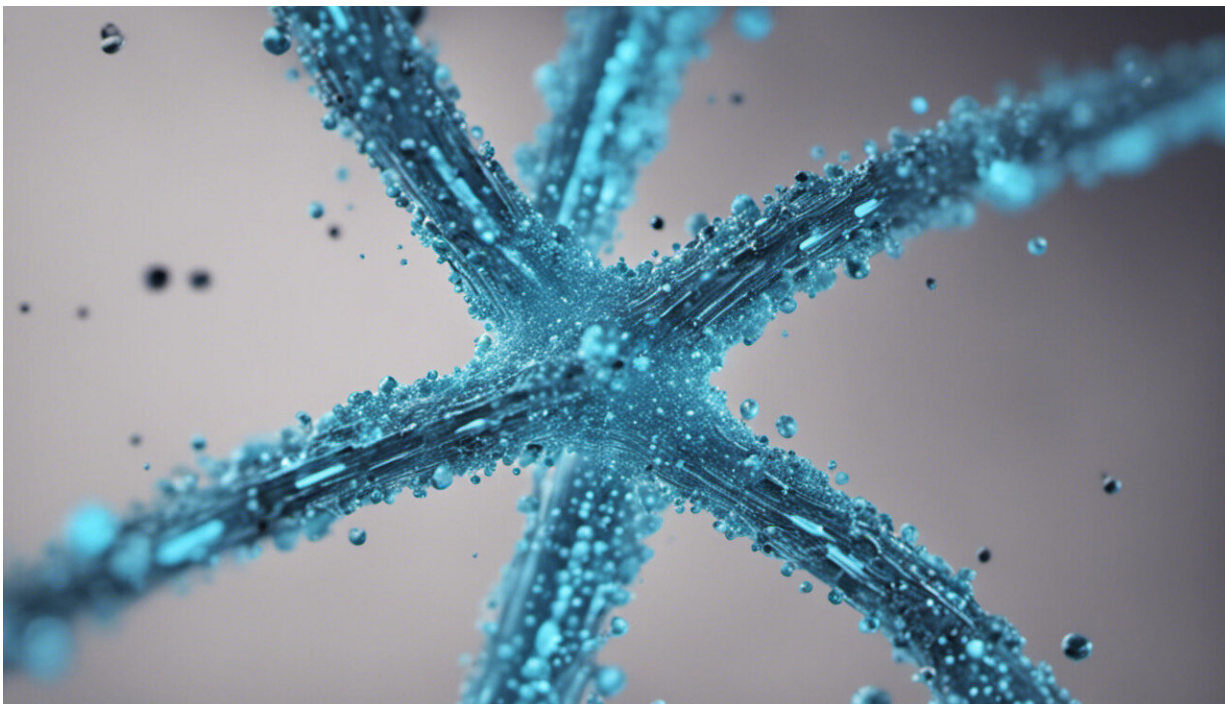


Nanomaterial risk profiling puts safety first

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Credit: AI-generated image ([disclaimer](#))

With uncertainty around the risks of nanomaterials hampering the EU's innovative potential, researchers are working on a safety concept to better monitor this emerging technology.

Researchers are working on an industry-tailored strategy for the [risk](#)-assessment of nanoparticles and nano-enabled products. Their approach, as described in the Journal of Chemical Health and Safety, focuses on

creating a risk profile for a given nanomaterial (NM), taking into account industrial needs across sectors. The process would determine which materials or processes pose risks, where in a material's life cycle these risks occur, and their impact on society.

The work is supported by three ongoing projects receiving support from the EU's Horizon 2020 research and innovation programme: INSPIRED (INDustrial Scale Production of Innovative nanomaterials for printed Devices), HI-RESPONSE (Innovative High Resolution Electro-Static printing of Multifunctional Materials) and NANOgentools (Developing and implementation of a new generation of nanosafety assessment tools).

An evolving field

While the size, structure and properties of NMs offer significant technological advances, their development also brings [potential risks to human health](#) and the environment. Existing nano-specific legislation at an EU level is vague, the paper states; as a result the regulatory environment for industry is uncertain. With the field constantly evolving, the European Commission has identified appropriate management of nano-related risks as a vital issue for the success of nanotechnologies.

As NMs are considered a chemical substance, they are bound by the regulatory framework REACH and like other substances are required to be registered centrally. But some Member States have developed their own national registers, and in this context, getting NMs on to the European market has become increasingly difficult. This hampers the region's potential for innovation and may affect consumer confidence in emerging nanotechnology.

Reliable information on safe levels of exposure to NMs is limited, and technical limitations make carrying out quantitative risk assessment of

NMs unfeasible. The paper therefore describes the most sensible course of action as focusing on qualitative risk assessment at all stages of a material's life cycle, risk avoidance, and involving industry, risk managers and stakeholders.

The authors' main goal was to develop a safety strategy for industry workers who deal with NMs on a daily basis, to protect human health and the environment without stifling innovation. The proposed safety concept follows the general REACH approach applied to chemicals while moving towards a joint application of risk, safety and [life-cycle](#) assessment.

So what steps can be taken to facilitate innovation?

The paper sets out a series of steps that can be taken to standardise an EU-wide approach. This includes information gathering on nanomaterials and hazards through questionnaires and company visits. They suggest hazard assessments to be carried out by collecting all relevant information on a substance's properties and risk management measures based on exposure scenarios.

Risk characterisation and mitigation strategies would also play a key role through the use of the Organisation for Economic Cooperation and Development (OECD) Harmonized Tiered Approach.

More information: HI-RESPONSE Project page:
cordis.europa.eu/project/rcn/194423_en.html

INSPIRED project page: cordis.europa.eu/project/rcn/194419_en.html

NANOAGENTOOLS project page:
cordis.europa.eu/project/rcn/198840_en.html

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