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Research Triangle Park, NC 27711

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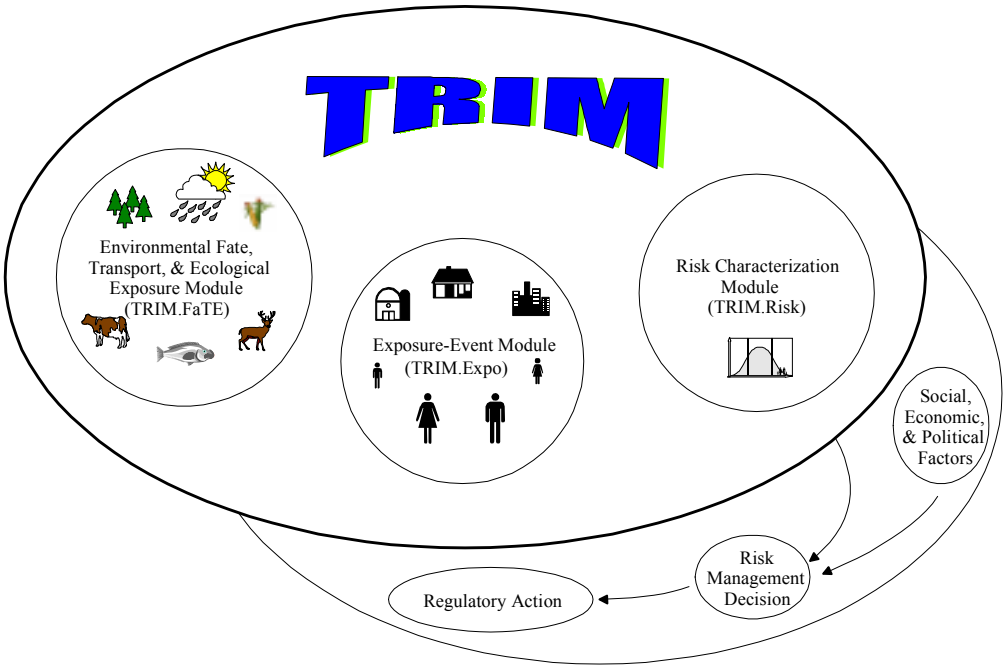
Air

TRIM
Total Risk Integrated Methodology

STATUS REPORT



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Disclaimer

This report has been reviewed and approved for publication by the U.S. Environmental Protection Agency's Office of Air Quality Planning and Standards. Mention of trade names or commercial products is not intended to constitute endorsement or recommendation for use.

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Preface

This document, the 1999 *Total Risk Integrated Methodology (TRIM) Status Report*, is part of a series of documentation for the overall TRIM modeling system. The purpose of this report is to provide a summary of the status of TRIM and all of its major components, with particular focus on the progress in TRIM development since the 1998 *TRIM Status Report* (U.S. EPA 1998e). EPA plans to issue status reports on an annual basis while TRIM is under development.

The detailed documentation of TRIM's logic, assumptions, algorithms, equations, and input parameters is provided in comprehensive Technical Support Documents (TSDs) for each of the TRIM modules. The purpose of the TSDs is to provide full documentation of how TRIM works and of the rationale for key development decisions that were made. To date, EPA has issued TSDs for the Environmental Fate, Transport, and Ecological Exposure module (*TRIM.FaTE TSD*, U.S. EPA 1999i and U.S. EPA 1999j, which supersedes an earlier version, U.S. EPA 1998f) and the Exposure-Event module (*TRIM.Expo TSD*, U.S. EPA 1999h). When the Risk Characterization module (TRIM.Risk) is developed, EPA plans to issue a TSD for it. The TSDs will be updated as needed to reflect future changes to the TRIM modules.

In addition to status reports and TSDs, EPA intends to develop detailed user guidance for the TRIM computer system. The purpose of such guidance will be to define appropriate (and inappropriate) uses of TRIM and to assist users in applying TRIM to assess exposures and risks in a variety of air quality situations.

Comments and suggestions are welcomed. The OAQPS TRIM team members, with their individual roles and addresses, are provided below.

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ACRONYMS

APEX	Air Pollutant Exposure Model
ATFERM	Agency Task Force on Environmental Regulatory Modeling
B(a)P	Benzo(a)pyrene
CAA	Clean Air Act
CalTOX	California Multimedia Total Exposure Model for Hazardous Waste Sites
CART	Classification and regression tree
CMAQ	Community Multi-Scale Air Quality
CRARM	Presidential/Congressional Commission on Risk Assessment and Risk Management
CO	Carbon monoxide
EC_{50}	Effective concentration at 50 percent response
EC_{10}	Effective concentration at 10 percent response
EPA	United States Environmental Protection Agency
HAP	Hazardous air pollutant
HAPEM4	Hazardous Air Pollutant Exposure Model Version 4.0
HAPEM-MS	Hazardous Air Pollutant Exposure Model for Mobile Sources
HEM	Human Exposure Model
HI	Hazard Index
HQ	Hazard Quotient
GIS	Geographic Information System
GUI	Graphical User Interface
I/O API	Environmental Decision Support System/Models 3 Input/Output Applications Programming Interface
IEM	Indirect Exposure Methodology
IEM2M	Indirect Exposure Methodology for Mercury
ISCST3	Industrial Source Complex, Short Term Version 3
IUBK	Intake, Uptake, Biokinetic Model
K_{aw}	Air/water partition coefficient
K_{oa}	Octanol/air partition coefficient
K_{ow}	Octanol/water partition coefficient
LC_{50}	Lethal concentration at 50 percent response
LOAEC	Lowest observed adverse effect concentration
LSODE	Livermore Solver for Ordinary Differential Equations
MATC	Maximum acceptable toxicant concentration
MPE	Multiple Pathways of Exposure
NAAQS	National ambient air quality standard
NAS	National Academy of Sciences
NATA	National Air Toxics Assessment
NOAEC	No observed adverse effect concentration
OAQPS	EPA Office of Air Quality Planning and Standards
PAH	Polycyclic aromatic hydrocarbon
pNEM	Probabilistic NAAQS Exposure Models
pNEM/CO	Probabilistic NAAQS Exposure Model for Carbon Monoxide
RfC	Reference concentration
RfD	Reference dose

RIA	Regulatory impact analysis
SAB	Science Advisory Board
SETAC	Society of Environmental Toxicology and Chemistry
SHEDS	Stochastic Human Exposure and Dose Simulation
SRA	Society for Risk Analysis
TCCR	Transparency, clarity, consistency, and reasonableness
TRIM	Total Risk Integrated Methodology
TRIM.Expo	TRIM Exposure-Event module
TRIM.FaTE	TRIM Environmental Fate, Transport, and Ecological Exposure module
TRIM.Risk	TRIM Risk Characterization module
TSD	Technical Support Document
URE	Unit risk estimate
WASP	Water Quality Analysis Simulation Program

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