

REACHnano Tool: a new web based toolkit to support the chemical safety assessment of engineered nanomaterials

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Abstract:

REACHnano is a LIFE + project (LIFE11 ENV/ES/549) focused on the development of innovative instruments to improve the implementation of the European Union Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) when manufacturing or handling materials or substances at the nanometer scale. To this end, the project was structured to allow the **development of a web based Help Desk tool to support the risk assessment and promote the safety use of nanomaterials along their life cycle**, providing the industry and stakeholders with easy to use tools to support the implementation of REACH regulation.

The toolkit developed within REACHnano project takes into account the needs and specifications of end-users and stakeholders, including advanced functionalities that supports the industry and authorities to fulfill their main task under REACH, with special concern to those provisions aimed at ensuring high levels of human health and environmental protection such as the generation of reliable information in terms of REACH information requirements, the assessment of risk for the specific uses of the substances (i.e. exposure scenarios) and the characterization of effective risk managements measures (RMMs).

The main contents of the web based toolkit are a ENMs database module, the risk assessment plug-in and the advanced query tool. The design of the toolkit was done in collaboration with the partners of the consortium, including LEITAT Technological Centre, NIA - Nanotechnology Industries Association, and INVASSAT. Figure 1 illustrates the toolkit front end.

The ENMs database has been designed following the structure of the IUCLID substance datasheets, allowing companies and relevant stakeholders to capture, store, submit and exchange data. The advanced query tool, it is aimed to serve as an innovative web-based data mining tool to support the identification of safer alternatives to hazardous nanomaterials.

The risk assessment module consists of two risk assessment plug-ins for occupational and environmental exposure respectively. The Environmental exposure plug-in is a probabilistic Material Flow Analysis (pMFA) multi-media model based on Monte Carlo (MC) methodology, while the occupational risk assessment module is based on a combination of control banding approaches, exposure estimation tools, and newly developed exposure scenario templates, allowing the uses to estimate the exposure on the basis of the operative conditions and RMMs applied in generic and/or specific exposure scenarios (GES / SES).

References

Figures

Figure 1. REACHnano Toolkit Front-end

The screenshot displays the front-end of the REACHnano Toolkit. At the top, the header includes the REACHnano logo, the project title "Development of a web based REACH toolkit to support the chemical safety assessment of nanomaterials / LIFE11 ENV/ES/000549", and user options: "Sign in", "Password recovery", and "Login".

The main content area is organized into several sections:

- Search:** A search bar with a "Search" button.
- Documents and Links:** A section with a decorative graphic of colorful icons and arrows.
- Inventory:** A card featuring a yellow pen on a grid, labeled "Inventory".
- Risk Assessment:** A card featuring red darts on a target, labeled "Risk Assessment".
- Social tool:** A card featuring a woman and a man looking at a laptop, labeled "Social Tool".

The footer contains logos for funding and partner organizations: ITENE, Generalitat Valenciana, IMISSAT (Institut Valencià de Seguretat i Salut en el Treball), LEITAT (Institut Valencià de Tecnologia), NIA (Nanotechnology Industries Association), and the European Union flag with the text "With the financial support of the European Commission".