



**ADEC Division of Spill Prevention and Response, Contaminated Sites Program**  
**Summary of changes between the posted 2011 draft of the Risk Assessment Procedures Manual and the draft 2015 version**

<b>2011 Draft RAPM</b>	<b>2015 Draft RAPM</b>
<b>ACRONYMS</b>	<b>ACRONYMS</b> New acronyms added for ease of the reader.
<b>1.3 The Risk Assessment Process</b> Only referenced soil cleanup levels	<b>1.3 The Risk Assessment Process</b> Includes groundwater cleanup levels in the discussion.
<b>2.2 Risk Assessment Work Plan</b>	<b>2.2 Risk Assessment Work Plan</b> Added requirement to include data evaluation, review of adequacy of detection limits. Clarifies how consultation with ATSDR will occur if there is inadequate toxicological information available for a chemical, etc.
<b>3.1.1 Data Usability</b> It was implied that historical data must be evaluated to assess the type, quantity, and quality of data in order to verify that the planning objectives, Quality Assurance Project Plan (QAPP) components, and sample collection procedures were satisfied and that the data are suitable for its intended purpose.	<b>3.1.1 Data Usability</b> Additional language was added to clarify historical data usability must be evaluated. (The available sampling data, including any historical data, etc...).
<b>3.1.4 Selection of Contaminants of Potential Concern</b> Screening hierarchy was based off ADEC tables first, followed by the EPA Regional Screening Levels (RSL).	<b>3.1.4 Selection of Contaminants of Potential Concern</b> Changed screening to be based off the EPA RSL tables first, followed by other toxicity sources, because the RSLs are updated twice a year, and are thus more reflective of the toxicity hierarchy used later to determine the risk.  Process for developing screening levels provides more detailed instructions on which sources to use.
<b>Table 1 Summary of Default Exposure Factors</b> Old exposure factors did not consider child receptors; For example, because only adult exposure factors such as water ingestion rates were provided, applying these to child receptors was overly conservative.	<b>Table 1 Summary of Default Exposure Factors</b> New Exposure factors include groundwater ingestion rates for a child receptor.
<b>3.2.3 Calculating Exposure Point Concentration</b> Definition of the exposure area lacked clarity.	<b>3.2.3 Calculating Exposure Point Concentration</b> Additional language added. "For the purposes of risk assessment, the source area is the exposure area (replace unit). The source area is defined as an evident volume of soil and/or groundwater containing elevated or potentially elevated concentrations of contaminant (horizontal and vertical extent) in comparison to surrounding media. The source area includes the following: <ul style="list-style-type: none"> <li>•Area with visible stains, known contamination, and/or obvious releases</li> <li>•Area where contaminants have leaked, spilled, migrated and been disposed</li> <li>•Area where sufficient laboratory data indicates elevated concentrations relative to surrounding media</li> <li>•Area is the extent and migration of the individual COPC and should not extend to different source areas."</li> </ul> Additional language provided to clarify how a defensible exposure point concentration is determined.

<b>2011 Draft RAPM</b>	<b>2015 Draft RAPM</b>
<b>3.3.2 Toxicity Values</b>	<b>3.3.2 Exposure Route Toxicity Values</b> Discussion for the inhalation route has been updated.
<b>3.3.3 Toxicity Equivalence Factors</b> Used TEFs for calculating risk from PAHs.	<b>3.3.3 Toxicity Equivalence Factors for Dioxins, Furnas, and PCBs and Relative Potency Factors</b> Section updated to incorporate the EPA's current use of Relative Potency Factors for carcinogenic polyaromatic hydrocarbons.
<b>3.3.4.1 Lead</b>	<b>3.3.4.1 Lead</b> Updated discussion of the cumulative risk calculations for lead.
<b>3.3.5 Types of Exposures: Chronic, Subchronic, and Acute</b> Lacked clarity on assessing risk to child receptors for the chronic reference dose based on default exposure parameters and EPA's chronic exposure definition.	<b>3.3.5 Types of Exposures: Chronic, Subchronic, and Acute</b> For a residential scenario, a 6-year childhood exposure with a chronic RfD should be assessed.
<b>3.4.1 Carcinogenic Risk</b>	<b>3.4.1 Carcinogenic Risk</b> Section updated to remove reference to carcinogen group designations and the use of different approaches in assessing risk from different groups.
<b>3.4.2 Noncarcinogenic Risk</b>	<b>3.4.2 Noncarcinogenic Risk</b> Revised and clarified instructions for calculating cumulative risk for noncarcinogens.
<b>3.4.4 Development of Alternative Cleanup Levels (ACL)</b> Lacked clarity on evaluating the migration issue for alternative cleanup level (ACL).	<b>3.4.4 Development of Alternative Cleanup Levels (ACL)</b> Clarifies that the ACL must be protective of the potential for migration.
<b>3.4.5 Uncertainty Assessment</b>	<b>3.4.5 Uncertainty Assessment</b> Emphasizes the requirement to identify and discuss uncertainty factors and their impact on the risk assessment.
<b>3.4.6 Uncertainty in Data Evaluation</b>	<b>3.4.6 Uncertainty in Data Evaluation</b> Clarifies requirements for discussing uncertainty with the data used in the selection of COPCs.
<b>3.4.7 Uncertainty in the Exposure Assessment</b>	<b>3.4.7 Uncertainty in the Exposure Assessment</b> Clarifies the requirement for discussing uncertainty with respect to the assumptions used in the exposure assessment.
<b>3.4.8 Uncertainty in the Toxicity Assessment</b>	<b>3.4.8 Uncertainty in the Toxicity Assessment</b> Provides an additional resource for evaluating uncertainties in the assessment.
<b>4.0 Ecological Risk Assessment</b>	<b>4.0 Ecological Risk Assessment</b> Updated and clarified procedures and updated document references. Updates the description of measures of exposure.
<b>5.0 References</b>	<b>5.0 References</b> Updated, deleted or added, and re-ordered references.
<b>6.0 Glossary</b>	<b>6.0 Glossary</b> Expanded definition of chronic to apply to greater than 10% of human life span. Changed definitions of dose and of uncertainty factor to conform to definitions used in the Integrated Risk Information System.
Document length: 76 pages.	Document length: 73 pages; figures are moved to the end of the document to facilitate flow.