

DERMAL EXPOSURES TO PAPER ADDITIVES PHASE III: ASSESSMENT OF DERMAL EXPOSURES

FOREST INDUSTRY HEALTH RESEARCH PROGRAM

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The Forest Industry Health Research Program (FIHRP) has completed an air and dermal exposure of mill workers to targeted compounds in water from paper machines. A preliminary report is now available to members titled "**Dermal Exposure To Paper Additives-Phase III: Assessment of Dermal Exposures**". To request a copy, phone Agi Lee at the Pulp and Paper Forum at (604) 777-1533, send a fax to (604) 777-1567 or email alee@paperforum.com. Non-members of the Forum may be charged for the reports.

Workers at the wet end of pulp and paper machines have concerns about rashes around their neck and wrists. The rashes may be the result of exposures to airborne contaminants such as formaldehyde, acetic acid or formic acid found in white water. These compounds were present in white water at notable concentrations during Phase II of the study.

An air and dermal exposure sampling program was performed at two mills. The dermal sampling evaluated the dermal exposures of five workers using a pad system to absorb vapours or aerosols. The sampling pads were attached to representative anatomical regions of each worker. Concurrent air samples were collected in the workplace of these workers. Air borne and dermal exposures to formaldehyde were at low levels at both mills. Therefore, most likely, formaldehyde did not contribute to the reported dermal effects.

Formic acid was not detected at all in airborne phase at low levels present at low dose rates in the dermal patch samples collected from Mill A and Mill B, except in the case of one worker in Mill B. Substantially higher dermal exposures to formic acid (up to 0.4 mg/hr) were experienced by the Loaderman in the chest, right and left shoulder regions. It was concluded that dermal exposure to formic acid may contribute to the reported dermal effects. The conclusion is supported by a report of chronic rashes by the Stone Sharper who experienced similar exposures to the target compounds as the Loaderman.

Acetic acid was present in low concentrations in the airborne vapour phase at both mills. Significant exposure to acetic acid (total dose of 2.06 mg/hr) was experienced by the Loaderman (at all anatomical regions). However, similar exposures of workers at Mill A did not result in reported cases of dermal irritation. This suggest that acetic acid may not be as important as formic acid in understanding the significance of the target chemicals in causing these health effects.

Overall, the aerosol phase (aerosol and liquid droplets) contributed predominantly to the dermal exposures of workers to the target chemicals found in the white water.

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