

Topic 8: How to Perform Health Analyses Using a Ground Level Concentration

This topic addresses how to run a health analysis by manually inputting a GLC value for one or more substances using the results from an outside air dispersion run. There are two paths described below that can be used to achieve this analysis. In future releases, HARP will address the need for electronically accepting the output from an air dispersion modeling run that is performed outside of the HARP Software. For more information on setting up a risk analysis, see Chapters 4 and 10 in the HARP User Guide.

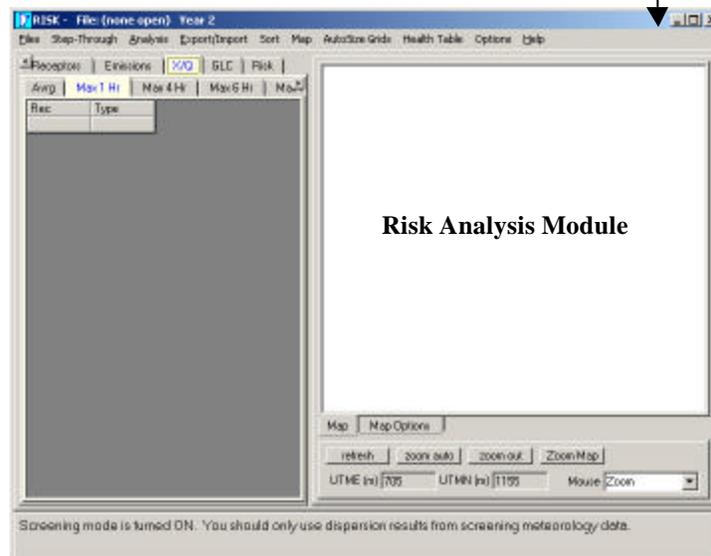
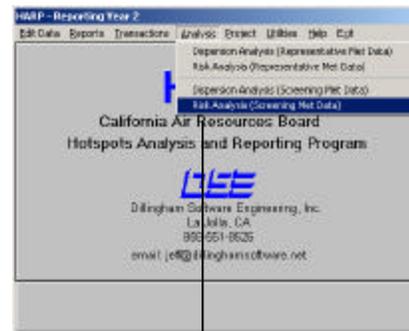
A. Adding a Substance-Specific GLC as a Background Concentration and Running a Point-Estimate Health Risk Analysis

The first method will allow you add a GLC for each substance across an entire receptor grid and run a multipathway point-estimate risk analysis. This method could be used for evaluating the contribution of background pollutants. Substance-specific GLC values can be added through the emissions information in the risk window as a background concentration. The GLC value that you enter will be applied to every receptor in the file as a background concentration.

Step 1. Opening the Risk Analysis Module

1. From the HARP main menu, select *Analysis*.

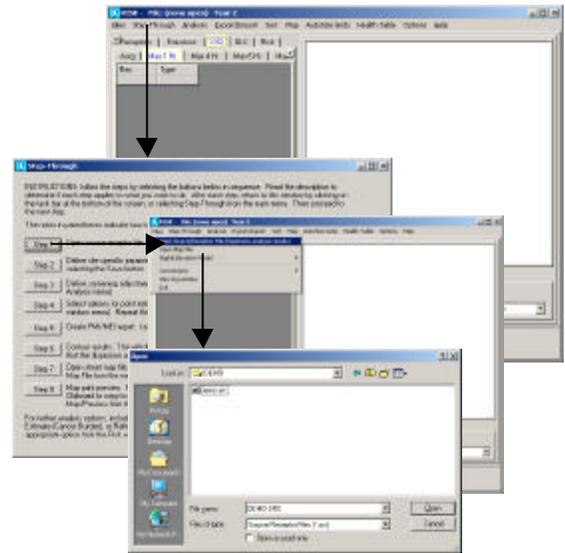
- If you have completed an air dispersion analysis using representative meteorology, select *Risk Analysis (Representative Met Data)*.
- If you have completed an air dispersion analysis using screening meteorology data, select *Risk Analysis (Screening Met Data)*.



Step 2. Opening the Source/Receptor (SRC) File

Use the Step-Through window to access SCR file. Open the SRC file for your project or use the demo SRC file (C:\HARP\PROJECTS\DEMO\Demo.src). This demo SRC file provides a surrogate receptor grid from an air dispersion modeling run. This file will be used as a template when inserting your background GLC value.

