

## عنوان مقاله:

Investigating the Non-carcinogenic Risk and Hazard Quotient of Heavy Metals in High-traffic Districts of Tehran Metropolis, Iran

## محل انتشار:

مجله پیشرفت در تحقیقات بهداشت محیط, دوره 9, شماره 4 (سال: 1400)

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## خلاصه مقاله:

Background: This study aimed to investigate the concentrations of heavy metals bound to airborne Particulate Matter (PM) in high-traffic districts of Tehran, Iran, and to determine the carcinogenic risk and Hazard Quotient (HQ) of these metals using a descriptive-applied method. Methods: Six indoor/outdoor stations were established in three high-traffic districts of Tehran. Each station was sampled with six replicates in winter ۲۰۱۸ (۳۶ samples in total). After extracting the metals from fiberglass filters by acid digestion based on the ASTM (the American Society for Testing and Materials method), the concentrations of heavy metals were determined by an Inductively Coupled Plasma (ICP-OES) device. The human health risk was evaluated according to the US EPA (Environmental Protection Agency) standard method. The obtained data were analyzed by the Spearman correlation and Multivariate Analysis of Variance (MANOVA) in SPSS. Results: Districts ۲, ۳, and then ۱۵ were the most high-traffic areas of Tehran in descending order. Average heavy metal concentrations were detected in order of Al>Fe>Pb>Mn>Cu>Zn>Cr>As>Ni>Cd. Also, the heavy metals concentrations were significantly different between indoor and outdoor environments. The correlations between heavy metal concentrations, carcinogenic risk, and HQ were significant in all three districts ( $P<0.05$ ). Mean carcinogenic risk variables, HQ levels, and heavy metal concentrations in all three regions were in order of districts ۱۵>۲>۳ and outdoors>indoors. Conclusion: Based on the results, serious measures are recommended to control traffic congestion in Tehran to prevent cancer risk and other health hazards caused by heavy metal bonded TSP (total suspended particulate matter).

## کلمات کلیدی:

Cancer risk, Hazard Quotient, PM<sub>۲.۵</sub>, Particulate Matter, Traffic Congestion

## لینک ثابت مقاله در پایگاه سیویلیکا:

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