“EXPOSURE TO WELDING FUME METAL MIXTURES: EFFECTS ON NEUROPSYCHOLOGICAL FUNCTIONS”

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Background:

Welding fume is a mixture of metals and gases to which millions of welders worldwide are exposed to everyday. Contrary to most previous studies, who focused on single metal exposures, we investigated the neurological effects of exposure to Mn as well as other prevalent welding fume metals, such as, Copper (Cu), Zinc (Zn), Iron (Fe), Aluminum (Al), and Lead (Pb). Exposure of welders and control subjects was assessed using two methods. Firstly, air exposure to each metal was calculated for individuals based on their personal work history and current departmental airborne concentration levels. Secondly, human toenail metal concentrations were used, which has recently been validated as good biomarker of Mn exposure in welders, including in our own studies. In testing neuropsychological performance, three cognitive and three motor tests were chosen. Our correlations between exposure (model and toenail concentration) indicate that chronic exposure to the metals Cu, Pb, Al, Fe and Mn in welding fume metals have an effect on neurological performance. (Supported by NIEHS R01 ES020529 and CDC/NIOSH T03 OH008615)

Host: Dr. Ulrike Dydak