



Project Summary

User's Guide for the Automated Inhalation Exposure Methodology (IEM): Addendum I

F. R. O'Donnell and A. C. Cooper

The Inhalation Exposure Methodology (IEM) is an interactive system of computer programs that provides an estimate of the population distribution around a chosen site and estimates of annual-average, ground-level, air concentrations of pollutants released from one or more sources at an industrial complex located at the site and of the population exposures associated with the releases. The addendum summarized herein presents revised output tables for the example problem given in the IEM User's Guide. These revisions result from corrections made to the atmospheric dispersion code after publication of the original document. The full report also provides information on preparation and manipulation of IEM input data files.

This Project Summary was developed by EPA's Hazardous Waste Engineering Research Laboratory, Cincinnati, OH, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

The Inhalation Exposure Methodology (IEM) is an integrated system of computer programs that estimates (1) near-field (within 50 km), annual-average, ground-level air concentrations of pollutants released from one or more sources at an industrial complex and (2) population exposures associated with the releases.¹ The IEM was developed to provide automatic access

to and linkage of on-line (1) meteorological data, (2) population data, (3) a slightly modified version (called ISCLTM) of the long-term version of the Industrial Source Complex (ISCLT) dispersion model, and (3) a concentration-exposure estimation program (CONEX). It produces various tables of concentration and exposure estimates. Although IEM can be applied to a variety of problems, its principal use has been in estimating annual-average pollutant concentrations and associated human exposures in the vicinity of hazardous waste incineration, treatment, and disposal facilities.

An interactive version of the IEM system has been implemented for use by contractors and staff of the U.S. Environmental Protection Agency, on the IBM system at the National Computer Center, Research Triangle Park, North Carolina.

The full report also provides information on preparation and manipulation of IEM input data files. Topics covered include: (1) methods for manually creating and editing input files, (2) specific instructions for creating, editing, and using the four input data sets, (3) comments on running IEM using monthly and seasonal meteorological data, and (4) comments on the default values built into the IEM.

Revised Output Tables

The full report presents revised samples of IEM output tables for the example problem in the IEM User's Guide.¹

The ISCLTM program used to produce the original example-problem output tables did not contain recent corrections suggested by the authors of the ISCLT computer code. The revised tables, which are given in Appendix A of the complete addendum, illustrate current IEM outputs and replace the tables given in Appendix E of the original IEM User's Guide.

File Preparation and Manipulation

The full report also provides information about the preparation and manipulation of IEM input data files. The report outlines general procedures for manipulating files using OBS (WYLBUR) on the IBM system of the USEPA National Computer Center, Research Triangle Park, N.C. The following topics are covered.

- File Creation
- File Saving and Replacement
- File Deletion
- File Editing
- File Concatenation

In addition, the complete addendum provides more detailed information on the form of data files used by IEM. The following areas are discussed:

1. Introduction of a user-specific meteorological data base in IEM by manually creation of a MET input data file.
2. Introduction of a user-specific population data base in IEM by manually creation of a POP input data file.
3. Manual creation and/or editing of the ISCLTM and the CONEX input data files.

Reference

1. O'Donnell, F. R., P. M. Mason, J. E. Pierce, G. A. Holton, and E. Dixon, *User's Guide for the Automated Inhalation Exposure Methodology (IEM)*, EPA-600/2-83-029, U.S. Environmental Protection Agency, Cincinnati, Ohio (April 1983).

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The complete report, entitled "User's Guide for the Automated Inhalation Exposure Methodology (IEM): Addendum 1," (Order No. DE 85-013 629; Cost: \$11.95, subject to change) will be available only from:

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23

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