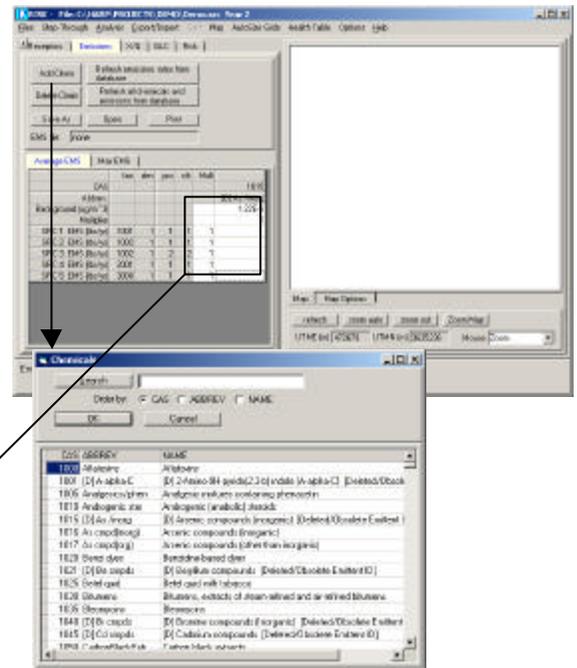
1. To open the Step-Through window, click on the **Step-Through** menu item at the top of the main Risk window.
2. On the **Step-Through** window, click **Step 1**. Click on the desired SRC file. Click **Open**. If you have previously used this SRC file to calculate risk, HARP will ask if you want to load the most recent risk calculations associated with this SRC file. Click **NO**, if you are going to do more calculations using this data. Click **YES**, if the point estimate risk data calculations are complete and you are viewing, printing, or conducting a stochastic analysis.



Step 3. Define the Pollutants and the Background Concentrations

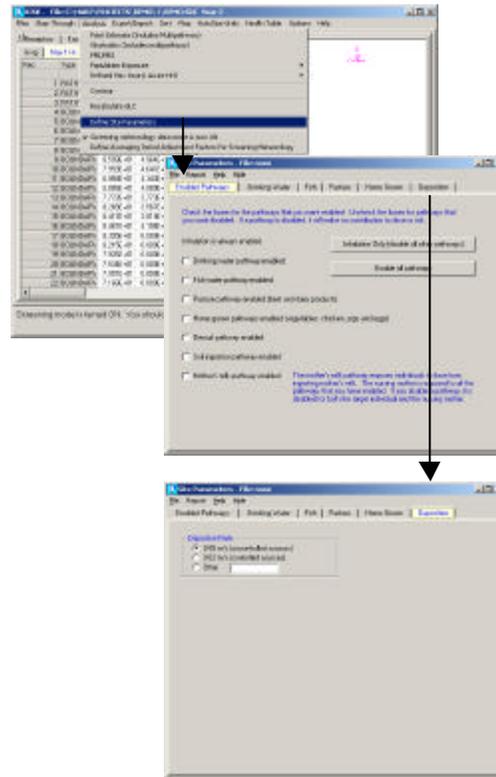
Identify the pollutants of interest and specify the ground level concentration for each pollutant (See Chapter 10 in the HARP User Guide for more information).

1. Click on the **Emissions tab**.
2. Add and/or delete chemicals using the **Add Chem** or **Delete Chem** buttons.
3. To delete a chemical from the emissions page, highlight the column for that substance and press the **Delete Chem** button.
4. To add a chemical, select the **Add Chem** Button and the screen on the right shows up. Enter the name of the chemical in the blank and press **Search**. A list of pollutants will appear for you to select from. Highlight the pollutant of interest and press **OK**. The substance will be added to the list of pollutants on the Emissions Page.
3. For each substance that is included in the background assessment, insert the GLC value into the background row, insert a one (1) into the multiplier row, and blank out the source emissions for each substance.



