

**Steps Required to Set Up the
 “TRIM.Expo w. TRIM.Risk (1 run)” Example Application**
 (December 13, 2005)

This file provides step-by-step instructions for creating an example application of the “TRIM.Expo w. TRIM.Risk (1 run)” scenario using the provided input files. Exhibit 1 provides a list of input files and databases that are required to run the application. This table is intended to be used as a reference for the example application.

NOTE: This application is for training purposes only and is not intended to apply to any real world situation.

Exhibit 1. List of Input Files and Databases

File		Source of File	
Name	Description	Downloaded	Created by User
employment.txt	APEX employment probabilities by age group file	Downloaded from the EPA website	
pop_geo.txt	APEX sector location file	Downloaded from the EPA website	
commuting2000.txt	APEX commuting flow file	Downloaded from the EPA website	
population files (10) <ul style="list-style-type: none"> • pop_fa.txt • pop_fb.txt • pop_fn.txt • pop_fo.txt • pop_fw.txt • pop_ma.txt • pop_mb.txt • pop_mn.txt • pop_mo.txt • pop_mw.txt 	APEX gender and race-specific population estimates file	Downloaded from the EPA website	
APEXinputAQsites.txt	APEX district location files	Downloaded with this example application	
APEXinputAQdata.txt	APEX air quality data files	Downloaded with this example application	
ME_descriptions.txt	APEX micro descriptions file	Downloaded with this example application	
ME_mapping.txt	APEX micro mapping file	Downloaded with this example application	
ProfileFunctions.txt	APEX profile functions file	Downloaded with this example application	

File		Source of File	
Name	Description	Downloaded	Created by User
MetZones_LA.txt	APEX temperature zone location file	Downloaded with this example application	
Met2000_LA.txt	APEX temperature data file	Downloaded with this example application	
CHADQuest.txt	APEX personal info file	Downloaded from the EPA website	
CHADEvents.txt	APEX diary events file	Downloaded from the EPA website	
CHADMets.txt	APEX activity-specific MET file	Downloaded from the EPA website	
Physiology.txt	APEX physiological parameters file	Downloaded from the EPA website	
ventilation.txt	APEX ventilation file	Downloaded from the EPA website	
apexpopdbexample	The MySQL database containing population data used by APEX and also used to generate risk metrics.	Downloaded with this example application	
HHToxDB_101405	Human Toxicity Value database	Downloaded from the EPA website	
resperdb	Residency Period database	Downloaded from the EPA website	

- (1) Confirm that all input files listed as “Downloaded with this example application” in Exhibit 1 are located in the “input” subdirectory of your APEX directory (e.g., C:\Models\APEX\input). Copy the APEX population database folder (apexpopdbexample) into the “MySQL Server 4.x\data” subdirectory of the MySQL directory on your computer (e.g., C:\Program Files\MySQL\MySQL Server 4.1\data).
- (2) Download the zip file (APEX_Inputs_CHAD.zip) containing the Consolidated Human Activity Database (CHAD) and other human characteristics data files (i.e., the physiology and ventilation files) to your computer from the TRIM.Expo_{Inhalation}/APEX Download page (www.epa.gov/ttn/fera/apex_download.html). Unzip this file into the “input” subdirectory of your APEX directory (e.g., C:\Models\APEX\input). Be sure to maintain the directory structure of the files being unzipped. This is done by default with WinZip's Wizard interface, and is done by checking the “Use folder names” box in the Extract screen of WinZip's Classic interface.

- (3) Download the zip file (APEX_Inputs_Pop.zip) containing the population (10), sector location, and employment files to your computer from the TRIM.Expo_{Inhalation}/APEX Download page (www.epa.gov/ttn/fera/apex_download.html). Unzip this file into the “input” subdirectory of your APEX directory (e.g., C:\Models\APEX\input).
- (4) Download the zip file (APEX_Inputs_Commuting.zip) containing the commuting file to your computer from the TRIM.Expo_{Inhalation}/APEX Download page (www.epa.gov/ttn/fera/apex_download.html). Unzip this file into the “input” subdirectory of your APEX directory (e.g., C:\Models\APEX\input).
- (5) Open TRIM.Risk by clicking on the Start button and selecting Programs > TRIM > TRIM, or by typing “runtrim.bat” from a run or DOS command window.
- (6) Double-click on the “Inhalation risk assessment using RfCs and UREs, with TRIM.Expo (Generic)” project in the Project Selection window to open the scenario list.
- (7) In the resulting window, select the “TRIM.Expo w. TRIM.Risk (1 run)” scenario and click the “Duplicate” button at the bottom of the window. When prompted to name the duplicate, type “Example Application - TRIM.Expo w. TRIM.Risk (1 run),” and click “OK.” A scenario with this name will appear in the window.
- (8) Open the “Example Application - TRIM.Expo w. TRIM.Risk (1 run)” scenario by double-clicking on the name.
- (9) The “Example Application - TRIM.Expo w. TRIM.Risk (1 run)” scenario window will open. The left side of the window (called “Input Panels”) lists some of the parameters needed for the simulation. The “Input Panels” have five tabs; “Settings,” “Databases,” “APEX Settings,” “APEX Files,” and “Other.” The right side of the scenario window shows the components of this TRIM.Risk scenario in the “Graph View” pane. Some of the fields on these tabs must be filled in for this example application. Check that filled fields are accurate for your computer, and fill in the blank fields (hitting “Tab” after typing in a value to progress to the next field) based on instructions in Exhibit 2.

