

NANOTOX 2024
23 - 25 September, Venice, Italy

Abstract max. 400 words (Calibri 10) for text only (excluding images but **including description/comment** of the figure if there is any).

One page A4 maximum.

See the example below.

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The European Green Deal policy ambitions set out in the Chemicals Strategy for Sustainability and the Zero Pollution Action Plan identify the transition to a Safe and Sustainable by Design (SSbD) approach to chemicals and materials. The H2020 SUNSHINE project has developed an approach to operationalize SSbD, specifically addressing multi-component nanomaterials (MCNMs), and applied it to two case studies. This approach enables assessment of safety and sustainability aspects at each stage of product development from a lifecycle perspective. This is achieved via a tiered approach that uses qualitative (Tier 1), semi-quantitative (Tier 2) and quantitative (Tier 3) assessment methods. The present work focuses on the Tier 1 (self-assessment) methodology designed to evaluate the safety, functionality and sustainability in the early R&D stages of the lifecycle of chemicals and materials. This approach was developed to be implementable by industries in a straightforward manner as often there is lack of time and/or expertise to engage in resource-intensive safety and sustainability evaluations. The approach was tested using two real industrial case studies, namely nano-enabled PFAS (Polyfluoroalkyl substances)-free anti-sticking coating for bakery molds, and nano-drops of essential oil anchored to the surface of nano clays and encapsulated in a polymeric film. The results indicate that these innovative materials have a high probability to have better safety, functionality and sustainability performance compared to conventional benchmark materials.

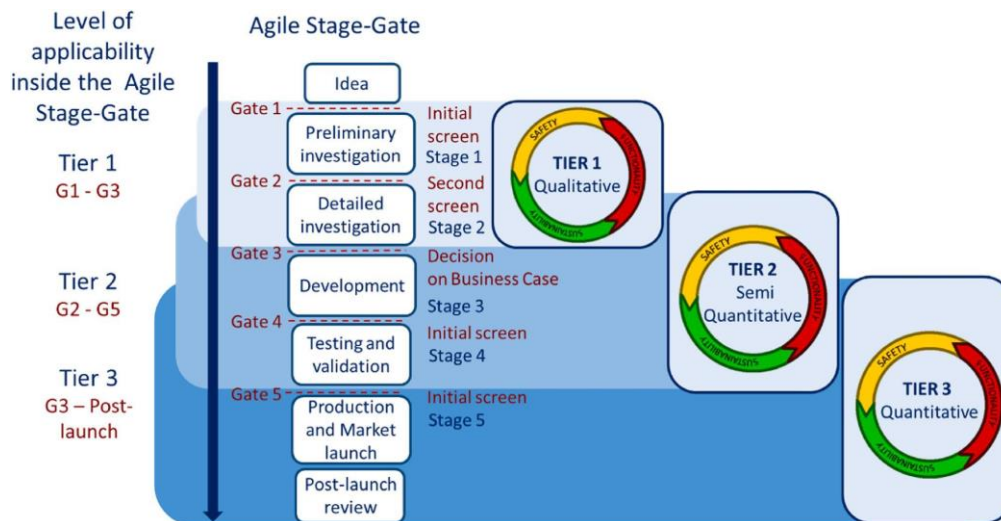


Figure: SSbD tiered assessment proposed in the SUNSHINE project. 'Level of applicability' means at which gate of the stage-gate the approach can be applied.