

Assess the development of Safe-by-design nano-enabled polymeric compounds for the Additive Manufacturing sector: the SAByNa user friendly guidance platform

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The toxicity and environmental fate of nanomaterials (NMs) and nano-enabled products (NEPs) are areas of concern, as the current regulatory framework has been designed to evaluate and control the (eco)toxicology of substances whose classification mainly relies on their chemical composition. NMs and NEPs, in this regard, are challenging as their potential human health and/or environmental impacts are highly dependent on many parameters (form, aggregation/agglomeration, surface chemistry and functionalisation). This has been outlined for the potential health and environmental risks of a nano-enabled product along its life cycle and a case-by-case approach has been deemed to be the most appropriate for risk assessment. One of the goals of SAByNA, a European Union's Horizon 2020 project in the Research and Innovation Programme, is to develop a web-based guidance platform, which will help the NMs and NEPs producers/ users to design and develop safer NMs and NEPs applying the most appropriate risk assessment & mitigation measures to protect workers, consumers and the environment. This will be of paramount importance for SMEs which may lack the internal expertise/ resources for a case-by-case risk assessment and/or need for a more cost-effective solution.

LATI is contributing to the validation of the tool with an industrial Additive Manufacturing (AM) case study in particular with the application of the FFF (Fused Filament Fabrication) technique by the research partners. The safety of nano-enabled polymeric compounds production, use and end-of-life stages is under investigation to identify sector-specific activities and associated releases of nanoforms (NFs) along the entire life cycle. Intensive feedback has been provided to guide research partners to develop a tool that would reach a widespread acceptance in the industrial AM sector thanks to user-friendliness and showing how usability can be increased on tailored case studies. LATI's experience as user of the tool as well as benefits and challenges, as intellectual property protection along the supply chain, will be outlined.

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