Exhibit 2. Parameters Values on Input Panels of Example Application

Parameter Name	Instructions for Setting Parameter
Settings Tab	
Run Name	This property is a descriptive name for the run you are performing. Suggested: ExampleRiskSing
TRIM Directory	Check that this parameter is filled in with the directory where the TRIM installation is on your computer. If not, navigate to the correct directory using the “Browse” button.
APEX Directory	Check that this parameter is filled in with the directory where APEX (i.e., TRIM.Expo) files are located on your computer. If not, navigate to the correct directory using the “Browse” button.
APEX Input Directory	Location of APEX input files, or folders containing input files. Type in: \$(str(“APEX Directory”))\input

Parameter Name	Instructions for Setting Parameter
APEX Output Directory	Directory to which the APEX output files will be saved. Type in: <code>{str("APEX Directory")}\output_{str("Pollutant")}_{str("Location")}\{str("Run Name")}</code>
APEX Executable	Location of the APEX executable on your computer. Type in: <code>{str("TRIM Directory")}\bin\APEX330.exe</code>
MySQL User Name	Check that the MySQL user name is set correctly. This should be the user name you entered during the TRIM installation.
MySQL Password	Check that the MySQL password is set correctly. This should be the password you entered during the TRIM installation.
R Bin Directory	Check that this parameter is filled in with the directory where the R bin directory is on your computer. If not, navigate to the correct directory using the "Browse" button.
Databases Tab^a	
APEX Population Database	The name of the APEX population database generated by running the "TRIM Inhalation Population Processor" scenario. For this example application, this database is included in the zip file containing input files. Type in: apexpopdbexample
Human Health Toxicity Database	The name of the human health toxicity database downloaded from the EPA website. Type in: HHToxDB_101405
Residency Period Database	The name of the residency period database downloaded from the EPA website. Type in: resperdb
Output Databases	
Inhalation Exposure DB Name	Type or copy in the name of the exposure estimates database to be generated. Suggested: apexoutdb{str("Run Name")}
Inhalation Risk DB Name	Type or copy in the name of the risk estimates database to be generated. Suggested: apexriskdb{str("Run Name")}
Risk Metrics DB Name	Type or copy in the name of the risk metrics database to be generated. Suggested: apexmetricsdb{str("Run Name")}
APEX Settings Tab	
Params File	Type or copy in a file path/reference and name or navigate to the directory where the params file should be saved using the "Browse" button, type in a file name and click "Select." Suggested: <code>{str("APEX Directory")}\Params_{str("Pollutant")}_{str("Location")}_{str("Run Name")}.txt</code>
Pollutant	Benzene
CAS Number	71-43-2
Source Type	Leaking
Facility	Plant
Location	Los Angeles
Start Date	20000101
End Date	20001231
Number of Profiles	100
Maximum Microenvironment Number	12

