

SKIN BARRIER FUNCTION ALTERATION INDUCED BY NOISE STRESS AND ORGANIC SOLVENT AMONG AIRCRAFT MAINTENANCE WORKERS

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Background and Purpose: Skin barrier alteration and stress were both remarkable health issues among workers. Noise, a common physiological stress in an occupational environment, has been demonstrated in change of hormone level of human body. Moreover, organic solvent exposure has been demonstrated as a risk factor of skin barrier function alteration in occupational environment. Aircraft maintenance workers exposed to the extremely high noise and organic solvent including n-hexane and methyl ethyl ketone in work place. The objective of this study is to investigate the skin barrier function alteration of noise and/or organic solvent exposure.

Methodology: 44 aircraft maintenance workers in mid-Taiwan were recruited in this study. Questionnaire was collected to adjust the confounders of workers. Skin barrier function index such as transepidermal water loss (TEWL) and skin recovery within 24 hours were measured to estimate the skin barrier disruption.

Results: We found noise may change the barrier integrity and induce the alteration of 3, 6 and 24h recovery. Basal TEWL is elevated after organic solvent exposure and a change of barrier integrity and a perturbation of 6h recovery caused by noise exposure were also found. Moreover, there was an interaction between co-exposure of noise and solvent.

Conclusions: In summary, noise may change the barrier integrity and induce the alteration of barrier recovery among aircraft maintenance workers. Organic solvents may cause the damage of basal TEWL and may change the effect of skin barrier alteration induced by noise.

Key words: noise stress and organic solvent, skin barrier function, aircraft maintenance workers