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Reproductive toxicity in lead pipe manufacturing industries workers: A debatable problem

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Nowaday exposure to heavy metals occurs in most work environments. Lead compounds are one of the most dangerous toxic metals. This study aimed to investigate the relationship between the concentration of lead fumes and the levels of reproductive hormones among exposed welders. A total number of 165 individuals of a construction industry of water pipelines, including 85 welders as the exposure group and 80 administrative staff as the non-exposure group were selected for study. The National Institute for Occupational Safety and Health (NIOSH) 7300 method was used for the purpose of sampling and analysis of lead fumes. Likewise, the NIOSH 8003 method was employed to determine the blood lead level. The level of luteinizing hormone (LH), follicle-stimulating hormone (FSH), and testosterone were measured by Chemiluminescence immunoassay (CLIA) test. Data analyses were done by SPSS. The average concentration of lead fumes in the breathing zone and blood were 0.57 ± 0.12 mg/m³ and 460.28 ± 93.65 µg/L, correspondingly, which both were significantly higher than threshold limit values (TLV) and biological exposure index (BEI) recommended by American Conference of Governmental Industrial Hygienists (ACGIH) ($P < 0.05$). The mean levels of LH and FSH were higher in the exposed group than those in the control group ($P < 0.05$), however, the mean levels of testosterone were lower in the exposed group compared to non-exposed ones ($P < 0.05$). A strong correlation was found between the concentration of lead fumes and the blood lead levels ($r = 0.82$; $P = 0.003$). Blood lead levels were inversely related to the testosterone levels and directly related to LH ($r = 0.72$; $P = 0.004$) and FSH ($r = 0.78$; $P = 0.001$) levels. Occupational exposure to metal fumes containing lead among welders may alter the level of sexual hormones and potentially harm the reproductive system.

Biography

Younes Mehrifar was born in 1989 in Delfan. He continued his education until high school in the city of Harsin and was accepted in the national entrance exam at the undergraduate level of Shiraz University. Mehrifar, after receiving his bachelor's degree from Shiraz University, was accepted in the master's degree of the University of Isfahan. Currently, He spends PhD in occupational health and safety at work from Shahid Beheshti University of Medical Sciences, Iran. Mehrifar has several books and international articles.

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