Integrated Exposure For Risk Assessment In Indoor Environments

Welcome

This is the second newsletter of the INTERA Project. INTERA aims to improve our understanding of human exposure to air pollutants in homes. The project has been running since January 2010 and has achieved several milestones since then.

Knowledge Management System

INTERA has produced a web-based indoor exposure knowledge management system (KMS) that incorporates, as far as possible, the information needed in exposure assessments related to indoor environments.

The purpose of the KMS was to produce a system that would:

- incorporate as much information as possible that is needed in exposure assessments related to indoor air;
- provide user-friendly access to that information through a freely accessible interface;
- accommodate data produced in previous studies in the field; and
- allow a powerful way of utilizing already available information in upcoming studies.

The system is structured around relevant databases, such as indoor and outdoor exposure levels, indoor sources and source emissions, consumer behaviour and housing conditions, and indoor source and exposure modelling tools. These are categorized based on their contents or purpose of use.

Review of existing indoor air pollutant exposure data and models

The goal of Work Package 1 was to provide a critical review of all state-of-the-art information regarding the parameters that determine exposure profiles to indoor air pollutants of both chemical and biological nature. A report is close to being finalised and presents information on a review of the scientific literature of household air pollutant concentrations in domestic environments within the past 15 years. The review also identifies existing and developing indoor air quality modelling methods.

The final report will be available for download on the INTERA website in the near future.

Computational Platform

INTERA is developing an integrated computational platform for exposure assessment in indoor environments to better exemplify and support the standardisation of the approach.

The platform will cover all parts of the exposure chain from sources through to indoor fate modelling, exposure scenario build-up and exposure modelling. In addition, advanced visualization tools are provided for presentation of the results. The modelling platform includes the following modules:

1. Emissions-concentrations module, linking emission sources to indoor air concentrations
2. Exposure module, linking the temporal variation of indoor air contamination to human exposure
3. Internal dosimetry module, linking the temporal variation of exposure to internal dose dynamics

Currently all the models addressing the different steps along the full-chain are fully developed and tested. The web-based graphical user interface, as well as the tools for visualizing the input/output of the platform, is under development and test usage by the project team. The goal is to have the whole platform up and running for usage in the INTERA case studies in summer 2011.

Case studies

The aims of the case studies are to help test and optimise the developed full chain approach and report on the indoor exposures for the pollutants being investigated in Europe. Work on three case studies will commence mid Feb 2011. These will focus on:

a) Dimethyl fumarate (DMF) through dermal exposure;
b) Phthalates through multi-pathway exposures;
c) BTEX (benzene, toluene, ethylbenzene, and xylenes) with mixture effect.

The case study methodology will involve a number of key steps which include: identifying the main sources of emission in residential settings; collection of information to assist with inhalation, dermal or ingestion modelling (as appropriate); exposure modelling and; internal dose monitoring.

Upcoming conference presentations

Two abstracts reporting the INTERA Project have been accepted at Indoor Air 2011, being held in Austin, Texas, 5-10th June 2011. We look forward to discussing our work with interested delegates.

Further information

If you would like more information on the INTERA project, please contact Arja Asikainen at THL: ✉ arja.asikainen@thl.fi or ☎ +358 206 106 469.

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The next INTERA newsletter is out Autumn 2011. Please visit the INTERA website
http://intera-home.eu/