

INSTRUCTIONS FOR TABLE 9

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

<p>PURPOSE OF THE TABLE:</p> <ul style="list-style-type: none"> To provide a summary of cancer risks and non-cancer hazards for each Receptor by Medium, Exposure Medium, Exposure Route, and Exposure Point 	<p><i>Table 9 presents cancer risk and non-cancer hazard information for all COPCs and media/exposure points quantitatively evaluated.</i></p>
<p>INFORMATION DOCUMENTED:</p> <ul style="list-style-type: none"> The cancer risk and non-cancer hazard to each Receptor for each COPC by Exposure Route and Exposure Point The total cancer risk and non-cancer hazard for each Exposure Point, Exposure Medium, and Medium The total cancer risks and non-cancer hazards for a Receptor across all media The primary target organs for non-carcinogenic hazard effects. 	
<p>TABLE NUMBERING AND SUMMARY BOX INSTRUCTIONS:</p> <ul style="list-style-type: none"> Complete one copy of Table 9 for each unique combination of the following three fields that will be quantitatively evaluated (Scenario Timeframe, Receptor Population, and Receptor Age). Enter each combination of these three fields in the Summary Box in the upper left corner of the table. Number each table uniquely beginning with 9.1 and ending with 9.n where “n” represents the total number of combinations of the three key fields. Different tables should be prepared to address RME and CT Risk and Hazard summaries. Tables 9.1. RME through 9.n. RME should be completed for RME Risk and Hazard summaries. Table 9.1.CT through 9.n.CT should be completed for CT Risk and Hazard Summaries. 	<p><i>It is possible that some tables may contain the same data associated with different descriptions in the Summary Box in the upper left corner.</i></p> <p><i>Separate tables may be necessary to ensure transparency in data presentation. Replication of information is readily accomplished using spreadsheet software.</i></p> <p><i>Consult the EPA risk assessor for alternatives (e.g., footnotes) to preparing multiple tables with the same data.</i></p>
<p>GENERAL NOTES/INSTRUCTIONS FOR THIS TABLE:</p>	

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SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs (continued)

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| <ul style="list-style-type: none">• Cancer risk and non-cancer hazard information for all COPCs and media/Exposure Points quantitatively evaluated is to be presented in Table 9.• All table entries are presented on Tables preceding Table 9.• Documentation of the non-cancer hazard and carcinogenic risk values for chemicals was presented on Table 7.• Documentation of the carcinogenic risk values for radionuclides was presented on Table 8.• Total cancer risks and non-cancer hazards associated with each Receptor are to be presented for each Exposure Point, Exposure Medium, and Medium and across all media and all Exposure Routes. | |
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INSTRUCTIONS FOR TABLE 9

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs (continued)

HOW TO COMPLETE/INTERPRET THE TABLE	
SUMMARY BOX IN UPPER LEFT CORNER	
Row 1 - Scenario Timeframe	
Definition: <ul style="list-style-type: none"> • The time period (current and/or future) being considered for the exposure pathway. 	
Instructions: <ul style="list-style-type: none"> • Choose from the picklist to the right. 	<i>Current</i> <i>Future</i> <i>Current/Future</i> <i>Not Documented</i>
Row 2 - Receptor Population	
Definition: <ul style="list-style-type: none"> • The exposed individual relative to the Exposure Pathway considered. 	<i>For example, a resident (receptor population) who drinks contaminated groundwater.</i>
Instructions: <ul style="list-style-type: none"> • Choose from the picklist to the right. 	<i>Resident</i> <i>Industrial Worker</i> <i>Commercial Worker</i> <i>Construction Worker</i> <i>Other Worker</i> <i>Golfer</i> <i>Jogger</i> <i>Fisher</i> <i>Hunter</i> <i>Fisher/Hunter</i> <i>Swimmer</i> <i>Other Recreational Person</i> <i>Child at School/Daycare/</i> <i>Playground</i> <i>Trespasser/Visitor</i> <i>Gatherer</i> <i>Farmer</i> <i>Gardener</i> <i>Other</i>
Row 3 - Receptor Age	
Definition: <ul style="list-style-type: none"> • The description of the exposed individual, as defined by the Region or dictated by the site. 	<i>For example, an adult (Receptor Age) resident (Receptor Population) who drinks contaminated groundwater.</i>

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SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs (continued)

