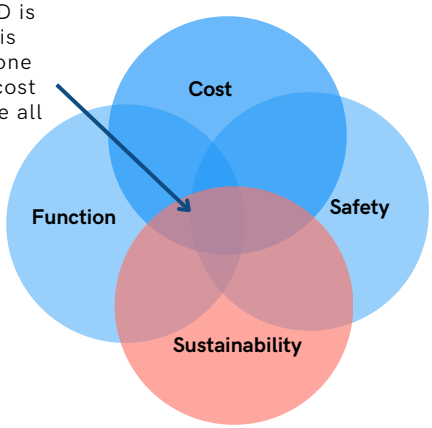
What is Safe-by-Design and where the SbD4Nano project fits

Safe-by-Design (SbD) is a concept whose aim is to facilitate and encourage the consideration of safety into product design throughout the process. It is hoped that integration of this concept will avoid unsafe products being placed on the market because these issues will have been designed out well before commercialisation.

What are the key principles of SbD?

SbD must always be considered within the parameters of a functional and cost effective product. Designing a safe product does not matter if no-one buys it!

The goal of SbD is to identify this "goldilocks" zone where safety, cost and function are all acceptable



Recently, sustainability has been included to give a concept that is at the heart of the EU Chemical Strategy for Sustainability.

Benefits of SbD for Nanomaterials

Enhanced Safety: By integrating the safety concerns from the beginning, SbD ensures the development of nanomaterials with reduced risks to human health and the environment.

Cost-Efficiency: Proactively addressing safety concerns during the early stages of product development can prevent cost increments and regulatory hurdles later on.

SbD4Nano Factsheets

This is the first in a series of factsheets aimed at non-experts designed to give an introduction to why SbD should be integrated into product development. They show how the SbD4Nano project has put SbD into practice for nanomaterials and developed an e-infrastructure to allow others to do the same. The factsheets include:

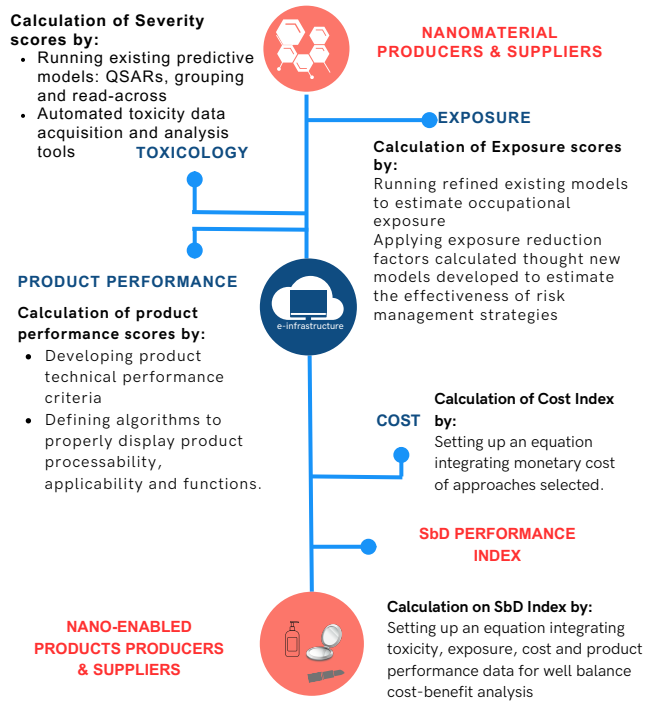
1. How SbD overlaps with regulations
2. Economic and social drivers for SbD
3. How SbD looks for different parts of the supply chain
4. How manipulation of surface features can be used to optimise function and safety
5. How exposure can be factored into safety assessments
6. How the SbD4Nano project has demonstrated SbD in real life case studies

Why does SbD apply so well to nanomaterials?

- Nanomaterials are very fine particulate forms of a substance. 50 % or more of the particles in a nanomaterial have a shortest dimension of < 100 nm.
- This small size can result in unique or enhanced properties, meaning nano-enabled products (NEP) are finding use in a huge range of functions.
- The small size can also lead to enhanced (eco)toxicological properties. These are governed both by chemical composition and particle characteristics.
- The hazard of a substance is generally intrinsic (cannot be changed), but as the particle characteristics of a nanomaterial can be changed so can the hazard.
- Several particle characteristics can be amended: Size distribution; Shape; Surface functionality; Crystallinity

Goals of the SbD4Nano project

The main goal of the SbD4Nano project is develop an e-infrastructure " to foster dialogue and collaboration between actors along the nanotechnology supply chain for a knowledge-driven definition of SbD approaches based on hazard, exposure, product performance and cost criteria.



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