

## **Metrics that affect the safety of nanomaterials: implicaties for design**

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Safe-by-design (SbD) is not new, the method has been used for years by the industry to minimize the toxicity of products. The SbD concept is tuned towards timely identification of uncertainties and potential risks as well as timely measures to reduce or eliminate these uncertainties and risks during an innovation project. SbD is not a stand-alone concept: it is designed so that it can be seamlessly integrated into current industrially used innovation processes. In essence, designers and developers of new nanomaterials should include toxicological expertise in a very early stage, rather than waiting until risk assessment has to be performed prior to bringing a product to the market. More than a decade of research on the toxicological potential of nanomaterials will allow us now to give guidance with some general principles. For example the aspect ratio of fibre like structures is very predictive for the development of mesothelioma (like the classical asbestos-induced cancer). Size, shape, solubility, number of particles that will be in contact with the biological system will all have their implications for the development of adverse health outcomes. A better design of products and better business models. This presentation will provide information on nanomaterial properties that affect their hazard.