<p>Instructions:</p> <ul style="list-style-type: none"> • Choose from the picklist to the right. 	<p><i>Child</i> <i>Adult</i> <i>Adolescents (teens)</i> <i>Pre-Adolescents</i> <i>Not Documented</i> <i>Child/Adult</i> <i>Geriatric</i> <i>Sensitive</i> <i>Other</i> <i>Infant</i> <i>Toddler</i> <i>Pregnant</i></p>
BODY OF THE TABLE	
Column 1 - Medium	
<p>Definition:</p> <ul style="list-style-type: none"> • The substance (e.g., air, water, soil) that is a potential source of contaminants in the Exposure Medium. (The Medium will sometimes equal the Exposure Medium.) Usually, the Medium is that targeted for possible remediation. 	
<p>Instructions:</p> <ul style="list-style-type: none"> • Choose from the picklist to the right. <p>For each Medium,</p> <ol style="list-style-type: none"> 1. The last entry in this column should be "Medium Total." In this row, the total risk/HI from each Medium (for all chemicals, Exposure Routes, Exposure Points, and Exposure Media) for the current Receptor is entered in the Exposure Routes Total Column. 	<p><i>Groundwater</i> <i>Leachate</i> <i>Sediment</i> <i>Sludge</i> <i>Soil</i> <i>Surface Water</i> <i>Debris</i> <i>Other</i> <i>Liquid Waste</i> <i>Solid Waste</i> <i>Air</i> <i>Surface Soil</i> <i>Subsurface Soil</i></p>
Column 2 - Exposure Medium	
<p>Definition:</p> <ul style="list-style-type: none"> • The contaminated environmental medium to which an individual may be exposed. Includes the transfer of contaminants from one medium to another. <p><i>For example:</i></p> <ol style="list-style-type: none"> 1) <i>Contaminants in Groundwater (the Medium) remain in Groundwater (the Exposure Medium) and are available for exposure to receptors.</i> 2) <i>Contaminants in Groundwater (the Medium) may be transferred to Air (the Exposure Medium) and are available for exposure to receptors.</i> 3) <i>Contaminants in Sediment (the Medium) may be transferred to Fish Tissue (the Exposure Medium) and are available for exposure to receptors.</i> 	

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SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs (continued)

<p>Instructions:</p> <ul style="list-style-type: none">• Choose from the picklist to the right. <p>2. For each Exposure Medium, the last entry in this column should be "Exposure Medium Total." This refers to the total risk/HI from each Exposure Medium (for all chemicals, Exposure Routes and Exposure Points) for the current Receptor. These totals are recorded in the Carcinogenic and Non-Carcinogenic Exposure Routes Total Columns.</p>	<p><i>Groundwater</i> <i>Leachate</i> <i>Sediment</i> <i>Sludge</i> <i>Soil</i> <i>Surface Water</i> <i>Debris</i> <i>Other</i> <i>Liquid Waste</i> <i>Solid Waste</i> <i>Air</i> <i>Plant Tissue</i> <i>Animal Tissue</i> <i>Fish Tissue</i> <i>Spring Water</i> <i>Surface Soil</i> <i>Subsurface Soil</i> <i>Particulates</i> <i>Vapors</i></p>
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SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs (continued)

Column 3 - Exposure Point	
<p>Definition:</p> <ul style="list-style-type: none"> • An exact location of potential contact between a person and a chemical within an Exposure Medium. <p><i>For example:</i></p> <ol style="list-style-type: none"> 1) <i>Contaminants are in Groundwater (the Medium and the Exposure Medium) and exposure to Aquifer 1 - Tap Water (the Exposure Point) is evaluated.</i> 2) <i>Contaminants in Groundwater (the Medium) may be transferred to Air (the Exposure Medium) and exposure to Aquifer 1 - Water Vapors at Showerhead (the Exposure Point) is evaluated.</i> 3) <i>Contaminants in Sediment (the Medium) may be transferred to Fish Tissue (the Exposure Medium) and Trout from Dean's Creek (the Exposure Point) is evaluated.</i> 	
<p>Instructions:</p> <ul style="list-style-type: none"> • Provide the information as text in the Table. 3. For each Exposure Point, the last entry in this column should be "Exposure Point Total." This refers to the total risk/HI (for all chemicals and Exposure Routes) for the current Receptor. These totals are recorded in the Carcinogenic and Non-Carcinogenic Exposure Routes Total columns. 	<p><i>Exposure Point should be defined in the same way as was done in Planning Table 1.</i></p>
Column 4 - Chemical of Potential Concern	
<p>Definition:</p> <ul style="list-style-type: none"> • The COPCs quantitatively considered in the risk characterization. 	
<p>Instructions:</p> <ul style="list-style-type: none"> • Enter the COPCs from previous tables. • Enter the term "Chemical Total" at the end of the list of chemicals for each Exposure Point. Use this row to record total risk/HI values from all chemicals at each Exposure Point. • Enter the term "Radionuclide Total" at the end of the list of radionuclides for each Exposure Point. Use this row to record total risk/HI values from all radionuclides for each Exposure Point. 	
Columns 5, 6, 7, and 8 - Carcinogenic Risk - Ingestion, Inhalation, Dermal and External (Radiation)	
<p>Definition:</p> <ul style="list-style-type: none"> • The cancer risk value calculated by Receptor for each COPC for each Exposure Route for each Exposure Point. 	<p><i>The value at the bottom of each column presents the total cancer risk by Exposure Route for each Exposure Point.</i></p>

