P38 HEALTH RISK ASSESSMENT OF N, N-DIMETHYLFORMAMIDE IN ARTIFICIAL LEATHER FACTORY

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Objectives N, N-dimethylformamide (DMF) is a common organic solvent massively used industrially. Exposure of DMF was reported to cause liver function damages and adverse health effects. DMF exposures in workplaces have been of great concern. Therefore, the objective of this study was to assess health risk due to occupational exposures to DMF in artificial leather industry.

Methods Personal samples at pre-shift and post-shift were collected to assess exposures for each individual study subject in artificial leather factories in this study. Air-monitoring samples were collected through SKC 226-01 coconut charcoal sorbent tubes, and followed by determination of DMF concentrations with Agilent 6890 GC-FID. Pre-shift and post-shift bio-monitoring samples were collected separately. Then urinary N-methylformamide (NMF) concentrations were determined by Agilent 6890 GC-FID.

Results The personal DMF exposures were analysed, and all data complied with the current PELs. However, hazard indexes (HI) were assessed by using either the reference concentration (RfC) published by U.S. EPA IRIS database, or the RfC generated from Benchmark dose modeling an animal dataset by using BMD 2.1.1 version software. Eighty of the 106 study subjects with HI value greater than 1.

Conclusions These results demonstrate that long-term occupational DMF exposures may cause liver damages or other lung non-cancer effects although complied with the current regulations.