

## HEM version 5.1 Model Change Bulletin (March 17, 2026)

**Table 1. Bug fixes**

Item	Modification	HEM Section Affected
1	Changed the method for checking if there is an active internet connection. The previous method relied on pinging an IP address, but that method is blocked by EPA's VPN. The new method makes a request for a known URL.	Run HEM
2	Improved the ability to check if internet connectivity has failed during the acquisition of elevations or hill heights. The new approach provides more control over the independent threads that run in the background and process elevations and hill heights. This additional control lessens the possibility of the model hanging when the internet connection is lost.	Run HEM
3	Corrected the bug resulting in the hem.log file not being copied to the run group folder when the "EXIT" button was pressed during the running of HEM.	Run HEM
4	Edited metlib_aermod.xlsx to set the surface year to 2017 for the CA23187 file, and surface year to 2016 for the PR11641 file. Also changed the name of the surface and upper air text files to "2017" and "2016" to match the year of the data.	Run HEM: metlib_aermod.xlsx
5	The Summarize Risks "Run" button is disabled while summaries are being generated to prevent the possibility of the summaries being duplicated if the button is accidentally clicked twice.	Summarize Risks

**Table 2. Enhancements**

Item	Modification	HEM Section Affected
1	Incorporated the ability to run the LEADPOST model during the modeling of a run group. This feature is activated by a new column within the Facility List Options input file that allows LEADPOST to be run on a per-facility basis. The outputs of LEADPOST are written to the facility folder of any facility with this option selected, if it emits Lead Compounds.	Run HEM
2	Enabled the column headers of the 5 acute benchmark columns in the Dose Response Library to be carried through to the acute outputs. This enables the user to modify the acute benchmarks and the outputs will indicate those modified benchmarks.	Run HEM
3	Removed the 100m restriction on the ring1 value. Ring1 can now be any value > 0 and < maximum modeling distance. If a user provides ring distances, they are used instead of calculated distances. If ring distances and ring1 are not provided, then logarithmic spaced distances are computed with the first ring equaling the sum of the max distance from facility center to source and the overlap distance. If the max modeling distance is less than the computed first ring distance, then the max modeling distance is set as the first ring distance.	Run HEM

Item	Modification	HEM Section Affected
4	The Census file is validated for use by the model, prior to a run. This validation checks for missing or out-of-range elevations and hill heights. If the validation checks fail, then the model run stops and outputs a spreadsheet to the user containing the problems found in the Census file. The user is also notified that these problems can be corrected with the Revise Census Data tool.	Run HEM
5	Changed the Revise Census Data tool to create a new Census file and retain the original version with “-old-date” appended to the file name. A new change option called “ElevHill” was added to the Revise Census Data input file. This new feature updates an existing block by computing elevation and hill height. A log file of all changes is created (if it does not already exist) and is appended to when future revisions are made. In addition, a copy of the Revise Census Data input file is created that notes the status (success or failure) of all requested changes.	Revise Census Data
6	Incorporated Dose Response and Target Organ Endpoints files dated 10/23/2025.	Run HEM: Dose Response and Target Organ Endpoint files
7	<p>Added the ability to merge two HEM runs. This is facilitated by means of a new user interface. The Merge feature performs the following operations:</p> <ol style="list-style-type: none"> <li>1) Deletes any summary files, demographic assessment results, and the source location kmz file from the original run group folder.</li> <li>2) Replaces the contents of the original run facility folders with the contents from the new/rerun facility folders. Also copies any new facility folders from the new/rerun run group to the original run group.</li> <li>3) Updates the files in the original run group Inputs folder with information from the corresponding files in the new/rerun Inputs folder.</li> <li>4) Copies the hem.log file from the new/rerun run group folder into the original run group folder. Renames this file to hem-xxxxxx.log where xxxxxx is the new/rerun run group name.</li> <li>5) Recreates the emission source KMZ file in the original run group using the updated inputs.</li> </ol>	Merge HEM Runs
8	Changed the file name “Mir_HI_All_Receptors.csv” to a name prefixed by the run group name	Demographic Assessment
9	Modified the “View Summary Graphical Outputs for Run Group” feature to address issues about the color ramp options being hard to see on the map. Added a border around the circle markers. Enabled user to select the number of classes or input their own list, and to select opacity. Changed the state border color to black.	Analyze Outputs