INSTRUCTIONS FOR TABLE 9

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs (continued)

<p>Instructions:</p> <ul style="list-style-type: none"> • Enter the cancer risk value calculated by Receptor for each Exposure Route for each Exposure Point. • Enter the cancer risk totals for each Exposure Route in the rows labeled “Chemical Total” and “Radionuclide Total.” 	
Column 9 - Carcinogenic Risk - Exposure Routes Total	
<p>Definition:</p> <ul style="list-style-type: none"> • The total cancer risk for each COPC across all Exposure Routes at each Exposure Point. 	
<p>Instructions:</p> <ul style="list-style-type: none"> • Enter the sum of the cancer risks across Exposure Routes for each COPC. • Enter the sum of the cancer risks in this column for each Exposure Point in the “Exposure Point Total” row. • Enter the total cancer risk for each Exposure Medium and individual Medium in the “Exposure Medium Total” and “Medium Total” rows. • For each Receptor, enter the total cancer risks across all Media and all Exposure Routes as “Receptor Risk Total.” 	<p><i>Consult the EPA risk assessor to determine the appropriate summing of risks.</i></p>
Column 10 - Non-Carcinogenic Hazard Quotient - Primary Target Organ	
<p>Definition:</p> <ul style="list-style-type: none"> • The primary effect reported as a primary target organ effect in IRIS, HEAST, or other source. 	
<p>Instructions:</p> <ul style="list-style-type: none"> • Enter the primary target organ effect as reported in IRIS, HEAST, or other source. 	<p><i>Consult the EPA risk assessor to determine if multiple effects should be provided.</i></p>
Columns 11, 12, and 13 - Non-Carcinogenic Hazard Quotient - Ingestion, Inhalation, Dermal	
<p>Definition:</p> <ul style="list-style-type: none"> • The non-cancer hazard calculated by Receptor for each COPC for each Exposure Route for each Exposure Point. 	<p><i>The value at the bottom of each column presents the non-cancer hazard by exposure route for each exposure point, for all effects considered together.</i></p>
<p>Instructions:</p> <ul style="list-style-type: none"> • Enter the non-cancer hazard value calculated by Receptor for each COPC for each Exposure Route for each Exposure Point. • Enter the non-cancer hazard totals for each Exposure Route in the rows labeled “Chemical Total” and “Radionuclide Total.” 	<p><i>Consult the EPA risk assessor for summing hazard quotients.</i></p>

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SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs (continued)

Column 14 - Non-Carcinogenic Hazard Quotient - Exposure Routes Total	
<p>Definition:</p> <ul style="list-style-type: none"> • The total non-cancer hazard calculated for each COPC across all Exposure Routes at each Exposure Point. 	<p><i>The Totals in each column present the total non-cancer hazards by Exposure Routes for each Exposure Point. The values beneath the table under this column present hazard quotients for target organs.</i></p>
<p>Instructions:</p> <ul style="list-style-type: none"> • Enter the sum of non-cancer hazards across the three Exposure Routes in each Exposure Route column. • Enter the sum of the non-cancer hazards across Exposure Routes for each COPC and primary target organ. • Enter the sum of the non-cancer hazards in this column for each Exposure Point in the “Exposure Point Total” row. • Enter the total hazard index for each Exposure Medium and Medium in the “Exposure Medium Total” and “Medium Total” rows. • Enter the total hazard index across all media and all Exposure Routes as “Receptor HI Total.” • Enter the total hazard index for primary target organs. • Sum the hazard quotient target organ effects by target organ and enter into the appropriate boxes. 	<p><i>Consult the EPA risk assessor for specific instructions in summing hazard quotients.</i></p>