Parameter Name	Instructions for Setting Parameter
Use Daylight Savings Time?	✓
Write Hourly Output?	[blank]
Include Commuting to Work?	✓
Random Seed	037
Study Area Information	
Study Area Radius	300.0
Latitude	34.0
Longitude	-118.0
Air Quality District Radius	10.0
Meteorological Zone Radius	300.0
Use County List?	✓
County FIPS Codes	Click the “Edit” button to open the list, then click on the plus button  and double-click in a row to add entries to the list. Add the following FIPS codes (one to each row): 06037 06059 06071
APEX Files Tab^b	
Input Files	
Meteorological Zone Locations	Type in: $\{\text{str}(\text{“Input Data Directory”})\} \backslash \text{MetZones_LA.txt}$
Air Quality Data	Type in: $\{\text{str}(\text{“Input Data Directory”})\} \backslash \text{APEXinputAQdata.txt}$
Temperature Data	Type in: $\{\text{str}(\text{“Input Data Directory”})\} \backslash \text{Met2000_LA.txt}$
District Locations	Type in: $\{\text{str}(\text{“Input Data Directory”})\} \backslash \text{APEXinputAQsites.txt}$
Microenvironment Descriptions	Type in: $\{\text{str}(\text{“Input Data Directory”})\} \backslash \text{ME_descriptions.txt}$
Profile Functions	Type in: $\{\text{str}(\text{“Input Data Directory”})\} \backslash \text{ProfileFunctions.txt}$
Output Files	
LOG	No user interaction required - the log file will be saved to the default location (i.e., $\{\text{str}(\text{“APEX Output Directory”})\} \backslash \text{log.txt}$).
Exposure	No user interaction required - the exposure file will be saved to the default location (i.e., $\{\text{str}(\text{“APEX Output Directory”})\} \backslash \text{exp.txt}$).
Dose	No user interaction required - the dose file will be saved to the default location (i.e., $\{\text{str}(\text{“APEX Output Directory”})\} \backslash \text{dose.txt}$).
PSUM	No user interaction required - the psum file will be saved to the default location (i.e., $\{\text{str}(\text{“APEX Output Directory”})\} \backslash \text{psum.txt}$).
MSUM	No user interaction required - the msum file will be saved to the default location (i.e., $\{\text{str}(\text{“APEX Output Directory”})\} \backslash \text{msum.txt}$).

Parameter Name	Instructions for Setting Parameter
TABLESB	No user interaction required - the tables file will be saved to the default location (i.e., $\{\text{str}(\text{"APEX Output Directory"})\}\backslash\text{tables.txt}$).
SITES	No user interaction required - the sites file will be saved to the default location (i.e., $\{\text{str}(\text{"APEX Output Directory"})\}\backslash\text{events.txt}$).
EVENTS	No user interaction required - the events file will be saved to the default location (i.e., $\{\text{str}(\text{"APEX Output Directory"})\}\backslash\text{sites.txt}$).
Other Tab	
TRIM.Expo _{Inhalation} PostProcessor	
Overwrite Existing Database?	✓
Summary File Name	Location and name of the APEX postprocessor summary file to be generated. Suggested: $\{\text{str}(\text{"Default Directory"})\}\backslash\text{apexpostproc_summary.txt}^c$
TRIM.Risk _{HH-NP}	
Overwrite Output Database	✓
TRIM.Risk Metrics	
Risk Metrics Summary File	Location and name of the risk metrics summary file to be generated. Suggested: $\{\text{str}(\text{"Default Directory"})\}\backslash\text{hhmetrics_summary.txt}^c$
DAVE	
TRIM Database Type	No user interaction required.

^a Although there are “Browse” buttons on this tab next to each input and output database, do not browse to the databases. Some modules read the entire file path as the database name and are then unable to locate the database. Instead, type in the name of each database; the input databases should be located in your “MySQL Server 4.x\data” subdirectory of the MySQL directory on your computer, and the output databases will be written to this directory as well.

^b Alternatively, you can browse to these TRIM.Expo files using the “Browse” button next to each parameter input, instead of typing in the file reference as suggested here.

^c To change the location of the “Default Directory,” edit the value for the parameter “Default Directory” in the scenario parameters table, which is accessed by selecting “Edit Parameter Values” from the “Scenario” menu.

(10) After specifying parameter values on the “Input Panels,” access the scenario parameters table by selecting “Edit Parameter Values” from the “Scenario” menu. Sort parameters alphabetically by clicking on the column heading “Parameter,” then specify values for the following parameters:

- “Scenario”: set to a name for the scenario (e.g., Example Application-Single Run”; and
- “Specific Input Directory”: a directory containing location-specific files (e.g., $\{\text{str}(\text{"APEX Input Directory"})\}\backslash\text{City-LA}$). It is not necessary to use this directory, but a directory must be specified for this parameter.

(11) After specifying these two scenario parameter values, close the parameter table (by selecting “Close Parameter Value Table” from the “File” menu) and then double-click on “APEX330” (i.e., the lower portion of the top-most box in the Graph View

pane). In the APEX330 module instance window, click on the “Parameters” tab, then click the “expand view” button () at the top of the window to view the complete list of parameters. To view the parameters in the same order as listed in Exhibit 3, click once on the column heading named “Parameter.” Parameters that are included on the “Parameters” tab but are not included in Exhibit 3 require no user interaction.

