Tracking a Chemical's Journey from Production Line to Body Burden Using the PROduction-To-EXposure (PROTEX) Model

Scan this QR code for more information about PROTEX

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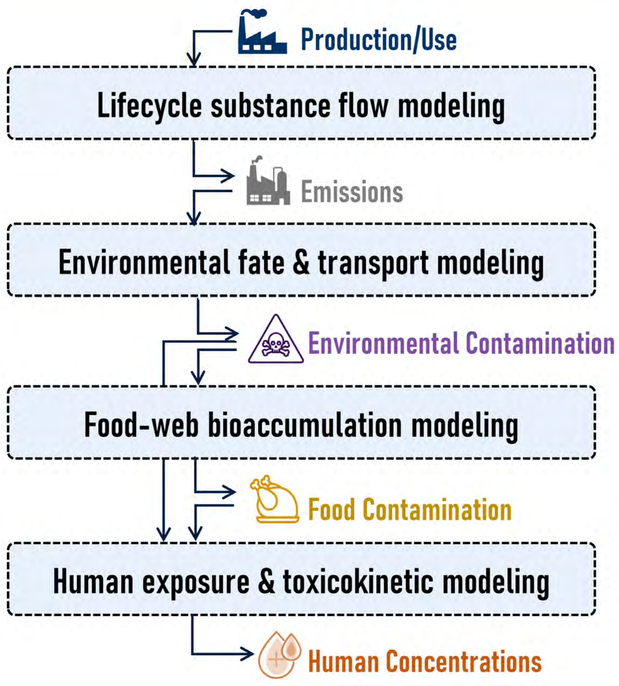
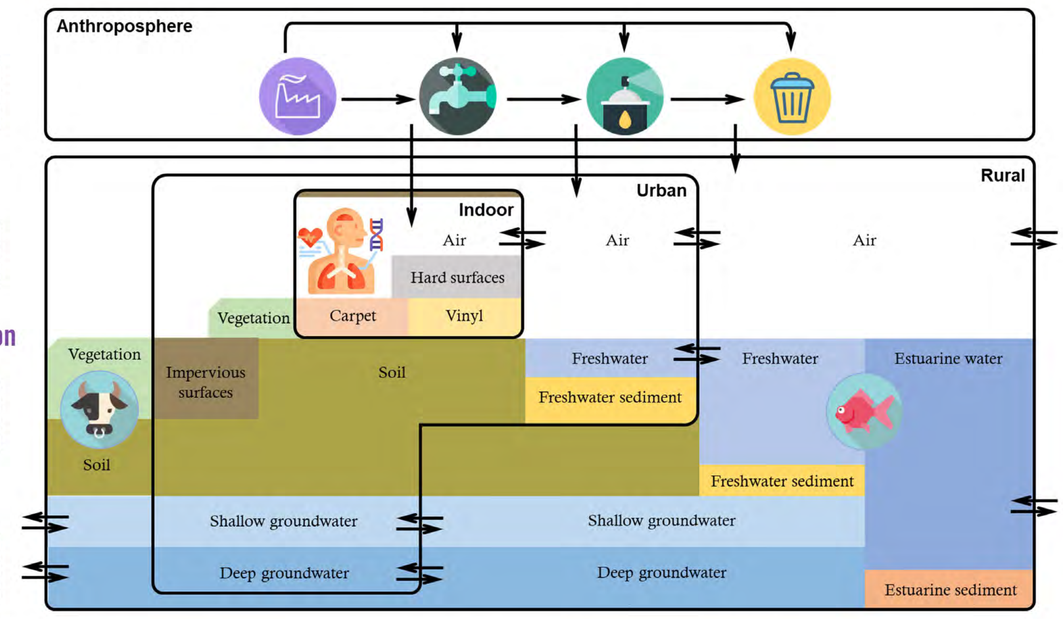
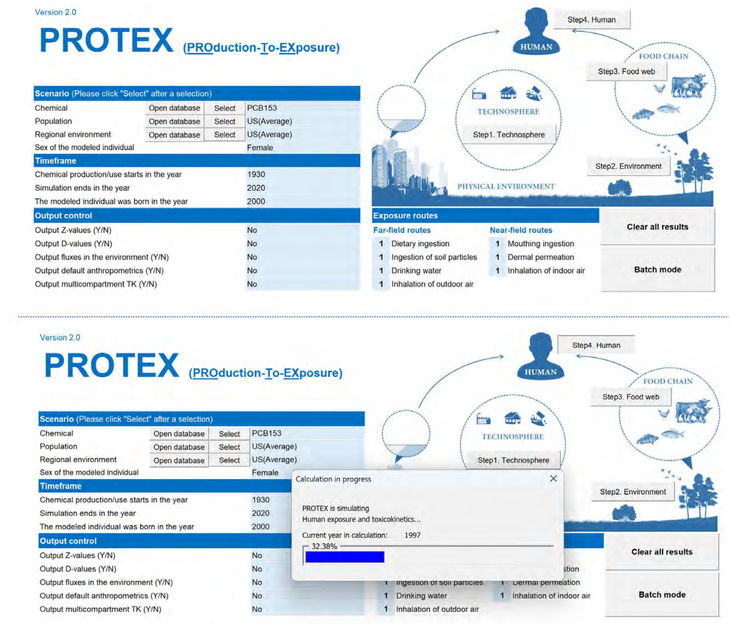
PROTEX: A "digital twin" of the regional anthroposphere and ecosystem





