K28 Workplace Toxicity In the Archives of Ottoman Empire

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After attending this presentation, attendees will understand the residual effects of multiple applications of chemical products, including heavy metals, pesticides, and rodenticides, over a five century period and its affects on archive employees.

This presentation will impact the forensic science community by demonstrating workplace toxicity due to multiple applications of pesticides and rodenticides.

The employees of the Ottoman Archives are exposed to different molds and chemical products such as heavy metals, pesticides, and rodenticides. The goal of this study is to investigate the inorganic elemental composition of archived papers to predict whether if there is any toxicity or not in the 100 to 500 years old Ottoman Archives as a work place.

Material and Method: Five ml of 70 % HNO_3 and 1 ml of concentrated HCl were added to the 0.1 g aliquots of the collected paper samples from randomly chosen fifteen departments of the archive and nails from the randomly selected ten employees and digested in microwave oven under 170º C/400 watt/15 minutes. Thirty-five elements of the collected pieces of papers of each of fifteen archive rooms and a blank plain paper have been analyzed and compared by using ICP MS technique.

The ICP-MS conditions were as follows: Rf power:1200 w; Nebuliser gas flow: 0.87 ml/min; Auxiliary gas flow: 0.75 ml/min; cooling gas flow: 13.8 ml/min. sample uptake: 60 s; Dwell time: 10 ms.

Results: Average values in ppm of fifteen archive rooms for related elements have been found as follows Li : 0,1 Be: 0,174 B: 29,1 Na: 1659,0 Mg: 3104,7 Al: 9538,2 P: 652,5 S: 0,0 K: 3047,7 Ca: 10573,4 V: 3,8 Cr: 97,7 Mn:68,0 Fe: 13857,1 Co: 7,8 Ni: 24,3 Cu:82,6

Zn:312,9 As: 24,6 Se: 0,3 Sr: 51,3 Zr: 1,5 Mo: 1,4 Cd: 0,3 Sn: 14,2 Sb: 1,4 Ba: 384,6 W: 0,1 Pt: 0,0 Hg: 4,9 Tl: 0,1 Pb: 282,8 Bi: 5,1 Th: 0,676 U: 0,344 respectively.

Conclusion: This study showed that, toxic metals such as As, Cu, and Pb varied between 100 and 1,000 folds of the nowadays produced plain (blank) paper. Employees that working for long times in restoration or examination of the archived papers inside the archive rooms subjected to chronic workplace heavy metal toxicity. Furthermore from the analysis of their nail samples, employees are under the risk of heavy metal toxicity. On the other hand, 160 employees of the archives have been sent to the department of thoracic medicine where breathing functions were administered. When compared, the values in the patients files of the hospital; Forced Expiratory Volume in One Second (FEV1) breathing function although statistically not significant, decline in ten years was greater in the achieve employees, in spite of smoking was more common in the control group while other functions such as FVC, FEV1/FVC, MEF 25-75%, DLCO/VA still in normal values. **Workplace, Toxicity, Archives**

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