Exhibit 3. Inputs for “Parameters” Tab of APEX330

Parameter	Value	Instructions for Setting Parameter
Additive factor for average concentration	0.0	Double-click in “Value” column and type in value.
Alititude	328.0	Double-click in “Value” column and type in value.
COHb Convergence Factor	2.5	Double-click in “Value” column and type in value.
Comments	Run of Example App	Double-click in “Value” column and type in value.
Include these profiles in Events File	1, 8, 23	Double-click in “Value” column and type in numbers.
Input Concentration Units	ug/m3	Double-click in “Value” column and type in value.
Input File - Census Commuting Flow	<code>\${str“Input Data Directory”}\comm2000.txt</code>	Browse to file or double-click in “Value” column and type in file path.
Input File - Employment	<code>\${str“Input Data Directory”}\employment.txt</code>	Browse to file or double-click in “Value” column and type in file path.
Input File - Microenvironment Mapping	<code>\${str“Input Data Directory”}\ME_mapping.txt</code>	Browse to file or double-click in “Value” column and type in file path.
Input File - Sector Locations	<code>\${str“Input Data Directory”}\pop_geo.txt</code>	Browse to file or double-click in “Value” column and type in file path.
Log Temperature Zones?	<input checked="" type="checkbox"/>	Click on check box in “Value” column.
Maximum Age	99	Double-click in “Value” column and type in value.
Minimum Age	0	Double-click in “Value” column and type in value.
Missing Age Diary Probability Factor	0.0	Double-click in “Value” column and type in value.

Parameter	Value	Instructions for Setting Parameter
Missing Employment Diary Probability Factor	0.0	Double-click in “Value” column and type in value.
Missing Gender Diary Probability Factor	0.0	Double-click in “Value” column and type in value.
Multiplicative Factor for Average Concentration	0.0	Double-click in “Value” column and type in value.
Number of Sources	1	Double-click in “Value” column and type in value.
Output Concentration Units	ug/m3	Double-click in “Value” column and type in value.
PPM to ug/m3 Factor	1.0	Double-click in “Value” column and type in value.
Persons to include in EVENTS file	10	Double-click in “Value” column and type in value.
Pollutant Notification Threshold	100.0	Double-click in “Value” column and type in value.
Population Input Files	List of 10	<p>Click on the “Edit” button in this row and in the resulting window, click the “plus” button (⊕) and add ten rows. Click in the first row and click in the first row and type “pop file, Female, [RACE DESCRIPTION]” in the “Parameter” column (i.e., “pop file, Female, Asian” and so on). For each row, browse to the corresponding population file. The ten entries should consist of the following descriptions (with corresponding population file paths):</p> <ul style="list-style-type: none"> • pop file, Female, Asian pop_fa.txt • pop file, Female, Black pop_fb.txt • pop file, Female, NatAm pop_fn.txt • pop file, Female, Other pop_fo.txt • pop file, Female, White pop_fw.txt • pop file, Male, Asian pop_ma.txt • pop file, Male, Black pop_mb.txt • pop file, Male, NatAm pop_mn.txt • pop file, Male, Other pop_mo.txt • pop file, Male, White pop_mw.txt <p>Click “OK” when finished.</p>
Primary Age Window Width	20.0	Double-click in “Value” column and type in value.

Parameter	Value	Instructions for Setting Parameter
Rollback Background Concentration	0.0	Double-click in “Value” column and type in value.
Rollback Maximum Concentration	10.0	Double-click in “Value” column and type in value.
Rollback Target Concentration	5.0	Double-click in “Value” column and type in value.
Shoulder Age Window Width	0.1	Double-click in “Value” column and type in value.

- (12) After specifying parameter values on the “Input Panels” (9), the scenario parameters table (10), and on the APEX330 “Parameters” tab (11), the run is ready. Close the APEX330 module instance window (by selecting “Close Module Instance” from the “File” menu) and click on the “play” button (▶) at the top of the scenario window. Choose “Yes” if the “Confirm deletion of Old Output Files” window appears after clicking the “play” button.
- (13) After APEX330, APEX Postprocessor, and TRIM.Risk_{HH-NP} have finished (indicated by a circle with a check mark, ✓) the TRIM.Risk_{HH} Inhalation Metrics GUI will automatically open (typically run time for the three upstream modules is less than one hour).

(13a) Databases Tab

Confirm that database names match those selected on the “Input Panels” in (9).

