Northern Division Naval Facilities Engineering Command, Risk Assessment Work Team

7.0 Acronyms

COPC	Chemicals of Potential Concern
CT	Central Tendency (Average Tendency
IEUBK	Integrated Exposure Uptake Biokinetic Model
PRG	Preliminary Remediation Goals
RBC	Risk Based Concentration
RME	Reasonable Maximum Exposure
95UCL	95 Upper Confidence Limit