The lifecycle anthroposphere and multimedia environment characterized in PROTEX



PROTEX's graphic-user interface

PROTEX: An integrative modeling system empowering chemical hazard, exposure, and risk assessments

What would you like PROTEX to do?	What modules do you need to run, and what input data do you need?			
Estimate how much of a produced chemical can end up in indoor and outdoor environments...	Technosphere module			
Assess the persistence and mobility of a chemical...		Environment module		
Assess the bioaccumulation potential of a chemical...			Food-web module	
Predict how much of a chemical can be found in the human body if we take it in at a certain rate...				Human module
Predict how much of a chemical can be found in the human body if we release it into indoor and/or outdoor environments...	Technosphere module	Environment module	Food-web module	Human module
Predict how much of a chemical can be found in the environment and organisms if we make or use it...	Technosphere module	Environment module	Food-web module	
Predict how much of a chemical can be found in the human body if we make or use it in a region...	Technosphere module	Environment module	Food-web module	Human module
	Chemical properties Partition coefficients Environ. reaction rate constants **Product lifecycle parameters** Lifespan Use pattern Emission factors Waste factors	**Chemical properties** Partition coefficients Environ. reaction rate constants **Environmental parameters** Land use and dimensions Meteorology Hydrology Environmental chemistry	**Chemical properties** Partition coefficients Biotransformation rate constants **Food-web parameters** Body composition Trophic structure Growth Behavior & activity	**Chemical properties** Partition coefficients Biotransformation rate constants **Human parameters** Anthropometrics Exposure medium intake rates Activity & lifestyle Maternal information

Have troubles finding reliable, defensible chemical property data? Scan this QR code for more information!

Have troubles finding reliable, defensible environmental, food-web, and human parameters? PROTEX has built-in databases for certain regions, food-webs, and populations!

What chemicals are you interested in?

We have a number of case studies to help you best understand the power of PROTEX!

PCBs | PBDEs | SCCPs

DBDPE | QACs | Pesticides

What makes PROTEX so unique in exposure modeling?

- ❑ **Multidimensionality**
  Multiple lifecycle sources, multiple environmental media, multiple exposure routes, & multiple prediction endpoints
- ❑ **Mechanistic feature**
  Mechanistic description of socioeconomic, chemical, physical, behavioral, & biological processes
  Flexible parameterization for different regions and populations
- ❑ **Spatial and temporal resolution**
  Regional nested indoor-urban-rural environment
  Time-variant & steady-state predictions
- ❑ **User-friendliness**
  VBA-coded with a Microsoft Excel graphic-user interface

Acknowledgment

We are incredibly grateful for the generous financial support over the past 5 years that made the PROTEX model possible.