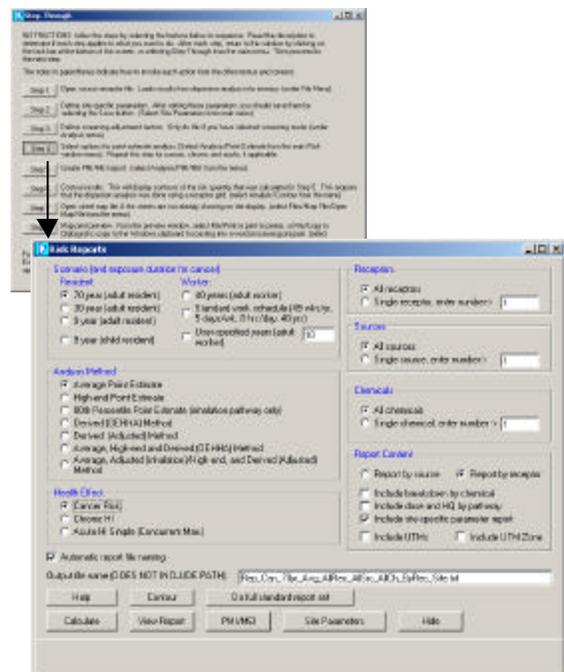
Step 4. Defining Site-Specific Parameters

- 1a. On the *Step-Through* window, click *Step 2*. This will open the *Site Parameters* window.
- or
- 1b. From the main *Risk* window, select *Analysis/Define Site Parameters*. This will open the *Site Parameters* window.
2. Click on the *Enabled Pathways* tab.
3. Place a check next to each pathway you wish to include in the point estimate risk analysis.
4. If you enable the drinking water, fish, pasture, and homegrown pathways you will need to add the required information in the corresponding tabs.
5. Choose a deposition rate under the *Deposition* tab.
6. Click *File/Save As* if you wish to save the file.
7. Click *Hide* (top menu) to close the *Site-Specific Parameters* window.



Step 5. Set up the Point-Estimate Risk Analysis

1. On the *Step-Through* window, click *Step 4*. This will open the *Risk Reports* window. (See Topic 5 in the HARP How-To Guides or Chapter 10 in HARP User Guide for more information).
2. Click on the button next to each item that you would like to include in the risk analysis.
3. Click *Calculate*. HARP will show you a preview of the report. Close Report.
4. At this point, the risk values will be added to the data view window. Click on the risk tab on the right side of the main risk window. The cancer, chronic, and acute risk values will be displayed. If no value has been calculated a – 1.00E+00 will be displayed for each receptor.
5. Repeat steps 2-3 for all other scenarios you wish to calculate

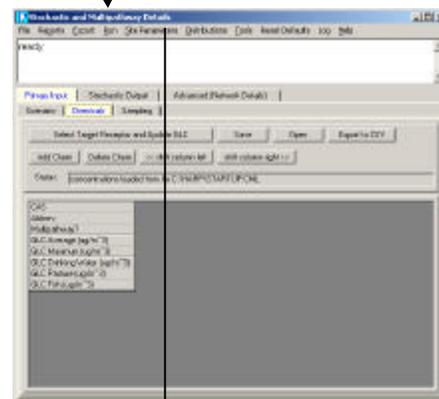
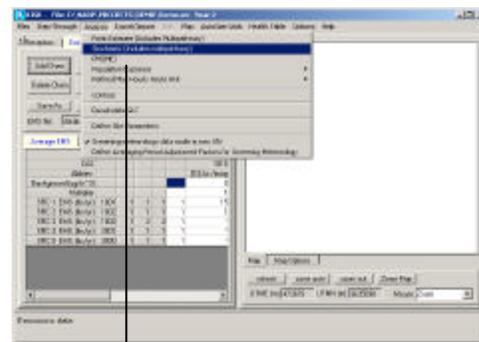


B. Performing a Stochastic Risk Analysis for a Single Receptor Without A Dispersion Analysis

The second method will allow you to analyze a single receptor only, but you can enter different GLC values for the target receptor and each of the three pathway receptors. This second method will allow you to run a multipathway point-estimate or stochastic analysis. This is done by entering the ground level concentrations directly on the *Stochastic and Multipathway Details* window and proceeding with the risk analysis without ever running a separate dispersion analysis. To perform the second method, see the steps below or refer to Chapter 10 in the HARP User Guide. Topic 7 in the HARP How-To Guides describes how to run a stochastic analysis.

