

Experimental workflow for the estimation of relevant exposure dose and effects of SSbD nanomaterials

Or A new approach methodology (NAM) for risk assessment of SSbD nanomaterials based on adverse

outcome pathways approach, real exposure scenarios and relevant hazard testing

A new approach methodology (NAM) framework for the risk assessment of safe and sustainable by design (SSbD) nanomaterials (NMs), developed during the ASINA project (Anticipating Safety Issues at the Design Stage of NAno Product Development, GA nr. 862444), is here presented. The ASINA NAM-based framework proposed integrates the adverse outcome pathways (AOPs) approach, real human exposure assessment and novel hazard testing strategies, using advanced in vitro 3D model coupled with air liquid interface (ALI) exposure systems. This framework contributes to obtain a more reliable and realistic interpretation of the risk of new SSbD NMs. The AOP-testing strategy, based on the p-chem properties of NMs, allows to identify the key events (KEs) involved in the biological outcomes. Moreover, the simulation of real-life exposures, thanks to the modelling of in field aerosol measurements and use of advanced in vitro exposure systems, will allow to uncover possible risks to human health based on the considerations of relevant exposure levels and toxicity pathways.