

Title \*

# **Tools for Exposure Assessment of Nanomaterials: online Exposure Scenario Library & two-box nano-specific inhalation exposure model**

Abstract \*

Exposure assessment of engineered nanomaterials (ENMs) is time consuming and expensive as it requires the use of sophisticated equipment and complex data analysis. Currently a few control banding and semi-quantitative tools are available but none of them provides absolute concentrations which are required for risk assessment.

Here we present two online tools that provide exposure concentrations: an online Exposure Scenario Library where the user can search scenarios according to ENM name, life-cycle, source domain and activity, and read-across the exposure data and a two-box nano-specific inhalation exposure model.

The library contains data on 200 exposure scenarios with measurement results collected from field surveys or from the peer-reviewed literature. The exposure data provided can be used in tier-one risk assessments.

The inhalation exposure model provides particle number concentration over time and size distribution around the emission source, the far field and the near field (around the worker). The model can be used to make predictions about the effects of changing emission rates, exposure periods and local controls which are useful for implementing safer by design (SbD) processes during scaling-up of production and for risk management purposes. In addition the information of the particle size distribution can be used in lung deposition models. The model has been tested in lab and field studies.

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