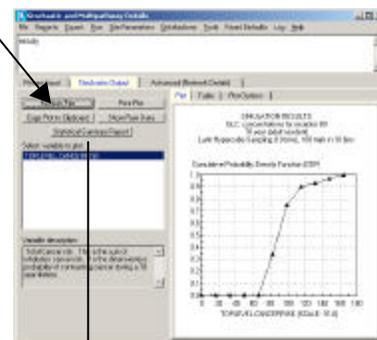
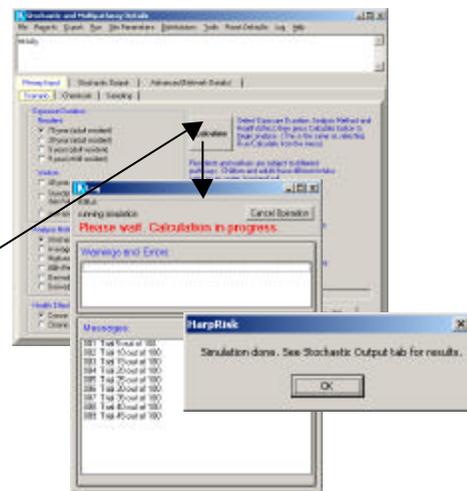
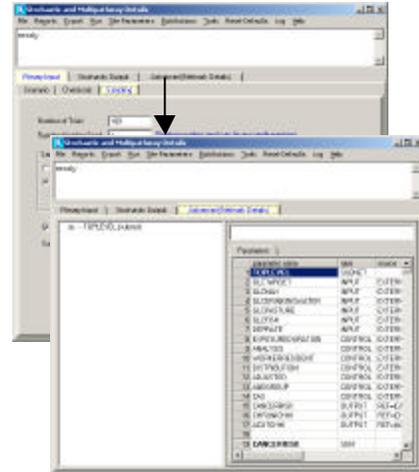
Step 1. Setting up and Running a Stochastic Simulation

1. From the main *Risk* window, select *Analysis/Stochastic (Includes Multipathway)*
2. Select the *Primary Input* tab and then click the *Chemicals* tab to access the chemical concentration data.
3. Use the *Add Chem* or *Delete Chem* buttons to create the list of pollutants. The method is the same as described in Step 3 above.
4. Enter the ground level concentrations at the location(s) of interest. The drinking water, pasture, and fish GLC's are used for multipathway analysis.
5. Select the *Site Parameters* from the top menu and verify that the parameters are correct for your site. If you enable the drinking water, fish, pasture, and homegrown pathways you will need to add the required information in the corresponding tabs. To save any changes beyond this run, click *File/Save As* and then close the window by clicking on *Hide*.



6. Next, set the sampling parameters by clicking the **Sampling** tab and set the sampling parameters (i.e., number of trials, random number seed, sampling type, and bins).
7. Identify the variable(s) to plot for viewing. The default plot is the total cancer risk. Use the **Advanced Network Details** button to identify any additional variables that you want to keep a record of for plotting. See Chapter 10 in the HARP User Guide and Topic 7 in the HARP How-To Guides for more information on plotting features.
8. Under the **Scenario** tab, set the exposure duration, analysis method, and health effect. Make sure stochastic is checked in the analysis method. Note that if you only want a point-estimate report, not a stochastic analysis, you can select one of the point-estimate options under the **Analysis Method** section under the Scenario tab.
9. Press the **Calculate** button to start the simulation.
10. Once the simulation is complete, press **Refresh Plot** and the plot that is highlighted will appear in the window.
11. Press the button, **Statistical Summary Report** to produce a tabular report. This will be saved to a file and folder that you designate, but will open automatically in HARP after it is named.

See Chapter 10 in the HARP User Guide and Topic 7 in the HARP How-To Guides for more information on viewing results, plot options, and contouring maps.



Time	DEP	SE	CI
0	0.0000	0.0000	0.0000
10	0.8500	0.0100	0.8300
20	0.8500	0.0100	0.8300
30	0.8500	0.0100	0.8300
40	0.8500	0.0100	0.8300
50	0.8500	0.0100	0.8300
60	0.8500	0.0100	0.8300
70	0.8500	0.0100	0.8300
80	0.8500	0.0100	0.8300
90	0.8500	0.0100	0.8300
100	0.8500	0.0100	0.8300