
APPENDIX A

Glossary

- Abiotic Compartment Type** A compartment type consisting primarily of a non-living environmental medium (*e.g.*, air, soil) for which TRIM.FaTE calculates chemical masses and concentrations; it may also contain biota, such as the microorganisms responsible for chemical transformation (see also compartment type).
- Activity Patterns** A series of discrete events of varying time intervals describing information about an individual's lifestyle and routine. The information contained in an activity pattern typically includes the locations that the individual visited (usually described in terms of microenvironments), the amount of time spent in those locations, and a description of what the individual was doing in each location (*e.g.*, sleeping, eating, exercising). All of the information for an activity pattern is gathered during an "activity pattern survey," usually through the use of questionnaires or diaries. Each activity pattern survey is designed to collect information on activities needed for a particular study or purpose. Activity patterns are also referred to as "time/activity patterns."
- Biotic Compartment Type** A compartment type consisting of a population or community of living organisms (*e.g.*, bald eagle, benthic invertebrate), or in the case of terrestrial plants, portions of living organisms (*e.g.*, stems, leaves), for which TRIM.FaTE calculates chemical masses and concentrations (see also compartment type).
- Chemical** A unit whose mass is being modeled by TRIM.FaTE. A chemical can be any element or compound, or even group of compounds, assuming the necessary parameters (*e.g.*, molecular weight, diffusion coefficient in air) are defined.
- Cohort** A group of people within a population who are assumed to have similar exposures and whose demographic variables are taken from the same probability distribution during a specified exposure period.
- The use of cohorts is useful when modeling the exposures of a large population. Since adequate data on the exposures of each individual in a population does not exist, information about people who are expected to have similar exposures are aggregated together in order to make better use of the limited data that is available.

Cohorts can be defined for each application or situation. In the latest pNEM/CO model, for example, cohort exposure was taken to be a function of demographic group, location of residence, location of work place, and type of cooking fuel (natural gas or other). Specifying the home and work district of each cohort provided a means of linking cohort exposure to ambient CO concentrations. Specifying the demographic group provided a means of linking cohort exposure to activity patterns which vary with age, work status, and other demographic variables. Specifying the type of cooking fuel provided a means of linking cohort exposure to proximity to a particular emission source. In some analyses, cohorts are further distinguished according to factors relating to time spent in particular microenvironments. In the pNEM analyses, the population-of-interest is divided into a set of cohorts such that each person is assigned to one and only one cohort.

Compartment

A homogeneous unit of space characterized by its physical composition and within which it is assumed, for modeling purposes, that all chemical mass is in equilibrium.

Compartment Type

A specific kind of compartment, such as an air compartment type or a mule deer compartment type. Compartment types are distinguished from each other by the way they exchange chemical mass with other compartment types.

Conceptual Model Evaluations

Evaluations focused on the theory and assumptions underlying the model. These activities seek to determine if the model is conceptually sound.

Criteria Air Pollutants

Air pollutants for which national ambient air quality standards (NAAQS) have been established under the Clean Air Act (CAA); at present, the six criteria air pollutants are particulate matter, ozone, carbon monoxide, nitrogen oxides, sulfur dioxide, and lead.

Exposure

The contact between a target organism and a pollutant at the outer boundary of the organism. Exposure may be quantified as the amount of pollutant available at the boundary of the receptor organism per specified time period. As an example, inhalation exposure over a period of time may be represented by a time-dependent profile of the exposure concentrations.

Exposure District

A geographic location within a defined physical or political region where there is potential contact between an organism and a pollutant, and for which environmental media

	concentrations have been estimated either through modeling or measurement.
Exposure Event	A human activity that results in contact with a contaminated medium within a specified microenvironment at a given geographic location.
Functionality	The capability to perform computational operations.
Hazardous Air Pollutant	Any air pollutant listed under Clean Air Act (CAA) section 112(b); currently, there are 188 air pollutants designated as Hazardous Air Pollutants (HAPs).
Link	A connection that allows the transfer of chemical mass between any two compartments. Each link is implemented by an algorithm or algorithms that mathematically represent the mass transfer.
Mechanistic and Data Quality Evaluations	Evaluations focused on the specific algorithms and assumptions used in the model. These activities seek to determine if the individual process models and input data used in the model are scientifically sound, and if they properly “fit together.”
Microenvironment	A defined space in which human contact with an environmental pollutant takes place and which can be treated as a well-characterized, relatively homogeneous location with respect to pollutant concentrations for a specified time period.
Model Evaluation	The broad range of review, analysis, and testing activities designed to examine and build consensus about a model’s performance.
Parcel	A planar (<i>i.e.</i> , two-dimensional) geographical area used to subdivide a modeling region. Parcels, which can be virtually any size or shape, are the basis for defining volume elements. There can be air, land, and surface water parcels.
Performance Evaluations	Evaluations focused on the output of the full model. These activities seek to determine if the output is relevant, reliable, and useful.
Scenario	A specified set of conditions (<i>e.g.</i> , spatial, temporal, environmental, source, chemical) used to define a model setup for a particular simulation or set of simulations.

Sensitivity	The rate of change of the model output with respect to changes in an input parameter.
Simulation	A single application of a model to estimate environmental conditions, based on a given scenario and any initial input values needed.
Source	An external component that introduces chemical mass directly into a compartment.
Structural evaluations	Evaluations focused on how changes in modeling complexity affect model performance. These activities seek to determine how the model will respond to being set up differently for different applications.
Uncertainty	The lack of knowledge regarding the actual values of model input variables (parameter uncertainty) and of physical systems (model uncertainty).
Variability	The diversity or heterogeneity in a population or parameter; sometimes referred to as natural variability.
Volume Element	A bounded three-dimensional space that defines the location of one or more compartments. This term is introduced to provide a consistent method for organizing objects that have a natural spatial relationship.