

عنوان مقاله:

Risk Assessment of chemical pollutants in a petrochemical company

محل انتشار:

ششمین کنفرانس مدیریت انرژی و محیط زیست (سال: 1395)

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خلاصه مقاله:

Introduction: Risk assessment has been fundamental method to identify the characterization of the potential harmful health effects of workers exposures to chemicals hazard. The aim of this study was to determine the risk level of exposure to volatile organic compounds and hydrogen sulfide on workers of Assaluyeh petrochemical industry. **Methods:** This study was a cross-sectional research performed at a petrochemical industry conducted in 2016. The subjects were included 123 samples for volatile organic compounds and hydrogen sulfide (H₂S). Methods 1500, 1501, and 6013 presented by the National Institute of occupational safety and Health (NIOSH) were used for the sampling and analysis of pollutant in the air. Semi-quantitative method presented by the Occupational Safety and Health Division, was used for risk assessment. In final stage was estimating the cancer risk assessment of blood cancer caused by exposure to benzene. **Results:** The concentration of xylene in the breathing zone of workers were higher than the other cases. The concentration of benzene in the breathing zone of workers (2.12 ppm) were higher than the standard level recommended by ACGIH. Average concentration of hydrogen sulfide (H₂S) were significantly lower than TLV-TWA recommended by ACGIH ($p < 0.05$). Benzene had very high rank of risk on petrochemical industry. Rank of risk was low for toluene and xylene in the breathing zone of workers. For other cases, risk ranks were in negligible. The cancer risk assessment of benzene exposures in the breathing zone was (8.78×10^{-3} or in other word 8.7 cancer per 1000) higher than the acceptable criteria of 10^{-6} . The non-cancer risks of workers exposure to pollutant for benzene, toluene, and xylene were ratio of 741.66, 21.64 and 156.60 respectively. **Conclusion:** Exposure to benzene can increase the risk of cancer in workers of petrochemical industry. This research demonstrated that, risk assessment and cancer risk analysis can provides valuable information on the prevention and control procedures in place.

کلمات کلیدی:

Risk Assessment, Volatile organic compounds, Hydrogen sulfide, Petrochemical industry