- Step 1: Confirm that the name entered in the box corresponds to the “Risk Metrics DB Name” entered on the “Databases” tab of the “Input Panels.”
- Step 2. Confirm that the name and location of the risk metrics simulation description file in the box matches that specified on the “Other” tab of the “Input Panels.”
- Step 3: Confirm that the TRIM.Risk_{HH-NP} database to be processed (i.e., the database containing risk estimates from which the risk metrics will be derived) corresponds to the “Inhalation Risk DB Name” entered on the “Databases” tab of the “Input Panels.”
- Step 4. Confirm that the human health toxicity database name in the box corresponds to the “Human Health Toxicity Database” specified on the “Databases” tab of the “Input Panels.”
- Step 5. Confirm that the residency period database name in the box corresponds to the “Residency Period Database” specified on the

“Databases” tab of the “Input Panels.”

After making your selections, click “Done” and continue on to the Assessment-Specific Selections tab.

(13b) Assessment-Specific Selections Tab

- Click on the radio button () next to “Select all study areas, facilities (where applicable), sources, and chemicals in chosen TRIM.Risk Database,” then choose either to derive metrics for either (1) aggregates and for each individually or (2) just for aggregates.
- Specify level of chemical aggregation as “None (Chemical-specific)” by clicking the appropriate radio button.
- Under “Specify Population” select “All Persons” for the gender group and select “All Persons” for the race group.

After making your selections, click on the Individual-Level Metrics tab.

(13c) Individual-Level Metrics Tab

For this example application, you can select any individual-level and population-level metrics on this tab and the following tab. No particular choices are required, though you must make some selections on the individual-level metrics tab. The metrics contained in the output database will be based on user selections on these tabs.

- Specify the upper and lower bounds for age group bins by clicking on the box under “Max Age” and typing in a numeric value; hit “Tab” to move the cursor into the next box. Alternatively, use the default bounds values.
- Specify the residency period(s) of interest by clicking in the check box next to the desired residency period(s).
- Select a percentile for age group representation by clicking on the radio button next to the desired percentile.
- Select either “Minimum” or “Median” by clicking the appropriate radio button to specify the age within each age group at which residency begins.

After making your selections, click on the Population-Level Metrics tab.

(13d) Population-Level Metrics Tab

Users do not need to select any population metrics on this tab. If population metrics are of interest, select one or more of the following metrics by clicking on the appropriate check boxes.

- Hazard Bin Frequency Counts
- Cancer Risk Bin Frequency Counts
- Population-weighted Chronic Hazard Frequency Distribution
- Population-weighted Cancer Risk Frequency Distribution
- Statistical Cancer Incidence Estimate (if this metric is selected, specify the number of years of exposure for this calculation by typing in a numeric value in the box provided).

If no population-level metrics are specified, only the individual-level risk metrics specified on the previous tab will be generated.

After making your selections, click on the Validate and Save tab.

(13e) Validate and Save Tab

- Click on the “Validate” button below the “Validation messages” window; if all selections are valid, a “validation passed” message will appear.
- Click “Save and Exit” to save selections, exit, and run the TRIM.Risk metrics generator.

(14) The TRIM.Risk_{HH} Inhalation Metrics GUI will run automatically and the green circle next to “RiskMetricsGenerator-NP” will appear filled in (●) while the model is running. The time the TRIM.Risk metrics generator takes to run depends on the number of modeled individuals, the selections you made in the GUI, etc. (typically run time is less than one hour).

(15) When the TRIM.Risk metrics generator is finished, the DAVE Database Selector window will open. In this window, select the name of the risk metrics output database (set in (9) by the “Risk Metrics DB Name” parameter as **apexmetricsdbExampleRiskSing**), select a risk metric from the “Available Metrics” drop-down menu, and click either “Analyze” or “Export” to view the results. The analyze options allow you to create tables and graphs based on the results of the TRIM.Risk simulation. The export option will export a single comma-delimited file for a particular risk metric. This file can be viewed in a text or spreadsheet program.

Other databases from this run (i.e., the exposure and risk databases generated with the names specified on the “Databases” tab of the “Input Panels”) can also be selected and viewed within DAVE. On the DAVE Database Selector window, select “All TRIM Databases” from the drop-down menu next to “Database Type.” All TRIM databases on your computer in the MySQL data directory will then be displayed in the window.

Alternatively, select “Human Inhalation Exposure (APEX3.3)” or “Human Health Risk (APEX3.3)” to view APEX-generated exposure and risk databases, respectively.

For instruction on using DAVE to analyze TRIM outputs, refer to the DAVE User’s Guide.