

ONLINE SOLVAY COLLOQUIUM



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A journey in experimental toxicology, with a twist of chemistry

The general scope of toxicology is to study the adverse effects of natural and man-made chemicals on human health. Experimental toxicologists investigate the molecular and biological mechanisms that drive the toxicity of chemicals. Unravelling these mechanisms is crucial to identify subgroups of the population who are more susceptible, to possibly develop treatments and antidotes, and ideally to support safer-by-design strategies for a sustainable development of chemicals. Investigators at LTAP have identified the mechanisms driving the toxicity of several important industrial chemicals, including the elective respiratory toxicity of cemented carbides used for the manufacturing of hard metals¹, the liver toxicity of hydrogenated compounds proposed for the replacement of ozone-depleting CFCs², and the lung toxicity of carbon nanotubes^{3,4} and silica dusts⁵. A close inter-disciplinary dialogue between chemists and biologists has always been the key to decipher these mechanisms of toxicity. These examples also illustrate the need, early in the process of discovery and development of new industrial chemicals, for a parallel consideration of technological applications but also implications for human health and the environment.

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3. Muller, J., Huaux, F., Fonseca A., B. Nagy J., Moreau N., Delos M., Raymundo-Piñero, E., Béguin, F., Kirsch-Volders M., Fenoglio I., Fubini B. and Lison D. (2008) Structural defects play a major role in the acute lung toxicity of multi-wall carbon nanotubes : toxicological aspects. *Chem. Res. Toxicol.* 21(9):1698-705 (JCR 06 : 3.162)
4. Fenoglio, I., Greco, G., Tomatis, M., Muller J, Raymundo-Pinero, E., Béguin, F., Fonseca A, B.Nagy, J., Lison D, and Fubini, B. (2008) Structural defects play a major role in the lung toxicity of multi-wall carbon nanotubes: physicochemical aspects. *Chem. Res. Toxicol.* 21(9):1690-7
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Zoom link: <https://zoom.us/j/95133598840?pwd=OHUrOERmQUIESG1BbEZjbHB4WmFjZz09>

