

Zinc Toxicity Among Galvanization Workers In Iron and Steel Industry

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Background: Galvanization process protects the surface against corrosion by providing protection to the iron. Zinc goes through a reaction with the iron molecules within the steel to form galvanized steel. **Aim of the work:** This study was designed to further our understanding of the changes that occur in metal levels such as copper, calcium, manganese and iron, in response to high zinc exposure. **Subjects and Methodology:** This study was conducted on 111 subjects in one of the major companies in iron and steel industry. All subjects are males. Workers who were involved in galvanization process were 61 subjects, their ages ranged between 19-39 years (mean \pm SD 28.86 ± 5.46). All of them work 12 hours / day. All the workers did not use any protective equipment. A referent group of 50 males matched for age (mean 39 ± 7.1 yrs), sex, socio-economic status, smoking habits from the same factory (administrative department), were also enrolled in our study. Their ages ranged between 20-41 years (mean \pm SD 27.34 ± 6.19). The ultimate goal of this work is to assess the effect of occupational exposure to zinc in galvanization to different metals in human body and is designed to detect the association between zinc exposure and its effects on respiratory system. Ventilatory functions were assessed in the morning before shift at fixed time between 9-10 a.m. for the studied groups. Other investigations done for the examined group were CBC, Hb, serum iron level. By using the Atomic Absorption, we measure blood zinc, copper, calcium, magnesium levels.

Results and discussion: This study illustrated the relation between zinc exposure in galvanization process and increased zinc level among exposed workers which is associated with increased the manifestation of MFF and decreased blood copper and calcium level with no statistically significant difference between the exposed and control groups as regard the magnesium level. No long term effect of these metal exposure was detected on ventilatory functions among the exposed workers.

Key words: Galvanization - metal interaction- zinc fume exposure

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