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Engineered nanomaterials: Toward effective safety management in research laboratories

Thierry Meyer and Groso A
EPFL, Switzerland

Evaluating the risk of a chemical substance to cause harm involves the compilation of accurate detailed information from all the available sources (SDS, toxicological information, etc.). However, engineered nanomaterials (ENMs) often demonstrate properties that differ from the ones of the same material in the bulk form, providing opportunities for new applications but also for new hazards. Given the current state of knowledge on ENMs, it is likely that several years will be needed before we will precisely know which types of ENMs and associated doses will represent a real danger to humans and the surrounding environment. In the meantime, there is a consensus on applying the precautionary principle to these novel materials until more information is available. One pragmatic way of applying it is to use a control banding approach for managing chemical risks in an effective manner. Nevertheless, the uncertainty on both exposure and impact as well as a cautionary approach seem to result in a high level of estimated risk requiring high protection. In research and teaching institutions, we face a highly versatile environment with large number of laboratories and large cohorts of inexperienced people (students), staff having a high level of education but with high turnover. We will present a practical and pragmatic implementation of a "Nano" safety management system based on a control banding method and 10 years' experience. It is applied to over 120 research labs dealing with ENMs. This system is composed of: 1) 'nano' activity analysis allowing classifying the lab into a risk level and 2) the implementation of the adequate preventive and protective mitigation measures corresponding to the risk level. We will conclude by discussing the difficulties, the drawbacks and the success encountered in an evolving and rapidly changing environment.

Biography

Thierry Meyer has his expertise in Risk Management and Occupational Safety. His professional cursus started from Chem. Eng. education, then he spent several years in industry in R&D and then as Production Manager. He came back to the Ecole Polytechnique Fédérale de Lausanne (EPFL) to manage a research group in Chemical Engineering and since 10 years leading both Research Group in Risk Management and the Safety Competence Center of EPFL (dealing with the safety of over 2500 research labs). His main focus is on developing and applying new and robust methodologies and/or strategies for managing safety and risk aspects in academia.

thierry.meyer@epfl.ch

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