

Title of Research:

12_S01-01

Development of human exposure assessment methods with the use of the probabilistic approach assisting voluntary risk management by industrial sector

Principal Investigator:

Akihiro Tokai, PhD (Professor, Osaka University, Graduate School of Engineering, Division of Sustainable Energy and Environmental Engineering)
2-1 Yamadaoka, Suita, Osaka 565-0871, Japan
(tel)+81-06-6879-7676, (e-mail) tokai@see.eng.osaka-u.ac.jp

Collaborators:

Haruko Yamaguchi (ibid)
(tel)+81-06-6879-7677,(e-mail) h.yamaguchi@em.see.eng.osaka-u.ac.jp

Summary of Research:

Risk management throughout life cycles of chemical substances becomes increasingly implemented, as enactment of laws and regulations on chemicals management and voluntary chemicals management in the industrial sector are advanced. For further development of the chemicals management, a probabilistic exposure assessment tool that estimates exposure levels and their spatial/temporal variability or uncertainty on estimated error would facilitate an effective risk management.

Thus, the purpose of this study is to develop an exposure assessment model that assists industrial voluntary chemicals management for occupational exposure which is expected to have the highest risk in the supply chain. With a reference to the Advanced REACH Tool (ART) constructed in Europe, we have developed a probabilistic assessment tool for the occupational exposure in Japan, named SWEEs (integrated Score-based Workplace Exposure system) and validated the algorithm by using some data in Japanese industries.

Timeline: November 1, 2012 –

Topics:

The 2nd Research Meeting of the New LRI of Japan Chemical Industry Association, Tokyo, August, 2013. "Development of human exposure assessment methods with the use of the probabilistic approach assisting voluntary risk management by industrial sector", Oral and Poster presentation.

Publications:

Ishimaru, T., Yamaguchi, H., Tokai, A. and Nakakubo, T. (2013) Development of quantifying method for the effect of metabolic inhibition during co-exposure by applying PBPK model: A case of toluene and n-Hexane, Proceeding of the SRA-JAPAN 26th annual meeting, B-6-3 (in Japanese).

Ichikawa, J., Yamaguchi, H., Tokai, A. and Nakakubo, T. (2013) Impact of lack of knowledge about model parameter on reduction of uncertainty factors by applying PBPK/PD model: A case of chlorpyrifos, Proceeding of the SRA-JAPAN 26th annual meeting, B-3-2 (in Japanese).

Ishimaru, T., Yamaguchi, H., Tokai, A. and Nakakubo, T., (2013), Development of practical quantifying method applicable for risk assessment of metabolic inhibition during co-exposure in workplaces by applying a PBPK model in humans, Society for Risk Analysis, Annual meeting, (2013.12.7-13, Baltimore) ※

※student merit award for the Dose-Response Specialty Group (DRSG) of the SRA.

※travel award.