

Workpackage WP T-A: Toxicity in vitro

Lead: GAIKER

In this project the toxicology assessment of aerosolized nanoCeO₂ and nanoAg will focus on the inhalation route as this is the most relevant route of exposure from an occupational health point of view. Furthermore, results will contribute to risk characterization for these two MNMs (Wijnhoven et al, 2009). Because exposure will cover various parts of the lung, as well as various cell types, the most relevant test system covering all different types of exposed cells will be used in this project in order to get the best picture of the actual lung's behaviour after MNM exposure. The selected cellular systems will be based on cells both from alveolar and bronchial origin cultured as monolayer as well as in the form of a more representative 3D model, which makes it possible to deposit MNM directly from the gas phase on cells in cooperation with WPE. The 3D model better resembles the in vivo architecture of the lung epithelia and allows for repeated experiments to investigate long-term effects (up to six months) which better mimics the in vivo situation. Results will be used for comparisons with the in vivo experiments conducted in WP T-B. In vitro end points will follow OECD recommendations to avoid interference of MNMs with testing strategies (OECD ENV/JM/MONO2009/20/Review). Cell models will be grown 1) in a submerged fashion followed by classical exposure and 2) as ALI (air-liquid interphase) to allow for aerosolized exposure. Experiments will be performed in a GLP compliant laboratory.

Objectives:

The objectives are to produce different toxicological profiles of aerosolized nanoAg- and nanoCeO₂- in the relevant inhalation route as well as to identify potential health risks to human MNM exposure by inhalation.