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Positive Matrix Factorization Model for environmental data analyses

What is the Positive Matrix Factorization Model?

EPA's Positive Matrix Factorization (PMF) Model is a mathematical receptor model developed by EPA scientists that provides scientific support for the development and review of air and water quality standards, exposure research and environmental forensics. The PMF model can analyze a wide range of environmental sample data: sediments, wet deposition, surface water, ambient air, and indoor air. EPA's PMF model reduces the large number of variables in complex analytical data sets to combinations of species called source types and source contributions. The source types are identified by comparing them to measured profiles. Source contributions are used to determine how much each source contributed to a sample. In addition, EPA PMF provides robust uncertainty estimates and diagnostics.

How does the model work?

Users of EPA's PMF model provide files of sample species concentrations and uncertainties, and the number of sources. The model calculates source profiles or fingerprints, source contributions, and source profile uncertainties. The PMF model results are constrained to provide positive source contributions and the uncertainty weighted difference between the observed and predicted species concentration is minimized. The PMF model software uses graphical user interfaces that ease data input, visualization of model diagnostics, and exporting of results. The model is free of charge, and does not require a license or other software to use. Algorithms used in the PMF model have been peer reviewed by leading air and water quality management scientists.

System Requirements:

Version 5.0 of EPA's Positive Matrix Factorization Model works on Windows versions 7 to 10. The computer should have at least a 2.0 GHz processor, 1 GB of memory, and a 1024x768 pixel display. Users will need to have Administrative permissions to write to the computer's C:\ drive in order to install and run the EPA PMF Model; this may not be the default setting for some users. Since files will be written to a user's C:\ drive, the EPA PMF Model needs to be run in Administrator mode. No further updates to the PMF Model are planned.

How can I get help?

[PMF 5.0 Fundamentals and User Guide](#)

The EPA Positive Matrix Factorization (PMF) 5.0 Fundamentals & User Guide provides references and details on how to use PMF. EPA no longer provides technical support for EPA Positive Matrix Factorization (PMF). The User Guide and a large number of publications provide examples of how to apply the model for air, water, sediment, and other data analyses.

[PMF Frequently Asked Questions](#)

Download Now

- [Download PMF 5.0 Software](#) (14 MB)
- Please register your download of EPA PMF 5.0 so we can keep you informed of any modifications, revisions, or improvements to the software.
[Register for PMF model download](#)

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